Waterbury Board of Education

THE CITY OF WATERBURY 236 Grand Street ~ Waterbury, CT 06702 203-574-8009

MEMORANDUM

FROM: Carrie A. Swain, Clerk
Board of Education

DATE: December 5, 2023

TO: Michael J. Dalton, City Clerk

SUBJECT: Notice of Workshop/Committee Meetings, December 7, 2023, Hopeville School

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The Committees of the Board of Education will meet on Thursday, December 7, 2023, 5:30 p.m., Hopeville School, 2 Cypress Street, Waterbury, Connecticut.

This meeting will be broadcasted live on the City of Waterbury's Government Access Channel (Comcast 96, Frontier 6096) and streamed live on YouTube at https://youtu.be/wu7vdM3-CkU

AGENDA

SILENT PRAYER

PLEDGE ALLEGIANCE TO THE FLAG

PUBLIC SPEAKING

PRINCIPAL'S REPORT ~ Erika Lanza

1. *Committee of the Whole/5 minutes* ~ Request of Representative Geraldo Reyes, Jr. to rename International Dual Language School "Roberto Clemente Dual Language School" (per policy, final consideration before vote).

2. *Committee of the Whole/10 minutes* ~ Mid-year Transportation Update – J. Hunter, Durham Transportation.

3. *Committee of the Whole/5 minutes* ~ Request approval of the Educational Specifications for the following proposed projects - N. Albini:
   1. 2024 Connecticut HVAC IAQ Grant at Bucks Hill Elementary School.
   2. 2024 Connecticut HVAC IAQ Grant at Chase Elementary School.
   3. 2024 Connecticut HVAC IAQ Grant at Generali Elementary School.
   4. 2024 Connecticut HVAC IAQ Grant at International Elementary School.
   5. 2024 Connecticut HVAC IAQ Grant at Regan Elementary School.
   6. 2024 Connecticut HVAC IAQ Grant at Washington Elementary School.

4. *Committee of the Whole/3 minutes* ~ Request approval of Amendment One (1) to the Memorandum of Understanding/Program Acknowledgement with Connecticut Military Department for STARBASE CT – J. Frenis, J. Lapham.

5. *Committee of the Whole/10 minutes* ~ New Kindergarten Age Legislation – J. Frenis.

6. *Committee of the Whole/15 minutes* ~ Waterbury Public Schools Accountability Results – T. Battistoni, J. Frenis.

7. *Committee on Finance/3 minutes:* Request approval to apply for the 2023-24 Carl D. Perkins Grant – L. Allen Brown, J. Frenis, M. Merati.

8. *Committee on Finance/3 minutes:* Request approval of Amendment One (1) to the Professional Services Agreement with Varsity Tutors for Schools LLC for elementary math and reading virtual tutoring – J. Frenis.

9. *Committee on Finance/3 minutes:* Request approval of a Statement of Agreement with Capital Region Education Counsel (CREC) for Parent Teacher Home Visiting Program implementation – Q. Brown.

10. *Committee on Finance/3 minutes:* Request approval of a Construction Contract with All Trade Industries, LLC for kitchen renovations at Crosby and Wilby High Schools – N. Albini.

11. *Committee on Finance/3 minutes:* Request approval of a Construction Contract with New England Masonry & Roofing Company for gutter repairs at Rotella Magnet and Maloney Magnet Schools – N. Albini.

12. *Committee on Finance/3 minutes:* Request approval of a Construction Contract with National Equipment and Facility Solutions, Inc. for bleacher and bench replacement at two schools – N. Albini.

13. *Committee on Finance/3 minutes:* Request approval of a Construction Contract with Sarracco Mechanical Services, Inc. for HVAC Replacement at Crosby High School and Wallace Middle School – N. Albini.

14. *Committee on Finance/3 minutes:* Request approval to apply for the Connecticut Department of Energy & Environmental Protection, Public Utilities Regulatory Authority "Public Educational and Governmental Programming and Education Technology Investment Account" (PEGPETIA) Grant 2024 – N. Albini, L. Allen-Brown.

15. *Committee on Finance/5 minutes:*
    a) FYI - ARP/ESSER Update – D. Biolo.
    b) Monthly Expenditure Report for October – D. Biolo.
    c) Transfer in the 2023/2024 Capital Improvement Budget – D. Biolo.

16. *Superintendent's Update* ~ Dr. Ruffin.

17. *Committee on Building & School Facilities/2 minutes* ~ Use of school facilities by school organizations and/or City departments – N. Albini.

18. *Committee on Building & School Facilities/2 minutes* ~ Use of school facilities by outside organizations and/or waiver requests – N. Albini.

19. *Superintendent's Notification to the Board/5 minutes:*

    a. Athletic appointments:

Name	*Position*	*Location*	*Effective*
Conte, Joseph	Intra-District Head Boys' Volleyball Coach	WCA	03/16/24
Dickey, Ryan	Head Boys Swimming Coach	KHS	11/25/23
Drewry, Emily	Intra-District Head Girls' Soccer Coach	KHS	03/16/24
Hibbert, Alethia	Intra-District Head Boys' Volleyball Coach	KHS	03/16/24
Piccolo, Carla	Intra-District Head Boys' Volleyball Coach	WHS	03/16/24
Scialla, Marlena	Assistant Indoor Track Coach	KHS	11/30/23
Sturdivant, Jason	Head Girls Basketball Coach	WCA	11/27/23

    b. Grant funded appointments:

Name	*Position/Location*	*FT/PT*	*Rate*	*Union*	*Funding*	*Effective*
Alers-Alves, Marissa	Parent Liaison WAMS	FT	$20.06/hr	UPSEU 69	Title I/DW 23-25	11/9/23
Bard, Charlotte	Tutor Chase	PT	$34/hr	NONBOE	Title I/A 23-25	11/09/23

Beltre-Marmolejos, Cesar	Office Manager Human Capital	FT	$20/hr	UPSEU 69	Title II/A District 23-25	11/09/23
Broughton, Michael	Computer Instr. Asst - Chase	FT	$15/hr	F UPSEU 69	General Fund	11/16/23
Gibson, Wanda	Crossing Guard Walsh	PT	$15/hr	SCG	General Fund	11/16/23
Hayes, Debra	Family Resource Center Coord.	FT	$28/hr	F UPSEU 69	FRC 23-24	11/30/23
Katz, Cheryl	College and Career Coord. WAMS/WCA	FT	$28/hr	F UPSEU 69	ESSER II 21-24	11/09/23
Lee, Ellen	Tutor Chase	PT	$34/hr	NONBOE	Title I/A 23-25	11/09/23
Orta de Garcia, Yohanny	Tutor International	PT	$25/hr	NONBOE	Title II/A 23-25	11/16/23
Ortiz, Christopher	Non-Certified Instr. Adult Ed	PT	$25/hr	NONBOE	Adult Ed 23-24	11/09/23
Scalzo, Timothy	Audio, Visual and Lighting Tech WAMS	FT	$18/hr	F UPSEU 69	WAMS 23-24	12/07/23
Steele, Cimone	Hall Monitor Crosby	PT	$105/day	NONBOE	SIG 7 CHS 23-25	11/20/23
Wright, Samantha	Parent Liaison Reed	FT	$20.06/hr	UPSEU 69	Title I/A 22-24	11/16/23

c. Miscellaneous after-school program appointments:

Academic Academy – 21st Century	*Bucks Hill – 21st Century*
Castellone, Tyler – Teacher	Arroyo, Maria – Rec. Specialist
De Santis, Paula – Teacher	
Fengeler, Jessica – Teacher	
McCue, Erin - Teacher	

d. Miscellaneous appointments:

Name	*Position*	*Location*
Banks, Melissa	Social Studies Content Coordinator	WMS
Purnawasi, Muniram	530 Club Teacher	CHS
Sullivan, Carly	530 Club Teacher	KHS
Macary, Meaghan	530 Club Teacher	WAMS
Kollchaku, Nikoleta	530 Club Teacher	WCA
Morin, Keith	530 Club Teacher	WCA
Carroll, Jonathan	530 Club Teacher	WHS
Sazo, Gustavo	530 Club Teacher	WHS
Bayliss, Michelle	480 Club Teacher	CHS
Cybart-Persenaire, Alena	480 Club Teacher	KHS
DeFrancesco, Nora	480 Club Teacher	WCA
Aguirre-Galan, Ashley	Mastery Based Learning Panel	CHS & Enlightenment
Andrezjewski, Elizabeth	Mastery Based Learning Panel	CHS
Bayliss, Michelle	Mastery Based Learning Panel	CHS & Enlightenment
Christopher, James	Mastery Based Learning Panel	CHS & Enlightenment
Donofrio, Christi	Mastery Based Learning Panel	CHS & Enlightenment
Forte, Diane	Mastery Based Learning Panel	CHS
Graffam, Korena	Mastery Based Learning Panel	CHS & Enlightenment
Massicotte, Tracy	Mastery Based Learning Panel	CHS
McGuire, Elona	Mastery Based Learning Panel	CHS & Enlightenment
Mead, Christine	Mastery Based Learning Panel	CHS & Enlightenment
Joseph Perusse, Joseph	Mastery Based Learning Panel	Enlightenment (WHS)
Hinton, Marci	Mastery Based Learning Panel	Enlightenment (WHS)
Sincuir, Silvia	Mastery Based Learning Panel	Enlightenment (WHS)

Henson, Elizabeth	Mastery Based Learning Panel	Enlightenment (WHS)
Riddick, Deandre	Mastery Based Learning Panel	Enlightenment (WHS)
Kelly, Wendy	Mastery Based Learning Panel	Enlightenment (WHS)
Donohue, Kelly	Mastery Based Learning Panel	Enlightenment (CHS)
Genua, Jerry	Mastery Based Learning Panel	Enlightenment (CHS)
Vilardo, Maria	Mastery Based Learning Panel	Enlightenment (CHS)
Ferrari, Lindsay	Mastery Based Learning Panel	Enlightenment (WCA)
Freitas, Ashley	Mastery Based Learning Panel	Enlightenment (WCA)
Obrien, Kendra A.	Mastery Based Learning Panel	Enlightenment (WCA)
Sejdaras, Benjola	Mastery Based Learning Panel	Enlightenment (WCA)
Germain, Ben	Mastery Based Learning Panel	State Street

e. Extended School Hours (ESH) and Priority School District (PSD) program appointments:

School	*Last name*	*First Name*	*Assignment*
Driggs	Sam	Hannah	Sub Administrator
	Pastore-Quezada	Paula	Teacher
	Gomez	Bridgett	Sub Administrator
Walsh	Laird	Jennifer	Sub Teacher
Washington	Nguyen	Karena	Sub Teacher
	Santos	Melanie	Sub Teacher
International	Rodriguez, Velez	Nanichi	Teacher (PSD)

f. Retirements:

Name	*Assignment*	*Effective*
Brown, Lisa	Supervisor of Special Education	12/29/23
Case, Mary	WAMS Music	06/30/24
Matos, Jacqueline	Elementary Bilingual Coach	01/31/24
O'Brien, Kathleen	WSMS Special Ed (previously indicated resignation)	11/15/23

g. Resignations:

Name	*Assignment*	*Effective*
Bessette, Amanda	General Special Ed	11/17/23
Faber, Cheryl	WMS/Rotella Special Ed	12/22/23
Kershaw, Tania	International Grade 2 Spanish	12/22/23
Sullo, Danielle	Tinker Library Media Specialist	12/01/23
Tramontanis, Brittany	Kingsbury Grade 4	12/14/23

EXECUTIVE SESSION for discussion concerning the appointment, employment, performance, evaluation, health, or dismissal of a public officer or employee.

ADJOURNMENT

ATTEST: Carrie A. Swain

Carrie A. Swain, Clerk
Board of Education

7553
FORM

#1

Waterbury Public Schools

Request for Renaming of School Buildings

Date: August 29, 2023

Proposed building or facility to be renamed: International Dual Language School

Requestor's Name: Representative Geraldo Reyes Jr.
Requestor's Address: 30 Madison Street Waterbury CT 06706
Requestor's Phone Number(s): 203-695-6776

Proposed individual(s) or group for whom the building or facility is to be renamed:
Roberto Clemente Dual Language School

Reasons for renaming (attach any additional information to this form):
At the Hispanic's Community's request. Please reference letter attached.

If applicable, materials needed (signage, plaque, etc.) and cost of materials (please note any costs associated with this request are the sole responsibility of the requestor):
N/A

Please submit this form and any attachments to the Clerk of the Board of Education at 236 Grand Street, 1st floor, Waterbury, Connecticut 06702 or via email at cswain@waterbury.k12.ct.us

State of Connecticut
HOUSE OF REPRESENTATIVES
STATE CAPITOL
HARTFORD, CONNECTICUT 06106-1591

REPRESENTATIVE GERALDO REYES, JR.
DEPUTY SPEAKER
PAST CHAIR, BLACK & PUERTO RICAN CAUCUS
75TH ASSEMBLY DISTRICT

LEGISLATIVE OFFICE BUILDING
CAPITOL: (860) 240-8585
TOLL FREE: (800) 842-8267

COMMITTEES

ENVIRONMENT COMMITTEE
APPROPRIATIONS COMMITTEE
TRANSPORTATION COMMITTEE
LEGISLATIVE MANAGEMENT COMMITTEE

September 11, 2023

President Ann Sweeney
Board of Education
236 Grand Street, 1st Floor
Waterbury, CT 06702

Dear President Sweeney,

Thank you all for allowing to express our appreciation and gratitude for this opportunity. We are truly honored and deeply moved to have been invited to speak at the momentous occasion of renaming the public school on Beecher Street in Waterbury. This event represents a profound step forward in embracing the values of equity, inclusion, and diversity that lie at the heart of our community's progress.

As we gather to commemorate this transformational moment, it is with great pride that we celebrate the renaming of the school to the Roberto Clemente Dual Language School. In a world where differences often divide us, it is essential to recognize and uplift the stories of those who have embodied unity and inspiration.

Roberto Clemente, Latin America's Biggest Afro Boricua star, personifies these ideals in the most exceptional way. His legacy of unwavering commitment to his craft, his community, and humanitarian causes has transcended borders and generations, making him a true icon across Latin America and beyond.

Clemente's dedication to excellence both on and off the field serves as an exemplary model for the values we aim to instill in our students. His spirit of generosity, social responsibility, and cultural pride exemplifies the ethos of our diverse Waterbury community.

By naming this school in his honor, we pay tribute to a man whose life's work continues to inspire countless individuals to overcome obstacles and reach for greatness. This renaming is not merely symbolic; it is a testament to our commitment to fostering a learning environment that celebrates the richness of languages, cultures, and perspectives.

By embracing a dual-language approach, we empower our students to navigate an increasingly interconnected world with confidence and proficiency. The Roberto Clemente Dual Language School will be a haven where students can embrace their heritage, while also embracing the beauty of language diversity.

In addition, this renaming marks a historic milestone for Waterbury. As the first school with a Spanish surname in its history, we set a precedent for acknowledging the contributions of the Latinx community that has been an integral part of our city's fabric.

The name "Roberto Clemente" becomes a symbol of unity, resilience, and progress as we move forward together. As we gather to celebrate this pivotal moment, let us remember that education is the cornerstone of change.

The Roberto Clemente Dual Language School will serve as a beacon of hope and opportunity, where young minds will be nurtured to become global citizens, compassionate leaders, and advocates for a just and inclusive society.

Thank you for the privilege of sharing in this celebration.

Let us come together to honor the legacy of Roberto Clemente and to embrace the transformative power of education, unity, and the pursuit of greatness. With utmost respect and admiration,

Sincerely,

Geraldo C. Reyes Jr.

Ing. Geraldo C. Reyes Jr.
75th District Waterbury CT

Larry B. Butler

Representative Larry B. Butler
72nd, District Waterbury CT

Michael DiGiovancarlo

Representative Michael DiGiovancarlo
74th District Waterbury CT

Sandra Martinez-McCarthy

Sandra Martinez McCarthy

Victor Lopez Jr.

Victor Lopez Jr.

Renaming of Schools Buildings

A school building is an individual building owned, operated, controlled, or governed by the Waterbury School District and its Board of Education.

RATIONALE

The Waterbury Board of Education recognizes that respect and gratitude for individuals who have made significant contributions to our School District and/or the City, as a whole, may be expressed by naming a building in honor of an individual.

Acknowledgement in this manner perpetuates the memory of the nominee's contribution and provides a sense of history for the future students, staff, and residents of the community.

Further, the Waterbury Board of Education recognizes the responsibility to consider the renaming of certain facilities as set forth in this policy.

AUTHORITY

The authority for naming all school buildings owned, operated, controlled, or governed by the Waterbury School District and its Board of Education rests with the Waterbury Board of Education.

CRITERIA

- Buildings to be renamed cannot have been previously designated as named in perpetuity as outlined in Waterbury Board of Education Policy 7551, and additionally listed under Policy 7551, Attachment A, except as allowed under Policy 7551.
- Buildings may be named for a deceased person(s) who have contributed significantly to the District through longevity of service, exemplary leadership, philanthropic contribution, connection to the local educational system, or other actions that benefitted the local community. To eliminate spontaneous or emotional response, nominations will not be considered until three years after the death of the individual.
- Names may denote the geographical area in which the school is located.
- Names may be used to denote identification of the program housed in the building.
- Names may denote a deceased person(s) prominent at the national or state level. Nominations will not be considered until three years after the death of the individual.
- Renaming of a school building will require a 2/3 majority of the Board of Education, present and absent.

Renaming of Schools Buildings, continued

PROCEDURES

1. All requests to rename school buildings should be sent to the Clerk of the Waterbury Board of Education. The request should provide the suggested building name for the proposed location, the rationale for the name submitted, and any related and supporting information. A form is available from the Office of the Clerk to the Board of Education (Appendix #18) or at the Department of Education's website – www.waterbury.k12.ct.us.
2. All requests received will be submitted to the Committee of the Whole for consideration at the next regularly scheduled Workshop meeting.
3. The Committee of the Whole will allow for 60 calendar days for consideration to allow for input from the public.
4. At the next regularly scheduled Workshop meeting following the 60 calendar days, the Board will agenda the request for final consideration and comment by the Committee of the Whole, with a vote at the next regularly scheduled Board Meeting.
5. Renaming, if approved, should be effective with the opening of the next school year to allow for signage changes, letterhead revision, etc. No renaming should take effect without sufficient time for the district to make all necessary adjustments to allow a smooth and complete transition.

#2

Welcome Center
Jeffrey A. Hunter Sr.
Bussing/Crossing Guard Cord.
185 South Main St
Waterbury, CT 06706
Phone (203)346-3511 Fax (203) 346-6168
jhunter@waterbury.k12.ct.us

MEMORANDUM

DATE: December 7, 2023

TO: Honorable Board of Education Commissioners

FROM: Jeffrey Hunter, Pupil Transportation Coordinator
Nicholas J. Albini, Chief Operating Officer

SUBJECT: Transportation Services Information

Attached is an annual update of Waterbury Public Schools school bus transportation information For Durham School Services and All-Star Transportation.

Waterbury Public Schools

Transportation Service Information

The 2023 – 24 School year began with a full slate of drivers. Durham & All-Star Transportation companies were able to have all routes covered at the start of the School. Due to the nationwide shortage both companies are challenged keeping & retaining driver.

Communication

With the help on the new Transportation Hotline, implemented in the Superintendent's conference room at the beginning of the school year, parents were able to call and get information about bus stops, complaints and busing issues. Number of phone calls to the Superintendent's office were reduce to a minimum.

The transportation info on the website was updated this year, parents has access to call the bus companies, the Transportation Coordinator; Asst. Transportation Coordinator. Adding to the website is a few Questions & Answer sections pertaining to busing issues.

A new routing system was implemented in the September 2023, giving the schools, parents access to see student names and bus stops, this helps reduce the number of calls to the bus company and transportation department.

Buses & Driver Facts

- Currently Durham School Services has 116 bus routes; All-Star Transportation has 70 bus routes. (60 in-town / 10 Pre-K)
- Durham has 149 buses assigned to Waterbury, All-Star has 70 totaling 219 buses assigned to Waterbury.
- There are approximately 18,500 students transported daily, this includes Public & Private Schools
- Background checks are performed on all drivers and staff every August that includes both DMV and criminal checks. Copies are available for Transportation Coordinator to review.
- 95 % of the drivers live in Waterbury
- There are 77 monitors assign to Regular Education, Special Education & Pre-k buses.
- Durham bus drivers were able to secure a Union Contract in October.

Mileage & Technology

- Annual miles 2,000,000.
- Beginning this school year, Waterbury Public school bus reported accident rate is substantially under the industry rate 1.0 with a total of 8 non-preventable and 4 preventable accidents.
- All buses are equipped with a child check safety check which assures that the driver walk to the back of the bus in order to hit a button that deactivate alarms that would go off 15 seconds after the driver leaves the vehicle without hitting the button.
- Traffic cam installed on outside of the bus, records video clips around the bus.
- Bus Tracker has been upgraded.
- All buses are equipped with live GPS trackers.

Vehicle Maintenance

- All vehicles are in compliance with the DMV regarding preventive maintenance.
- All vehicles are inspections reports are available for review by the Board of Education Transportation Dept. conducts spot checks on vehicle files.

Training

- All new drivers receive a minimum of 40 hours training. State requirement is 30 hours.
- Training is a combination of classroom, demonstration and skill station mastery.
- Experienced drivers receive a minimum of 17 hours training and must complete training passenger management, bus evacuation, response to emergencies, loading and unloading.
- Drivers cannot transport students until all elements are passed.
- All drivers are evaluated on the road twice a year, drivers are trained to be DCF mandated reporters.
- Emergency evacuation drills are demonstrated and conducted at each school, with all students twice a year. (Fall and Spring months) in conjunction with our Security Division.

Fines and Infractions

Fines and Infractions are listed in the Busing Contracts and monitored for compliance with respect to equipment. Last year Durham was fined $1400 for infractions for late buses, we will continue to monitor both All-Star and Durham for compliances.

Propane Fuel

The City receives federal reimbursement for propane fuel used in Durham buses, FY2022 the federal reimbursement amount received was $179K.

Busing Contracts

All-Star Transportation (Special In-Town and Out of District Transportation), Durham Services (Regular Ed Transportation) both contracts is in Year 3 of five year contracts. We also have a contract with Ambassador for medically fragile students, students with disabilities and McKinney-Vento student's transportation in Year 1 of three-year contract.

Budget

The Transportation Coordinator works closely with the Budget Office and the Special Education Department to maintain costs where possible. Generally, the contract budget projection remains in line with expectations. Two areas of cost drives that require review of projections are in the area of Special Education, Pre-K and Homeless. Those areas are closely monitored collaboratively by the Transportation Division, the Budget Office, the Chief Operating Officer and the Special Education Department with cost efficiencies being sought where possible while still delivering the necessary transportation for our programs and students.

#3

ARCHITECTS
ENGINEERS
INTERIORS

EDUCATIONAL SPECIFICATIONS
HVAC Grant Program

Bucks Hill School
330 Bucks Hill Road
Waterbury, CT 06705

PROJECT RATIONALE

The long-range plan for the Bucks Hill School calls for the provision of a safe and appropriate learning environment. The current school was built in 1953 and only has a central steam heating system providing heating in the building, with operable windows the primary source of fresh air ventilation, likely replaced around 2005. The building is hot in the shoulder seasons and particularly in each June and September. This project is to deliver modernized ventilation systems with new DOAS and VRF systems that provide an important public health function that filtrates the air and reduces airborne contaminants, including particles containing viruses as well as reducing humidity.

LONG RANGE PLANS

The current long-range plan for the Bucks Hill School calls for the current facility to be utilized in its current capacity as a school for in excess of 20 years. To comply with this aspect of the plan, and to provide a safe and healthy learning environment, it is necessary to maintain the existing 2005 boilers, provide new cooling and ventilation components, replace existing antiquated controls and installing new BMS technology systems related to HVAC operations and installing air conditioning and ventilation systems.

THE PROJECT

Summary Project Need:
(A)Age and condition of the current HVAC system or equipment: There is no central ventilation or air conditioning in the school except for isolated window air conditioners for year-round staff and special needs student requirements (IEP mandated)

(B)Current air quality issues at the school: There is no fresh air ventilation other than opening windows, with no air conditioning (a city project is currently underway to provide a cooler center environment in the gymnasium and the cafeteria). These two spaces are not included in this grant application.

(C)Age and condition of the overall school building: Built in 1953, the school has only had light renovations over the years including code conformance work, window replacements and roof replacements. It is constructed with durable materials that are in good condition with a serviceable life exceeding 20 years.

(D)School district's master plan: See the information provided in related grant application documents. The long-range master plan is to continue using this school as part of its K-5 elementary school program for the long term, foreseeable future (8-year enrollment projections are part of the grant and justify the school's continued operation)

(E)Availability of maintenance records: See documents attached to this application.

(F) Contract or plan for the professional maintenance and cleaning of the HVAC system: The District's maintenance plan already includes the maintenance schedule for quarterly, semi-annual and annual cleaning and maintenance requirements, implemented by our custodians, maintenance staff and paid contractors.

Silver Petrucelli + Associates
3190 Whitney Avenue | Hamden CT 06518
311 State Street | New London CT 06320
203 230 9007 *silverpetrucelli.com*

The existing school will have its existing central steam boilers and steam distribution system preserved. Classroom and Offices will be provided with Variable Refrigerant Flow (VRF) ductless mini split systems; with outdoor (rooftop or ground), cold climate (hyper-heat) heat pumps; refrigerant circuit control boxes to serve multiple rooms in a zone and benefit from internal energy exchange (free cooling/heating).

Dedicated Outdoor Air Systems (DOAS) for central ventilation of tempered and humidity controlled fresh air and exhaust to the Classrooms, Offices and Restrooms; with refrigerant coil cooling and multi-stage natural gas heating; with energy recovery wheel; with 100% Outside Air Economizer; with Carbon Dioxide Sensing demand-controlled ventilation (DCV) controls. Heat pumps instead of preferred Dx cooled and gas heated (backup) can be an option as well, thus eliminating fossil fuel consumption at the site.

The gymnasium and cafeteria spaces are being cooled by a separate and precedent cooling center project that is not part of this application. Systems shall plan for a later boiler replacement in the appropriate time frame noted and is not a part of this project or grant application.

Finally, the project will upgrade controls to a full Building Management System (BMS) with Internet and remote access and monitoring capabilities. Roof areas will be cut, patched and flashed for the DOAS ducted systems and the pitch boxes passing the piping between the rooftop heat pumps and the VRF system. Small areas of new ceilings in the corridors and other ducted DOAS areas will be created to conceal the duct systems and provide security for these systems.

The main electrical service is in the process of being upgraded under a separate project including the main switchgear. New local sub-panels are being provided under this project. Branch circuit feeds will be provided to all new HVAC equipment.

The building roof areas were last replaced in 2013 (according to the CSDE,state.CT.us /general report log). The entire 77,741 sq. ft. will be involved and IAQ improved.

Other work includes the following:

1. Installation of ceiling systems where required to conceal systems
2. Installation of new chase wall construction for risers
3. Installation of vertical chases for pipe runs and controls circuitry

BUILDING SYSTEMS

Security:	Not applicable
Public Address:	Not applicable
Technology:	Not applicable
Phone System:	Not applicable
Clocks:	Not applicable
Security camera:	Not applicable

INTERIOR BUILDING ENVIRONMENT

Acoustics:	Not applicable
Lighting:	Not applicable
HVAC:	Total improvements to air conditioning and ventilation systems per this grant application
Electrical:	The primary power system is currently being upgraded under a separate project, but sub panels are being added for power requirements and distribution equipment as required, related to this grant application
Plumbing:	Not applicable
Windows/Doors	Not applicable

SITE DEVELOPMENT

Site Acquisition: Not applicable.
Parking: Not applicable.
Drives: Not applicable.
Walkways: Not applicable
Outdoor Athletic Facilities Not applicable.
Landscaping: Not applicable.
Site Improvements: Not applicable.

CONSTRUCTION BONUS REQUEST

Bucks Hill Elementary School does not house any of the special programs eligible for a school construction bonus which can be designated for this project.

School Readiness: C.G.S. 10-285a(e) – Not applicable
Lighthouse Schools; C.G.S. 10-285a(f) – Not applicable
CHOICE: C.G.S. 10-285a(g), as amended – Not applicable
Full-day Kindergarten: C.G.S. 10-285a(h) – Not applicable
Reduced Class Size: C.G.S. 10-285a(h) – Not applicable
Regional Vo-Ag Center: C.G.S. 10-65 – Not applicable
Interdistrict Magnet School: C.G.S. 10-264h – Not applicable
Interdistrict Cooperative School: C.G.S. 10-158a – Not applicable
Regional Special Education Center: C.G.S. 10-76e – Not applicable

FACILITY USES

Bucks Hill Elementary School will be designated to facilitate activities during school hours, before and after school hours, and throughout the entire calendar year.

Occasionally various Town Departments and local community organizations will utilize facilities at Bucks Hill Elementary School for activities when they are not being used by the students, in accordance with Board of Education Policy.

EDUCATIONAL SPECIFICATIONS
HVAC Grant Program

ARCHITECTS
ENGINEERS
INTERIORS

Chase School
40 Woodtick Road
Waterbury, CT 06705

PROJECT RATIONALE

The long-range plan for the Chase School calls for the provision of a safe and appropriate learning environment. The current school was built in 1905 and only has a central steam heating system providing heating in the building likely replaced in 2005 and with operable windows the primary source of fresh air ventilation, likely replaced around 1995. The building is hot in the shoulder seasons and particularly in each June and September. This project is to deliver modernized ventilation systems with new DOAS and VRF systems that provide an important public health function that filtrates the air and reduces airborne contaminants, including particles containing viruses as well as reducing humidity.

LONG RANGE PLANS

The current long-range plan for the Chase School calls for the current facility to be utilized in its current capacity as a school for in excess of 20 years. To comply with this aspect of the plan, and to provide a safe and healthy learning environment, it is necessary to maintain the existing 2005 boilers, provide new cooling and ventilation components, replace existing antiquated controls and installing new BMS technology systems related to HVAC operations and installing air conditioning and ventilation systems.

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Summary Project Need:
(A)Age and condition of the current HVAC system or equipment: There is no central ventilation or air conditioning in the school except for isolated window air conditioners for year-round staff and special needs student requirements (IEP mandated)

(B)Current air quality issues at the school: There is no fresh air ventilation other than opening windows, with no air conditioning (a city project is currently underway to provide a cooling center environment in the gymnasium and the cafeteria). These two spaces are not included in this grant application.

(C)Age and condition of the overall school building: Built in 1905 with numerous expansions, the school has only had light renovations over the years including code conformance work, window replacements and roof replacements. It is constructed with durable materials that are in good condition with a serviceable life exceeding 20 years.

(D)School district's master plan: See the information provided in related grant application documents. The long-range master plan is to continue using this school as part of its PK-5 elementary school program for the long term, foreseeable future (8-year enrollment projections are part of the grant and justify the school's continued operation)

(E)Availability of maintenance records: See documents attached to this application.

(F) Contract or plan for the professional maintenance and cleaning of the HVAC system: The District's maintenance plan already includes the maintenance schedule for quarterly, semi-annual and annual cleaning and maintenance requirements, implemented by our custodians, maintenance staff and paid contractors.

Silver Petrucelli + Associates
3190 Whitney Avenue | Hamden CT 06518
311 State Street | New London CT 06320
203 230 9007 *silverpetrucelli.com*

The existing school will have its existing central steam boilers and steam distribution system. Classroom and Offices will be provided with Variable Refrigerant Flow (VRF) ductless mini split systems; with outdoor (rooftop or ground), cold climate (hyper-heat) heat pumps; refrigerant circuit control boxes to serve multiple rooms in a zone and benefit from internal energy exchange (free cooling/heating).

Dedicated Outdoor Air Systems (DOAS) for central ventilation of tempered and humidity controlled fresh air and exhaust to the Classrooms, Offices and Restrooms; with refrigerant coil cooling and multi-stage natural gas heating; with energy recovery wheel; with 100% Outside Air Economizer; with Carbon Dioxide Sensing demand-controlled ventilation (DCV) controls. Heat pumps instead of preferred Dx cooled and gas heated (backup) can be an option as well, thus eliminating fossil fuel consumption at the site.

The cafeteria space has newer rooftops with DX cooling and gas fired heat and are not part of this project application. Systems shall plan for a later boiler replacement in the appropriate time frame noted and is not a part of this project or grant application.

Finally, the project will upgrade controls to a full Building Management System (BMS) with Internet and remote access and monitoring capabilities. Roof areas will be cut, patched and flashed for the DOAS ducted systems and the pitch boxes passing the piping between the rooftop heat pumps and the VRF system. Small areas of new ceilings in the corridors and other ducted DOAS areas will be created to conceal the duct systems and provide security for these systems.

The main electrical service is in the process of being upgraded under a separate project including the main switchgear. New local sub-panels are being provided under this project. Branch circuit feeds will be provided to all new HVAC equipment.

The second of building roof areas were last replaced in 1998 (according to the CSDE,state.CT.us /general report log). The entire 78,772 sq. ft. will be involved and IAQ improved.

Other work includes the following:

1. Installation of ceiling systems where required to conceal systems
2. Installation of new chase wall construction for risers
3. Installation of vertical chases for pipe runs and controls circuitry

BUILDING SYSTEMS

Security:	Not applicable
Public Address:	Not applicable
Technology:	Not applicable
Phone System:	Not applicable
Clocks:	Not applicable
Security camera:	Not applicable

INTERIOR BUILDING ENVIRONMENT

Acoustics:	Not applicable
Lighting:	Not applicable
HVAC:	Total improvements to air conditioning and ventilation systems per this grant application
Electrical:	The primary power system is currently being upgraded under a separate project, but sub panels are being added for power requirements and distribution equipment as required, related to this grant application
Plumbing:	Not applicable
Windows/Doors	Not applicable

SITE DEVELOPMENT

Site Acquisition: Not applicable.
Parking: Not applicable.
Drives: Not applicable.
Walkways: Not applicable
Outdoor Athletic Facilities Not applicable.
Landscaping: Not applicable.
Site Improvements: Not applicable.

CONSTRUCTION BONUS REQUEST

Chase Elementary School does not house any of the special programs eligible for a school construction bonus which can be designated for this project.

School Readiness:	C.G.S. 10-285a(e) – Not applicable
Lighthouse Schools;	C.G.S. 10-285a(f) – Not applicable
CHOICE:	C.G.S. 10-285a(g), as amended – Not applicable
Full-day Kindergarten:	C.G.S. 10-285a(h) – Not applicable
Reduced Class Size:	C.G.S. 10-285a(h) – Not applicable
Regional Vo-Ag Center:	C.G.S. 10-65 – Not applicable
Interdistrict Magnet School:	C.G.S. 10-264h – Not applicable
Interdistrict Cooperative School:	C.G.S. 10-158a – Not applicable
Regional Special Education Center:	C.G.S. 10-76e – Not applicable

FACILITY USES

Chase Elementary School will be designated to facilitate activities during school hours, before and after school hours, and throughout the entire calendar year.

Occasionally various City Departments and local community organizations will utilize facilities at Chase Elementary School for activities when they are not being used by the students, in accordance with Board of Education Policy.

EDUCATIONAL SPECIFICATIONS
HVAC Grant Program

ARCHITECTS
ENGINEERS
INTERIORS

Generali School
3196 East Main Street
Waterbury, CT 06705

PROJECT RATIONALE

The long-range plan for the Generali School calls for the provision of a safe and appropriate learning environment. The current school was built in 1923 and only has a central steam heating system providing heating in the building, with operable windows the primary source of fresh air ventilation, likely replaced around 2005. The building is hot in the shoulder seasons and particularly in each June and September. This project is to deliver modernized ventilation systems with new DOAS and VRF systems that provide an important public health function that filtrates the air and reduces airborne contaminants, including particles containing viruses as well as reducing humidity.

LONG RANGE PLANS

The current long-range plan for the Generali School calls for the current facility to be utilized in its current capacity as a school for in excess of 20 years. To comply with this aspect of the plan, and to provide a safe and healthy learning environment, it is necessary to maintain the existing 2005 boilers, provide new cooling and ventilation components, replace existing antiquated controls and installing new BMS technology systems related to HVAC operations and installing air conditioning and ventilation systems.

THE PROJECT

Summary Project Need:
(A)Age and condition of the current HVAC system or equipment: There is no central ventilation or air conditioning in the school except for isolated window air conditioners for year-round staff and special needs student requirements (IEP mandated)

(B)Current air quality issues at the school: There is no fresh air ventilation other than opening windows, with no air conditioning (a city project is currently underway to provide a cooler center environment in the gymnasium and the cafeteria). These two spaces are not included in this grant application.

(C)Age and condition of the overall school building: Built in 1923, the school has only had light renovations over the years including code conformance work, window replacements and roof replacements. It is constructed with durable materials that are in good condition with a serviceable life exceeding 20 years.

(D)School district's master plan: See the information provided in related grant application documents. The long-range master plan is to continue using this school as part of its K-5 elementary school program for the long term, foreseeable future (8-year enrollment projections are part of the grant and justify the school's continued operation)

(E)Availability of maintenance records: See documents attached to this application.

(F) Contract or plan for the professional maintenance and cleaning of the HVAC system: The District's maintenance plan already includes the maintenance schedule for quarterly, semi-annual and annual cleaning and maintenance requirements, implemented by our custodians, maintenance staff and paid contractors.

Silver Petrucelli + Associates
3190 Whitney Avenue | Hamden CT 06518
311 State Street | New London CT 06320
203 230 9007 *silverpetrucelli.com*

The existing school will have its existing central steam boilers and steam distribution system (with hydronic heat in the 1998 expansions) preserved. Classroom and Offices will be provided with Variable Refrigerant Flow (VRF) ductless mini split systems; with outdoor (rooftop or ground), cold climate (hyper-heat) heat pumps; refrigerant circuit control boxes to serve multiple rooms in a zone and benefit from internal energy exchange (free cooling/heating).

Dedicated Outdoor Air Systems (DOAS) for central ventilation of tempered and humidity controlled fresh air and exhaust to the Classrooms, Offices and Restrooms; with refrigerant coil cooling and multi-stage natural gas heating; with energy recovery wheel; with 100% Outside Air Economizer; with Carbon Dioxide Sensing demand-controlled ventilation (DCV) controls. Heat pumps instead of preferred Dx cooled and gas heated (backup) can be an option as well, thus eliminating fossil fuel consumption at the site.

The gymnasium and cafeteria spaces are not cooled presently and will be included for HVAC improvements as part of this project. Systems shall plan for a later boiler replacement in the appropriate time frame noted and is not a part of this project or grant application.

Finally, the project will upgrade controls to a full Building Management System (BMS) with Internet and remote access and monitoring capabilities. Roof areas will be cut, patched and flashed for the DOAS ducted systems and the pitch boxes passing the piping between the rooftop heat pumps and the VRF system. Small areas of new ceilings in the corridors and other ducted DOAS areas will be created to conceal the duct systems and provide security for these systems.

The main electrical service is in the process of being upgraded under a separate project including the main switchgear. New local sub-panels are being provided under this project. Branch circuit feeds will be provided to all new HVAC equipment.

The building roof areas were last replaced in 1998 (according to the CSDE,state.CT.us /general report log). The entire 54,600 sq. ft. will be involved and IAQ improved.

Other work includes the following:

1. Installation of ceiling systems where required to conceal systems
2. Installation of new chase wall construction for risers
3. Installation of vertical chases for pipe runs and controls circuitry

BUILDING SYSTEMS

Security:	Not applicable
Public Address:	Not applicable
Technology:	Not applicable
Phone System:	Not applicable
Clocks:	Not applicable
Security camera:	Not applicable

INTERIOR BUILDING ENVIRONMENT

Acoustics:	Not applicable
Lighting:	Not applicable
HVAC:	Total improvements to air conditioning and ventilation systems per this grant application
Electrical:	The primary power system is currently being upgraded under a separate project, but sub panels are being added for power requirements and distribution equipment as required, related to this grant application
Plumbing:	Not applicable

Windows/Doors Not applicable

SITE DEVELOPMENT

Site Acquisition: Not applicable.
Parking: Not applicable.
Drives: Not applicable.
Walkways: Not applicable
Outdoor Athletic Facilities Not applicable.
Landscaping: Not applicable.
Site Improvements: Not applicable.

CONSTRUCTION BONUS REQUEST

Generali Elementary School does not house any of the special programs eligible for a school construction bonus which can be designated for this project.

School Readiness: C.G.S. 10-285a(e) – Not applicable
Lighthouse Schools; C.G.S. 10-285a(f) – Not applicable
CHOICE: C.G.S. 10-285a(g), as amended – Not applicable
Full-day Kindergarten: C.G.S. 10-285a(h) – Not applicable
Reduced Class Size: C.G.S. 10-285a(h) – Not applicable
Regional Vo-Ag Center: C.G.S. 10-65 – Not applicable
Interdistrict Magnet School: C.G.S. 10-264h – Not applicable
Interdistrict Cooperative School: C.G.S. 10-158a – Not applicable
Regional Special Education Center: C.G.S. 10-76e – Not applicable

FACILITY USES

Generali Elementary School will be designated to facilitate activities during school hours, before and after school hours, and throughout the entire calendar year.

Occasionally various Town Departments and local community organizations will utilize facilities at Generali Elementary School for activities when they are not being used by the students, in accordance with Board of Education Policy.

EDUCATIONAL SPECIFICATIONS
HVAC Grant Program

ARCHITECTS
ENGINEERS
INTERIORS

International Elementary School
116 Beecher Avenue
Waterbury, CT 06706

PROJECT RATIONALE

The long-range plan for the International Elementary School (formerly Saints Peter and Paul School closed in 2019) calls for the provision of a safe and appropriate learning environment. The current school was built in 1926 with later classroom and gymnasium additions and 2 recently replaced steam boilers serve the central steam heating system providing heating in the building (the rented steam boiler on a trailer and the original 2 steam boilers were removed under a separate prior project), with operable windows the primary source of fresh air ventilation, likely replaced around the 1970s as they are insulated. The building is hot in the shoulder seasons and particularly in each June and September. This project is to deliver modernized ventilation systems with new DOAS and VRF systems that provide an important public health function that filtrates the air and reduces airborne contaminants, including particles containing viruses as well as reducing humidity.

LONG RANGE PLANS

The current long-range plan for the International Elementary School calls for the current facility to be utilized in its current capacity as a school for in excess of 20 years. To comply with this aspect of the plan, and to provide a safe and healthy learning environment, it is necessary to provide new cooling and ventilation components, replace existing antiquated controls and installing new BMS technology systems related to HVAC operations and installing air conditioning and ventilation systems.

THE PROJECT

Summary Project Need:
(A)Age and condition of the current HVAC system or equipment: There is no central ventilation or air conditioning in the school except for isolated window air conditioners for year-round staff and special needs student requirements (IEP mandated)

(B)Current air quality issues at the school: There is no fresh air ventilation other than opening windows, with no air conditioning (a city project is currently underway to provide a cooler center environment in the gymnasium and the cafeteria). These two spaces are not included in this grant application.

(C)Age and condition of the overall school building: Built in 1926, the school has had an expansion(s) for a gym and classrooms, with light renovations over the years including code conformance work, window replacements and roof replacements (age unknown). It is constructed with durable materials that are in good condition with a serviceable life exceeding 20 years.

(D)School district's master plan: See the information provided in related grant application documents. The long-range master plan is to continue using this school as part of its K-5 elementary school program for the long term, foreseeable future (8-year enrollment projections are part of the grant and justify the school's continued operation)

(E)Availability of maintenance records: See documents attached to this application.

Silver Petrucelli + Associates
3190 Whitney Avenue | Hamden CT 06518
311 State Street | New London CT 06320
203 230 9007 *silverpetrucelli.com*

(F) Contract or plan for the professional maintenance and cleaning of the HVAC system: The District's maintenance plan already includes the maintenance schedule for quarterly, semi-annual and annual cleaning and maintenance requirements, implemented by our custodians, maintenance staff and paid contractors.

The existing school will have its recently replaced steam boiler system feeding a steam heat distribution and terminal system. Ventilation is provided via an obsolete central exhaust system. Classroom and Offices will be provided with Variable Refrigerant Flow (VRF) ductless mini split systems; with outdoor (rooftop or ground), cold climate (hyper-heat) heat pumps; refrigerant circuit control boxes to serve multiple rooms in a zone and benefit from internal energy exchange (free cooling/heating).

Dedicated Outdoor Air Systems (DOAS) for central ventilation of tempered and humidity controlled fresh air and exhaust to the Classrooms, Offices and maybe Restrooms; with refrigerant coil cooling and multi-stage natural gas heating; with energy recovery wheel; with 100% Outside Air Economizer; with Carbon Dioxide Sensing demand-controlled ventilation (DCV) controls. Heat pumps instead of preferred Dx cooled and gas heated (backup) can be an option as well, thus eliminating fossil fuel consumption at the site.

The gymnasium is heated using cast iron steam radiation mounted on walls and bare runs of steam piping just below the pitched ceiling. Exhaust from the Gym could not be located, Gymnasium and kitchen/cafeteria spaces are not cooled presently and will not be included for HVAC improvements as part of this project but rather engineered under a separate project.

Finally, the project will upgrade controls to a full Building Management System (BMS) with Internet and remote access and monitoring capabilities. Roof areas will be cut, patched and flashed for the DOAS ducted systems and the pitch boxes passing the piping between the rooftop heat pumps and the VRF system. Small areas of new ceilings in the corridors and other ducted DOAS areas will be created to conceal the duct systems and provide security for these systems.

The main electrical service is in the process of being upgraded under a separate project including the main switchgear. New local sub-panels are being provided under this project. Branch circuit feeds will be provided to all new HVAC equipment.

The building roof areas were last replaced in 2012 (according to the CSDE,state.CT.us /general report log). The entire 39,778 sq. ft. will be involved and IAQ improved.

Other work includes the following:

1. Installation of ceiling systems where required to conceal systems
2. Installation of new chase wall construction for risers
3. Installation of vertical chases for pipe runs and controls circuitry

BUILDING SYSTEMS

Security:	Not applicable
Public Address:	Not applicable
Technology:	Not applicable
Phone System:	Not applicable
Clocks:	Not applicable
Security camera:	Not applicable

INTERIOR BUILDING ENVIRONMENT

Acoustics:	Not applicable
Lighting:	Not applicable

HVAC:	Total improvements to air conditioning and ventilation systems per this grant application
Electrical:	The primary power system is currently being upgraded under a separate project, but sub panels are being added for power requirements and distribution equipment as required, related to this grant application
Plumbing:	Not applicable
Windows/Doors	Not applicable

SITE DEVELOPMENT

Site Acquisition:	Not applicable.
Parking:	Not applicable.
Drives:	Not applicable.
Walkways:	Not applicable
Outdoor Athletic Facilities	Not applicable.
Landscaping:	Not applicable.
Site Improvements:	Not applicable.

CONSTRUCTION BONUS REQUEST

International Elementary School does not house any of the special programs eligible for a school construction bonus which can be designated for this project.

School Readiness:	C.G.S. 10-285a(e) – Not applicable
Lighthouse Schools;	C.G.S. 10-285a(f) – Not applicable
CHOICE:	C.G.S. 10-285a(g), as amended – Not applicable
Full-day Kindergarten:	C.G.S. 10-285a(h) – Not applicable
Reduced Class Size:	C.G.S. 10-285a(h) – Not applicable
Regional Vo-Ag Center:	C.G.S. 10-65 – Not applicable
Interdistrict Magnet School:	C.G.S. 10-264h – Not applicable
Interdistrict Cooperative School:	C.G.S. 10-158a – Not applicable
Regional Special Education Center:	C.G.S. 10-76e – Not applicable

FACILITY USES

International Elementary School will be designated to facilitate activities during school hours, before and after school hours, and throughout the entire calendar year.

Occasionally various City Departments and local community organizations will utilize facilities at International Elementary School for activities when they are not being used by the students, in accordance with Board of Education Policy.

EDUCATIONAL SPECIFICATIONS
HVAC Grant Program

Regan School
2780 North Main Street
Waterbury, CT 06704

PROJECT RATIONALE

The long-range plan for the Regan School calls for the provision of a safe and appropriate learning environment. The current school was built in 1998 and only has two condensing hot water boiler system providing heating in the building, with operable windows the primary source of fresh air ventilation, double paned and likely original. The building is hot in the shoulder seasons and particularly in each June and September. This project is to deliver modernized ventilation systems with new DOAS and VRF systems that provide an important public health function that filtrates the air and reduces airborne contaminants, including particles containing viruses as well as reducing humidity.

LONG RANGE PLANS

The current long-range plan for the Regan School calls for the current facility to be utilized in its current capacity as a school for in excess of 20 years. To comply with this aspect of the plan, and to provide a safe and healthy learning environment, it is necessary to maintain the 2021 replacement boilers, provide new cooling and ventilation components, replace existing antiquated controls and installing new BMS technology systems related to HVAC operations and installing air conditioning and ventilation systems.

THE PROJECT

Summary Project Need:
(A)Age and condition of the current HVAC system or equipment: There is no central ventilation or air conditioning in the school except for isolated window air conditioners for year-round staff and special needs student requirements (IEP mandated)

(B)Current air quality issues at the school: There is no fresh air ventilation other than opening windows, with no air conditioning (a city project is currently underway to provide a cooler center environment in the gymnasium and the cafeteria). These two spaces are not included in this grant application.

(C)Age and condition of the overall school building: Built in 1968, the school has only had an expansion preceding 1950, with light renovations over the years including code conformance work and roof replacements. It is constructed with durable materials that are in good condition with a serviceable life exceeding 20 years.

(D)School district's master plan: See the information provided in related grant application documents. The long-range master plan is to continue using this school as part of its K-5 elementary school program for the long term, foreseeable future (8-year enrollment projections are part of the grant and justify the school's continued operation)

(E)Availability of maintenance records: See documents attached to this application.

(F) Contract or plan for the professional maintenance and cleaning of the HVAC system: The District's maintenance plan already includes the maintenance schedule for quarterly, semi-annual and annual cleaning and maintenance requirements, implemented by our custodians, maintenance staff and paid contractors.

The existing school will preserve its boilers and hydronic heat distribution. Ventilation is provided via an obsolete central exhaust system. Classroom and Offices will be provided with Variable Refrigerant Flow (VRF) ductless mini split systems; with outdoor (rooftop or ground), cold climate (hyper-heat) heat pumps; refrigerant circuit control boxes to serve multiple rooms in a zone and benefit from internal energy exchange (free cooling/heating).

Dedicated Outdoor Air Systems (DOAS) for central ventilation of tempered and humidity controlled fresh air and exhaust to the Classrooms, Offices and maybe Restrooms; with refrigerant coil cooling and multi-stage natural gas heating; with energy recovery wheel; with 100% Outside Air Economizer; with Carbon Dioxide Sensing demand-controlled ventilation (DCV) controls. Heat pumps instead of preferred Dx cooled and gas heated (backup) can be an option as well, thus eliminating fossil fuel consumption at the site.

The Cafeteria is heated and ventilated using an air handling unit located in a storage room on the second floor above it. The Library above is similarly heated and ventilated by an air handling unit in the adjacent storage room. These spaces will require distant future replacement of the HV units that will be designed outside of the 2022-23 HVAC Grant programs.

Finally, the project will upgrade controls to a full Building Management System (BMS) with Internet and remote access and monitoring capabilities. Roof areas will be cut, patched and flashed for the DOAS ducted systems and the pitch boxes passing the piping between the rooftop heat pumps and the VRF system. Small areas of new ceilings in the corridors and other ducted DOAS areas will be created to conceal the duct systems and provide security for these systems.

The main electrical service is in the process of being upgraded under a separate project including the main switchgear. New local sub-panels are being provided under this project. Branch circuit feeds will be provided to all new HVAC equipment.

The building roof areas were last replaced in 1998 (according to the CSDE,state.CT.us /general report log). The entire 30,157 sq. ft. will be involved and IAQ improved.

Other work includes the following:

1. Installation of ceiling systems where required to conceal systems
2. Installation of new chase wall construction for risers
3. Installation of vertical chases for pipe runs and controls circuitry

BUILDING SYSTEMS

Security:	Not applicable
Public Address:	Not applicable
Technology:	Not applicable
Phone System:	Not applicable
Clocks:	Not applicable
Security camera:	Not applicable

INTERIOR BUILDING ENVIRONMENT

Acoustics:	Not applicable
Lighting:	Not applicable
HVAC:	Total improvements to air conditioning and ventilation systems per this grant application
Electrical:	The primary power system is currently being upgraded under a separate project, but sub panels are being added for power requirements and distribution equipment as required, related to this grant application

Plumbing:	Not applicable
Windows/Doors	Not applicable

SITE DEVELOPMENT

Site Acquisition:	Not applicable.
Parking:	Not applicable.
Drives:	Not applicable.
Walkways:	Not applicable
Outdoor Athletic Facilities	Not applicable.
Landscaping:	Not applicable.
Site Improvements:	Not applicable.

CONSTRUCTION BONUS REQUEST

Regan Elementary School does not house any of the special programs eligible for a school construction bonus which can be designated for this project.

School Readiness:	C.G.S. 10-285a(e) – Not applicable
Lighthouse Schools;	C.G.S. 10-285a(f) – Not applicable
CHOICE:	C.G.S. 10-285a(g), as amended – Not applicable
Full-day Kindergarten:	C.G.S. 10-285a(h) – Not applicable
Reduced Class Size:	C.G.S. 10-285a(h) – Not applicable
Regional Vo-Ag Center:	C.G.S. 10-65 – Not applicable
Interdistrict Magnet School:	C.G.S. 10-264h – Not applicable
Interdistrict Cooperative School:	C.G.S. 10-158a – Not applicable
Regional Special Education Center:	C.G.S. 10-76e – Not applicable

FACILITY USES

Regan Elementary School will be designated to facilitate activities during school hours, before and after school hours, and throughout the entire calendar year.

Occasionally various City Departments and local community organizations will utilize facilities at Regan Elementary School for activities when they are not being used by the students, in accordance with Board of Education Policy.

EDUCATIONAL SPECIFICATIONS
HVAC Grant Program

ARCHITECTS
ENGINEERS
INTERIORS

Washington School
685 Baldwin Street
Waterbury, CT 06702

PROJECT RATIONALE

The long-range plan for the Washington School calls for the provision of a safe and appropriate learning environment. The current school was built in 1882 and only has a central steam heating system providing heating in the building, with operable windows the primary source of fresh air ventilation, likely replaced around 2005. The building is hot in the shoulder seasons and particularly in each June and September. This project is to deliver modernized ventilation systems with new DOAS and VRF systems that provide an important public health function that filtrates the air and reduces airborne contaminants, including particles containing viruses as well as reducing humidity.

LONG RANGE PLANS

The current long-range plan for the Washington School calls for the current facility to be utilized in its current capacity as a school for in excess of 20 years. To comply with this aspect of the plan, and to provide a safe and healthy learning environment, it is necessary to maintain the existing 2005 boilers, provide new cooling and ventilation components, replace existing antiquated controls and installing new BMS technology systems related to HVAC operations and installing air conditioning and ventilation systems.

THE PROJECT

Summary Project Need:
(A)Age and condition of the current HVAC system or equipment: There is no central ventilation or air conditioning in the school except for isolated window air conditioners for year-round staff and special needs student requirements (IEP mandated)

(B)Current air quality issues at the school: There is no fresh air ventilation other than opening windows, with no air conditioning (a city project is currently underway to provide a cooler center environment in the gymnasium and the cafeteria). These two spaces are not included in this grant application.

(C)Age and condition of the overall school building: Built in 1882, the school has only had an expansion preceding 1950, with light renovations over the years including code conformance work, window replacements and roof replacements. It is constructed with durable materials that are in good condition with a serviceable life exceeding 20 years.

(D)School district's master plan: See the information provided in related grant application documents. The long-range master plan is to continue using this school as part of its PK-5 elementary school program for the long term, foreseeable future (8-year enrollment projections are part of the grant and justify the school's continued operation)

(E)Availability of maintenance records: See documents attached to this application.

(F) Contract or plan for the professional maintenance and cleaning of the HVAC system: The District's maintenance plan already includes the maintenance schedule for quarterly, semi-annual and annual cleaning and maintenance requirements, implemented by our custodians, maintenance staff and paid contractors.

Silver Petrucelli + Associates
3190 Whitney Avenue | Hamden CT 06518
311 State Street | New London CT 06320
203 230 9007 *silverpetrucelli.com*

The existing school will have its existing single hot water boiler system (conversion to hydronic heat in 2008) preserved. The other old steam boiler is not operable and out of service. Ventilation is provided via an obsolete central exhaust system. Classroom and Offices will be provided with Variable Refrigerant Flow (VRF) ductless mini split systems; with outdoor (rooftop or ground), cold climate (hyper-heat) heat pumps; refrigerant circuit control boxes to serve multiple rooms in a zone and benefit from internal energy exchange (free cooling/heating).

Dedicated Outdoor Air Systems (DOAS) for central ventilation of tempered and humidity controlled fresh air and exhaust to the Classrooms, Offices and maybe Restrooms; with refrigerant coil cooling and multi-stage natural gas heating; with energy recovery wheel; with 100% Outside Air Economizer; with Carbon Dioxide Sensing demand-controlled ventilation (DCV) controls. Heat pumps instead of preferred Dx cooled and gas heated (backup) can be an option as well, thus eliminating fossil fuel consumption at the site.

The gymnasium is heated using cast iron steam radiation mounted on walls and bare runs of steam piping just below the pitched ceiling. Exhaust from the Gym could not be located, Gymnasium and kitchen/cafeteria spaces are not cooled presently and will not be included for HVAC improvements as part of this project but rather engineered under a separate project not related to state grant(s). Systems shall plan for a later boiler replacement in the appropriate time frame noted and is not a part of this project or grant application.

Finally, the project will upgrade controls to a full Building Management System (BMS) with Internet and remote access and monitoring capabilities. Roof areas will be cut, patched and flashed for the DOAS ducted systems and the pitch boxes passing the piping between the rooftop heat pumps and the VRF system. Small areas of new ceilings in the corridors and other ducted DOAS areas will be created to conceal the duct systems and provide security for these systems.

The main electrical service is in the process of being upgraded under a separate project including the main switchgear. New local sub-panels are being provided under this project. Branch circuit feeds will be provided to all new HVAC equipment.

The building roof areas were last replaced in 2012 (according to the CSDE,state.CT.us /general report log). The entire 41,118 sq. ft. will be involved and IAQ improved.

Other work includes the following:

1. Installation of ceiling systems where required to conceal systems
2. Installation of new chase wall construction for risers
3. Installation of vertical chases for pipe runs and controls circuitry

BUILDING SYSTEMS

Security:	Not applicable
Public Address:	Not applicable
Technology:	Not applicable
Phone System:	Not applicable
Clocks:	Not applicable
Security camera:	Not applicable

INTERIOR BUILDING ENVIRONMENT

Acoustics:	Not applicable
Lighting:	Not applicable
HVAC:	Total improvements to air conditioning and ventilation systems per this grant application

Electrical:	The primary power system is currently being upgraded under a separate project, but sub panels are being added for power requirements and distribution equipment as required, related to this grant application
Plumbing:	Not applicable
Windows/Doors	Not applicable

SITE DEVELOPMENT

Site Acquisition:	Not applicable.
Parking:	Not applicable.
Drives:	Not applicable.
Walkways:	Not applicable
Outdoor Athletic Facilities	Not applicable.
Landscaping:	Not applicable.
Site Improvements:	Not applicable.

CONSTRUCTION BONUS REQUEST

Washington Elementary School does not house any of the special programs eligible for a school construction bonus which can be designated for this project.

School Readiness:	C.G.S. 10-285a(e) – Not applicable
Lighthouse Schools;	C.G.S. 10-285a(f) – Not applicable
CHOICE:	C.G.S. 10-285a(g), as amended – Not applicable
Full-day Kindergarten:	C.G.S. 10-285a(h) – Not applicable
Reduced Class Size:	C.G.S. 10-285a(h) – Not applicable
Regional Vo-Ag Center:	C.G.S. 10-65 – Not applicable
Interdistrict Magnet School:	C.G.S. 10-264h – Not applicable
Interdistrict Cooperative School:	C.G.S. 10-158a – Not applicable
Regional Special Education Center:	C.G.S. 10-76e – Not applicable

FACILITY USES

Washington Elementary School will be designated to facilitate activities during school hours, before and after school hours, and throughout the entire calendar year.

Occasionally various City Departments and local community organizations will utilize facilities at Washington Elementary School for activities when they are not being used by the students, in accordance with Board of Education Policy.

WATERBURY
PUBLIC SCHOOLS

#4

Jeffrey Lapham
21st Century & SDE Grants Coordinator
(203) 573-5032
jeffrey.lapham@waterbury.k12.ct.us

November 2, 2023

Dear Waterbury Board of Education members:

Waterbury Public Schools has long received funding for State Department of Education and 21st Century Community Learning Centers (CCLC) programs. These programs support the creation of community learning centers that provide academic enrichment opportunities during non-school hours for children, particularly students who attend high-poverty and low-performing schools.

StarBase has reached out to us to expand their ongoing school day work in the district to an afterschool program with free-to-the-district STEM education this year. Waterbury's 21st CCLC program would like to avail one of our programs with this proven and trusted opportunity. It very much fits with the enrichment in which 21st CCLC sites in Waterbury annually engage.

This amendment expands the current Starbase program for Waterbury Public Schools, which is scheduled to terminate at the end of the 2023-2024 school year, to include a 21st CCLC teacher-supervised STEM curriculum. The program is for 6th-8th grade students and delivered by StarBase Staff. Activities include STEM, teamwork, hands-on student involvement and self-esteem building for each after-school session lasting twenty (20) days of one (1) hour instruction periods.

Having witnessed a similar valuable StarBase program as a parent chaperone in 2019, and having received the endorsement of the grant's Quality Coordinators who are my colleagues, we hope to bring StarBase to our enrolled students in the West Side Middle School 21st CCLC program.

Respectfully;

Jeffrey Lapham
21st CCLC Grants Coordinator

AMENDMENT 1
to
MEMORANDUM OF UNDERSTANDING/PROGRAM ACKNOWLEDGEMENT
for
STARBASE, CT – Waterbury
Schoolyears 2022-2023 and 2023-2024
between
City of Waterbury/Waterbury Department of Education
and
Connecticut Military Department

THIS AMENDMENT 1 ("Amendment 1"), effective on the date signed by the Mayor, is by and between the City of Waterbury, 235 Grand Street, Waterbury, Connecticut 06702 (the "City") and the Connecticut Military Department (the "CTMD"), with its principal location at William A. O'Neill State Armory, 360 Broad Street, Hartford, Connecticut 06105-3706 (jointly referred to as the "Parties" to this Agreement and Amendment).

WHEREAS, the City and the CTMD entered into a Memorandum of Understanding for CTMD to provide STARBASE CT programs at certain City public schools, with a term commencing on June 23, 2022 and terminating at the end of the 2023-2024 school year ("Agreement"); and

WHEREAS, the parties now desire to amend the Agreement by this Amendment 1 to expand the scope of services by providing STARBASE CT as an after-school program for 6th-8th grade students with 21st Century and SDE Programming at West Side Middle School; and

WHEREAS, CTMD will offer extension educational activities to City teachers if they desire to extend the STARBASE CT lessons for their classes.

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. **The foregoing recitals are incorporated by reference as if fully stated herein.**

2. **Section 1 shall be amended to include new subsections 1.9, 1.10, and 1.11, which shall read as follows:**

   1.9 A STEM curriculum for 6th-8th grade students and teachers of Waterbury Public Schools 21st Century and SDE Programming at West Side Middle School throughout each school year and activities including STEM, teamwork, hands-on student involvement and self-esteem building for each after-school session.

   1.10 A STARBASE CT after-school program providing twenty (20) days of one (1) hour instruction periods utilizing the STEM curriculum for 6th-8th

grade students and teachers.

1.11 Extension educational activities for teachers if they desire to extend the STARBASE CT lessons for their classes.

3. **Section 2.2 shall be amended to read as follows:**

2.2 Identify, transport, and supervise the students participating in STARBASE CT. For students participating in the STARBASE CT after-school program, school staff member will be arrange for and be responsible for overseeing the dismissal of students to their appropriate mode of transportation from the school after completion of each instruction period.

4. **Other than as amended herein, all other terms, conditions, and provisions of the June 23, 2022 Agreement shall remain in full force and effect and binding on the Parties hereto.**

IN WITNESS WHEREOF, the parties hereto execute this Amendment 1 on the dates signed below.

WITNESSES:

Sign:_____
Print name:

Sign: _____
Print name:

CITY OF WATERBURY

By:_____
Neil M. O'Leary, Mayor

Date: _____

WITNESSES:

Sign:_____
Print name: Erich Heinonen

Sign:_____
Print name: Timothy J. Toucho

CONNECTICUT MILITARY DEPARTMENT

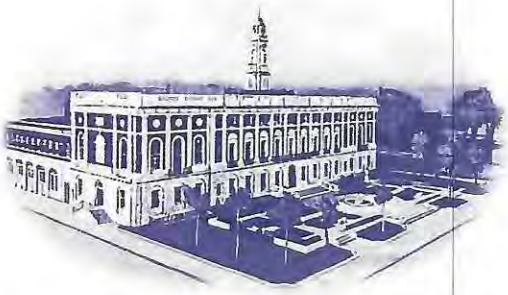
By: EVON.FRANCIS.JOSEPH.JR.1013437145 Digitally signed by EVON.FRANCIS.JOSEPH.JR.1013437145 Date: 2023.11.03 13:24:43 -04'00'

Title: Major General, The Adjutant General

Date: November 3, 2023

F:\New Electronic Filing System\FILE MANAGEMENT\Transactional\Contracts\Education Contracts\Starbase MOU 2022-2024 - Amendment 1 CRT23-532\Drafts\Starbase CT Draft 1 - 10.24.23.doc

KEVIN McCAFFERY
DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING

THE CITY OF WATERBURY

CONNECTICUT

To: Jeffrey Lapham, 21st CCLC Grants Coordinator

From: Kevin McCaffery, Director of Purchasing

Subject: Waiver Request – Amendment #1 to Memorandum of Understanding with StarBase

Date: November 6, 2023

I have reviewed the attached letter dated November 6, 2023 provided by Jeffrey Lapham, 21st CCLC Grants Coordinator, concerning the above amendment. In my opinion, since there is no cost for the afterschool program, Starbase can provide a teacher-supervised STEM curriculum for 6th-8th grade students.

The following does apply per § 38.073 **AMENDMENTS TO CONTRACTS**
(B) (1) The amendment is consistent with the scope of the original procurement.
Therefore, you may proceed with the amendment with StarBase.

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE (203) 574-6749 • FAX (203) 597-3437

WATERBURY
PUBLIC SCHOOLS

Jeffrey Lapham
21st Century & SDE Grants Coordinator
(203) 573-5032
jeffrey.lapham@waterbury.k12.ct.us

November 6, 2023

Mr. Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street
Waterbury, CT 06702

Dear Mr. McCaffery:

My department seeks to amend the current Waterbury Letter of Agreement with StarBase. StarBase has reached out to us to expand their ongoing school day work in the district to an afterschool program with **free-to-the-district** STEM education this year. Waterbury's 21st CCLC program would like to avail one of our programs with this proven and trusted opportunity. It very much fits with the enrichment in which 21st CCLC sites in Waterbury annually engage.

This amendment expands the current StarBase program for Waterbury Public Schools, which is scheduled to terminate at the end of the 2023-2024 school year, to include a 21st CCLC teacher-supervised STEM curriculum. The program is for 6th-8th grade students and delivered by StarBase Staff. Activities include STEM, teamwork, hands-on student involvement and self-esteem building for each after-school session lasting twenty (20) days of one (1) hour instruction periods.

We hope to bring StarBase to our enrolled students in the West Side Middle School 21st CCLC program. Please provide written agreement that the proposed amendment is consistent with the existing StarBase agreement with no cost to the City. Feel free to contact me if any of this requires additional information or clarification.

Respectfully,

Jeffrey Lapham
21st CCLC Grants Coordinator

MEMORANDUM OF UNDERSTANDING/PROGRAM ACKNOWLEDGEMENT
Between
The City of Waterbury/Waterbury Department of Education
and
Connecticut Military Department
for
STARBASE CT – Waterbury
Schoolyears 2022-2023 and 2023-2024

This Memorandum of Understanding/Program Acknowledgement ("MOU"), by and between the City of Waterbury, the City of Waterbury Department of Education, 236 Grant Street Waterbury, Connecticut (the "City") and the Connecticut Military Department (the "CTMD"), William A. O'Neill State Armory, 360 Broad Street, Hartford, Connecticut 06105-3706, governs the conduct of the STARBASE CT - Waterbury program for the 2022-2023 and the 2023-2024 schoolyears.

WHEREAS, the CTMD administers a program known as STARBASE CT; and

WHEREAS, STARBASE CT offers an innovated program of instruction designed to facilitate interest in Science, Technology, Engineering, and Math (STEM) and focuses on elementary students, primarily fifth graders; and

WHEREAS, STARBASE CT traditionally provides services to students who are historically underrepresented in STEM, encourages students to set and achieve goals, and works with school districts to support their learning objectives; and

WHEREAS, the City desires to have its fifth grade school students participate in STARBASE CT Program; and

WHEREAS, the CTMD welcomes the City's fifth grade school students to participate in STARBASE CT Program; and

NOW, THEREFORE, in support of the partnership established between the City/Waterbury Department of Education and the CTMD enter into this MOU for the purpose of facilitating a safe, positive, learning environment for every student and teacher attending STARBASE CT.

1. **The CTMD agrees to provide the following.**

1.1 A STEM curriculum for 5th grade students and teachers of Waterbury Department of Education throughout each schoolyear and activities involving STEM, teamwork, hands-on student involvement and self-esteem building for each academy class.

1.2 A STARBASE CT academy class providing a 25-hour program of instruction, consisting of five days of 5-hour periods of instruction. The daily schedule is adapted to facilitate school and transportation schedules and the operations of STARBASE CT.

1.3 All supplies, instructional support materials, and assistance associated with the STARBASE CT program.

1.4 Information about STARBASE CT through publications and presentations throughout Waterbury as required.

1.5 A program orientation workshop for all participating classroom teachers to introduce them to STARBASE CT and help them prepare their students for the academy if asked.

1.6 A pre-course visit conducted at participating classrooms to help students understand what to expect for the 25-hour course of STARBASE CT program of instruction.

1.7 Adequate classroom space for program activities, including regular classroom and activity lab.

1.8 An opportunity for parents to become familiar with STARBASE CT through parent letters or personal visitation to the program site.

2. **The City agrees to provide the following.**

2.1 Select the students for classes and provide assurance of their attendance during scheduled times.

2.2 Identify, transport, and supervise the students participating in STARBASE CT.

2.3 Provide timely notification to the CTMD and STARBASE CT staff of the classes selected (including number of students).

2.4 Complete racial/ethnic/gender data for every participating class.

2.5 Provide a 45-60 minute time period before the first day at STARBASE CT for a meeting with STARBASE CT staff. If a SMART board is not available in the classroom, a projector will be required for the presentation.

2.6 Provide a sack lunch for each child, including those children on free/reduced lunch program, if needed.

2.7 Provide at least one additional adult besides the classroom teacher for each day. Teacher aides or parents designated by the Waterbury Department of Education are acceptable.

2.8 Provide an opportunity for and encourage all potential participating teachers and additional adult support staff to attend the introductory workshop, if offered.

2.9 Be responsible for the behavior of participating students. Classroom teachers shall maintain responsibility for all disciplinary matters with their class. The classroom teacher shall document a student's inappropriate behavior and warn them that a second offense will result in disenrollment from the STARBASE CT program. Upon recommendation of a STARBASE CT staff member or the classroom teacher, the school will disenroll students who demonstrate inappropriate behavior while at STARBASE CT for a second offense.

2.10 The participating teacher(s), not STARBASE CT personnel, are responsible for students' at all times, including when students make trips to the bathroom and other areas outside the main classroom and/or activity lab, when student is not in visual view of the rest of the class.

2.11 When necessary, conduct pretests and posttests and/or student surveys at home school and return them to STARBASE CT for evaluation.

3. **TERM AND TERMINATION.** The term of this MOU shall commence upon the date of execution by the CTMD and shall terminate upon the end of the designated schoolyear. However, either Party may terminate this MOU at any time upon a 30-day written notice to the other Party.

4. **FERPA.** If any STARBASE CT personnel come into possession of education records of City of Waterbury student, as defined in and governed by Family Educational Rights and Privacy Act ("FERPA", 20 U.S.C. § 1232g) and related regulations (34 C.F.R. § 99), STARBASE CT personnel shall comply with the requirements of said statute and regulations and agree to use information obtained regarding student education records only for the purposes provided in this MOU. Without the prior written consent of the student, as required by FERPA, STARBASE CT personnel have no authority to make any other disclosures of any information from the education from education records.

5. **Criminal Background Checks.** The CTMD represents and warrants that it and its STARBSE CT personnel who may have been assigned to perform services set forth in this MOU have no history of violations of the laws or regulations of the State of Connecticut pertaining to public health, have not been convicted of a crime and have no criminal investigation pending. The City and Board shall rely upon these representations.

6. **City of Waterbury, Ethics Code of Ordinance.**

6.1 Interest of City Officials. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of this Agreement, shall have any personal interest, direct or indirect, in this Agreement.

6.2 Prohibition against Gratuities and Kickbacks. No person shall offer, give, or agree to any current or former public official, employee or member of a board or commission, or for such current or former public official, employee or member of a board or commission to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any of the following pertaining to any program requirement or a contract or purchase order, or to any solicitation.

6.3 No person shall make any payment, gratuity, or offer of employment as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime contractor or higher tier subcontractor or any person associated therewith, under contract or purchase order to the City.

6.4 The value of anything transferred or received in violation of the provisions of this Chapter or regulations promulgated hereunder by any person subject to this Chapter may be recovered by the City.

6.5 Prohibition against Contingency Fees. The CTMD hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingency fee.

7. **Compensation.** The parties agree that there will be no compensation made to CTMD or to its employees or agents from the City for the performance of any of the services set forth herein.

8. **Non-Appropriation.** If government (City, State or Federal) appropriations are necessary for the execution of this MOU, the Parties acknowledge that they are bound by fiscal limitations and cannot obligate funds without legal authority. Hence, the Party's obligation to execute this MOU or to make payments under this MOU is contingent upon the availability of sufficient government appropriated funds for the purpose of any provision herein during the budget/fiscal years for which this MOU is in effect. If appropriated funds are insufficient for execution, any Party may terminate this MOU upon notice in writing.

9. **Independent Contractor Relationship.** The relationship between the City and the CTMD/STARBASE personnel is similar to that of an independent service contractor. No agent, employee, or servant of the CTMD/STARBASE shall be deemed to be an employee, agent, or servant of the City. The CTMD/STARBASE and/or its employees shall not be entitled to the usual characteristics of employment, such as income tax withholding, F.I.C.A deductions, pension or retirement privileges, Workers Compensation coverage, health benefits, etc. CTMD/STARBASE shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants or representatives.

IN WITNESS WHEREOF, the parties hereto execute this Memorandum of Understanding on the dates signed below.

WITNESSES:

David A. Lepore

Alexandra DeGirolamo

CITY OF WATERBURY

By: _____
Honorable Neil M. O'Leary
City of Waterbury

Date: 6/23/22

APPROVED AS TO FORM
Attorney, Office of the Corporation Counsel

WITNESSES:

WATERBURY DEPARTMENT OF EDUCATION

By: _____
Dr. Verna D. Ruffin
Superintendent of Schools

Date: 6-23-2022

WITNESSES:

CONNECTICUT DEPARTMENT OF THE MILITARY

By: _____
Major General Francis J. Evon, Jr.
The Adjutant General

Date: AUGUST 5, 2022

//NOTHING FOLLOWS//

#5

WATERBURY
PUBLIC SCHOOLS

Early Entry to Kindergarten
2024-2025 School Year

Legislation

Effective July 1, 2023, in accordance with CT Substitute House Bill 5003-Public Act 23-208, children entering kindergarten for the 2024-2025 school year must turn 5 on or before September 1, 2025. Children who turn 5 September 2, 2024 through September 1, 2025 will now enter kindergarten in the 2025-2026 school year.

WATERBURY
PUBLIC SCHOOLS

Impact

Approximately 400 students

WPS - **212** students

School Readiness - **174** students

All parents may request early entry. (including students not currently enrolled)

All 4 year olds will assess

Decisions/Parent Notification in March 2024

PK seats will be held for “bubble students”

WATERBURY PUBLIC SCHOOLS

Process for Early Entry to Kindergarten

1. District leaders will notify parents in writing of the change in Kindergarten eligibility through ***CT Substitute House Bill 5003-Public Act 23-208.*** **11/27/23**

2. Parents requesting Early Entry to Kindergarten for their child must request it in writing to their child's school or Early Childhood Office by completing an Early Entry to Kindergarten Request Form. **11/27 - 12/15**

3. Students requesting Early Entry to Kindergarten will be assessed using approved district measures. Students will be assessed in their natural learning environment by staff with whom children are familiar.

4. The decision for Early Entry to Kindergarten will be based on students meeting wide range expectations in 4 of 6 developmental domains on their most current report card/progress report and performance on the district determined assessment.

Students who do not meet requirements for early entry to kindergarten will remain in their pre-k program.

WATERBURY PUBLIC SCHOOLS

#6

WATERBURY
PUBLIC SCHOOLS

Next Generation Accountability

December 2023

Overview

WATERBURY
PUBLIC SCHOOLS

Next Generation Accountability

- Holistic perspective on school and district performance

- All schools and districts in the state are rated on a broad set of indicators, as calculated by the Connecticut State Department of Education (CSDE)

Academic Achievement & Growth
Participation Rates
Chronic Absenteeism
College and Career Readiness Coursework & Exams
On-Track in Grade 9

Four-Year & Six-Year Graduation Rates
Postsecondary Entrance
Physical Fitness
Arts Access

WATERBURY PUBLIC SCHOOLS

District Level

WATERBURY
PUBLIC SCHOOLS

District Level Highlights

At the district level, there was improvement in the following indicators ***compared to pre-pandemic data (2018-2019)***:

- Academic Growth - English Language Proficiency (Oral)
- College and Career Readiness Coursework
- College and Career Readiness Exams
- Four-Year Graduation Rate
- Six-Year Graduation Rate
- Arts Access

WATERBURY PUBLIC SCHOOLS

District Level Highlights

At the district level, there was improvement in the following indicators ***compared to the prior year (2021-2022)***:

- Academic Achievement - Math
- Academic Growth - English Language Proficiency (Oral)
- Chronic Absenteeism
- College and Career Readiness Coursework
- College and Career Readiness Exams
- Six-Year Graduation Rate
- Postsecondary Entrance
- Physical Fitness
- Arts Access

WATERBURY PUBLIC SCHOOLS

District Reference Group (DRG)

- As identified by CSDE, District Reference Groups (DRGs) classify local public school districts together based on the similar socioeconomic status of their students
- DRGs are classified by letters A through I
- Waterbury's DRG I peers are: Bridgeport, Hartford, New Britain, New Haven, New London, and Windham

WATERBURY
PUBLIC SCHOOLS

DRG Highlights

WPS RANKINGS IN DRG I
2022-2023

#1

Academic Achievement - ELA (High Needs)

On-Track in Grade 9

Four-Year Graduation Rate

Six-Year Graduation Rate

#2

Overall Accountability Index

Academic Achievement - Math (All Students)

Academic Achievement - Math (High Needs)

Chronic Absenteeism (All Students)

Chronic Absenteeism (High Needs)

Physical Fitness

WATERBURY PUBLIC SCHOOLS

School Level

WATERBURY
PUBLIC SCHOOLS

School Level Highlights

- North End Middle School was removed from the state turnaround list
  - Improved from Category 5 to Category 3
  - Only two turnaround schools (out of 40) in the state exited turnaround status in 2022-2023
- Waterbury Arts Magnet School improved from Category 3 to Category 2
- Washington School was identified as a School of Distinction for Academic Growth in Math (High Needs)

WATERBURY PUBLIC SCHOOLS

SCHOOL ASSIGNMENT CATEGORIES
BASED ON PERCENTAGE OF POINTS EARNED

Category 1 (85-100)					
Category 2 (70-84.9)	Rotella	WAMS			
Category 3 (0-69.9)	Bucks Hill Bunker Hill Carrington Chase Driggs	Duggan Generali Gilmartin Hopeville	Kingsbury Maloney North End Reed	Regan Sprague Tinker Walsh	Washington WCA Wendell Cross Wilson
Category 4 (Focus/Turnaround)	Kennedy				
Category 5 (Focus/Turnaround)	Crosby	Wallace	West Side	Wilby	

WATERBURY
PUBLIC SCHOOLS

School Level Data

12 schools had improvement in the overall accountability index from the prior year:

School	Overall Accountability Index	Change Prior Year	School	Overall Accountability Index	Change Prior Year
Rotella	74.8	+4.7	Duggan	56.0	+.9
WAMS	73.5	+6.5	Hopeville	55.8	+3.2
Maloney	66.5	+.3	North End	53.5	+4.8
WCA	65.2	+.1	Kennedy	52.8	+.6
Washington	61.3	+2.1	Crosby	51.2	+.4
Tinker	57.1	+2.7	West Side	49.5	+4.2

WATERBURY PUBLIC SCHOOLS

School Level Data

16 schools had declines in the overall accountability index from the prior year:

School	Overall Accountability Index	Change Prior Year	School	Overall Accountability Index	Change Prior Year	School	Overall Accountability Index	Change Prior Year
Chase	64.2	-1.3	Walsh	58.3	-.4	Wilson	49.3	-5.0
Regan	63.5	-16.9	Kingsbury	58.2	-5.3	Reed	48.3	-6.8
Carrington	60.2	-1.2	Sprague	54.0	-5.9	Wilby	47.8	-1.1
Wendell Cross	59.3	-4.3	Driggs	53.6	-3.4	Gilmartin	46.4	-5.2
Bunker Hill	59.1	-1.8	Generali	51.5	-5.3	Wallace	45.0	-5.0
Bucks Hill	58.5	-6.1						

WATERBURY PUBLIC SCHOOLS

School Level Data

15 schools had marked improvement in reducing their chronic absenteeism percentage from the prior year:

School	Change Prior Year	School	Change Prior Year	School	Change Prior Year
Wilby	-28.5	North End	-12.3	Rotella	-9.1
Hopeville	-21.2	Kennedy	-11.9	WCA	-8.8
Gilmartin	-13.6	Washington	-11.0	Wallace	-8.6
Driggs	-12.8	WAMS	-9.9	Sprague	-5.8
Crosby	-12.3	West Side	-9.2	Walsh	-5.1

WATERBURY PUBLIC SCHOOLS

Improvement Plan

WATERBURY
PUBLIC SCHOOLS

Improvement Strategies

- All schools developed School Improvement Plans targeting specific indicators
- Plans and associated data are being monitored for fidelity of implementation of strategies
- Improved SAT and Smarter Balanced aligned assessments in middle and high school math, science, and ELA
- Math 530 and ELA 480 Clubs (HS SAT)
- Curriculum Implementation Walks (data collection)

WATERBURY
PUBLIC SCHOOLS

Improvement Strategies

- Small group tutoring targeting grades 4 and 5 Reading and Math (beginning in January)
- Student Success Agency
- Professional learning on highly effective instructional strategies being implemented in all schools
- Defining a Framework for High Quality Instruction
- Examining and enhancing our data systems

WATERBURY PUBLIC SCHOOLS

Questions

WATERBURY
PUBLIC SCHOOLS

WATERBURY PUBLIC SCHOOLS
NEXT GENERATION ACCOUNTABILITY RESULTS

	DISTRICT			STATE		
Indicator	2018-2019 Index/Rate	2021-2022 Index/Rate	2022-2023 Index/Rate	2018-2019 Index/Rate	2021-2022 Index/Rate	2022-2023 Index/Rate
1a. ELA Performance Index - All Students	55.6	51.3	50.7	67.7	64.2	63.9
1b. ELA Performance Index - High Needs Students	54.1	49.7	49.2	58.1	54.2	54.1
1c. Math Performance Index - All Students	48.6	42.3	43.8	63.1	58.6	59.7
1d. Math Performance Index - High Needs Students	47.1	40.8	42.3	52.7	47.7	48.9
1e. Science Performance Index - All Students	51.2	47.1	46.6	63.8	61.4	61.6
1f. Science Performance Index - High Needs Students	50.0	45.9	45.0	54.2	51.3	51.1
2a. ELA Academic Growth - All Students	57.8%	58.6%	50.6%	59.9%	60.4%	57.2%
2b. ELA Academic Growth - High Needs Students	57.0%	58.0%	50.2%	55.1%	56.2%	52.5%
2c. Math Academic Growth - All Students	53.8%	54.6%	51.9%	62.5%	65.2%	61.8%
2d. Math Academic Growth - High Needs Students	53.3%	54.1%	51.6%	55.2%	59.1%	55.5%
2e. Progress Toward English Proficiency - Literacy	50.5%	57.5%	50.1%	60.0%	64.9%	55.3%
2f. Progress Toward English Proficiency - Oral	44.5%	48.8%	49.6%	52.1%	57.4%	56.1%
4a. Chronic Absenteeism - All Students	15.6%	39.5%	31.2%	10.4%	23.7%	20.0%
4b. Chronic Absenteeism - High Needs Students	16.9%	41.8%	33.1%	16.1%	34.0%	28.5%
5. Preparation for CCR - Percent Taking Courses	60.6%	80.9%	87.4%	80.0%	84.8%	90.4%
6. Preparation for CCR - Percent Passing Exams	12.0%	17.1%	19.8%	42.6%	43.5%	44.3%
7. On-track to High School Graduation	80.9%	79.9%	77.7%	88.0%	82.7%	82.4%
8. 4-year Graduation: All Students	76.7%	83.6%	83.0%	88.3%	89.6%	88.9%
9. 6-year Graduation: High Needs Students	75.1%	85.2%	86.4%	83.3%	85.2%	85.6%
10. Postsecondary Entrance	65.1%	45.9%	47.2%	70.9%	66.1%	66.1%
11. Physical Fitness	51.9%	32.0%	44.5%	52.9%	45.8%	45.5%
12. Arts Access	39.8%	46.4%	49.8%	51.9%	52.4%	54.5%
Accountability Index (% of points earned)	64.6	59.9	59.2	74.2	69.7	69.3

T. Battistoni, Research and Testing; November 30, 2023

#7

Waterbury Public Schools

Office of Competitive Grants

Louise Allen Brown, J.D., M.P.A., Grant Writer

November 20, 2023

Honorable Board of Education
City of Waterbury
236 Grand Street
Waterbury, CT 06702

RE: 2023-24 Carl D. Perkins Grant (CSDE)

Dear President Sweeney and Board of Education Commissioners:

Once again, Waterbury's annual Carl D. Perkins Grant application will reflect the federal Perkins V legislation guidance, and will aspire to advance Connecticut's vision "that schools and districts provide each student access to rigorous pathways and programs of study that result in students graduating with the essential knowledge, skills, and employability expertise to successfully meet the demands of Connecticut's expanding economy." [Connecticut Perkins V Improvement Plan] More details are provided in my attached Grant Highlights document.

The Connecticut State Department of Education (CSDE) has announced the Waterbury Public Schools 2023-24 year allocation: $590,467. No matching funds are required.

As part of the application preparation process, CTE Supervisor Michael Merati and CTE teachers provided input regarding CTE professional development, equipment, and supplies, needed to improve CTE teaching and learning. In approving teacher requests for inclusion in the district grant application, the CTE Supervisor takes into consideration, the Waterbury Comprehensive Local [CTE] Needs Assessment (CLNA), which is regularly updated.

The 2023-24 Carl D. Perkins grant application is due to the Connecticut State Department of Education on December 15, 2023. The application will be submitted via eGMS to CSDE again this year. I anticipate that there may yet be some minor adjustments to the budget prior to submission. I respectfully request your approval to submit the 2023-24 Perkins grant application. Thank you for your consideration.

Very truly yours,

Louise Allen Brown

Louise Allen Brown, Grant Writer

cc: Dr. Verna D. Ruffin
Doreen Biolo
Janet Frenis
Michael Merati

236 Grand Street, Rm 252, Waterbury, CT 06702 - phone 203-346-3506 - fax 203-597-3436

Carl D. Perkins Grant 2023-24
CT State Department of Education
November 20, 2023
Louise Allen Brown

Grant Highlights

Program Purpose:
The purpose of the Carl D. Perkins Grant is to support students by providing funding for secondary (and postsecondary) programs of study in Career & Technical Education (CTE).

Eligible Applicants:
This year, five of Waterbury's high schools are eligible for Perkins Grant funds based upon their course offerings and Career & Technical Student Organizations (CTSOs): Crosby, Kennedy, Wilby, Waterbury Career Academy, and Waterbury Arts Magnet School. Under Perkins V, the Waterbury middle schools eligible now for limited funding (up to 10% of grant amount) are: Wallace, West Side, North End.

Application Deadline: December 15, 2023

Grant Period: July 1, 2023 – June 30, 2024

Grant Amount: Waterbury allocation - $590,467.

Matching Funds: Matching funds are not required.

Waterbury Proposal:

The Waterbury proposal seeks funding to support new and existing WPS CTE Career Clusters/Pathways/Programs of Study which are consistent with the Waterbury Comprehensive Local (CTE) Needs Assessment (CLNA), and recommendations from members of the CTE Advisory Board. A table of the career clusters and pathways scheduled to be offered at each of the high schools during 2023-24 appears below:

CTE Career Clusters and Pathways offered by WPS for 2023-24:

2023-24 Waterbury Public Schools CTE Cluster and Pathway Chart	Crosby High School	Kennedy High School	Waterbury Career Academy	Wilby High School	Waterbury Arts Magnet School (9-12)
Total Number of Clusters: 12					
Total Number of Pathways: 15	12	10	9	12	5
Cluster – Agriculture, Food, and Natural Resources					
Pathway – Plant Systems				X	
Cluster – Architecture and Construction					
Pathway - Construction	X	X		X	X

Cluster – Business, Management, Administration					
Pathway – General Management	X	X	X	X	X
Cluster – Education and Training					
Pathway – Teaching/Training	X	X	X	X	
Cluster – Finance					
Pathway - Accounting Services	X	X		X	X
Pathway - Insurance, Investments and Securities	X	X	X	X	
Cluster – Health Services					
Pathway – Therapeutic Services	X	X	X	X	
Cluster – Hospitality and Tourism					
Pathway – Restaurant, Food, Beverage, Services	X			X	
Cluster – Information Technology					
Pathway – Information, Support, Services			X		
Pathway – Web and Digital Communications					X
Pathway – Programming and Software Development	X	X	X	X	
Cluster – Manufacturing					
Pathway – Manufacturing Production	X		X		
Cluster – Marketing					
Pathway – Marketing Communications	X	X	X	X	
Cluster – Science, Technology, Engineering, Mathematics (STEM)					
Pathway – Engineering, Design, Development	X	X	X	X	X
Cluster – Transportation, Distribution, Logistics					
Pathway – Facility and Mobile Equipment Maintenance	X	X		X	

Perkins funding will support CTE courses that prepare students for success with earning industry-recognized credentials such as ServSafe and ProStart (Culinary); EdRising micro credential assessments in classroom instruction, anti-bias instruction, and classroom climate; ASE certifications (Automotive); NCCER certifications (Construction and Carpentry); NIMS certifications (Manufacturing); CISCO Fundamentals and A+ certifications (IT); and YouScience Certifications across all CTE pathways. Perkins funds will also support courses in which WPS students will earn college credit while in high school.

The CTE Advisory Board consists of stakeholders from schools, businesses, community agencies, students and parents. The CTE Advisory Board will meet again in 2023-24, in large part to give district educators opportunities to hear from the business community about what knowledge and skills employers most need students to possess to obtain entry level positions in high-skill, high-wage, and/or in-demand careers in the greater Waterbury area. Input from the business community, as well as from parents and students, teachers and administrators, will continue to shape the CTE programs of study supported through the Perkins grant. Work-based learning for students is planned through in person opportunities for EdRising students in various schools, summer public works department, school based enterprises, Virtual Job Shadow, and the Pharmacy Technician and Certified Nurse Assistant programs. Students will also have opportunities to work at manufacturing businesses in the area.

Budget

The budget includes staff training and a variety of student supports requested by teachers and administrators, or the CTE Supervisor, and approved by the CTE Supervisor as consistent with the direction of the CTE department in the Waterbury schools. The budget will total the maximum allowable allocation for WPS for 2023-24 of $590,467. No matching funds are required.

#8

November 30, 2023

Honorable Board of Education
Waterbury Board of Education
236 Grand Street
Waterbury, CT 06702

Re: No cost amendment with Varsity Tutors for Schools, LLC (CRT23-631)

Dear Honorable Board of Education:

The Waterbury Public Schools Academic Office respectfully requests your approval of a no cost contract amendment with Varsity Tutors for Schools, LLC.

Waterbury Public Schools established a two-year contract with Varsity Tutors for Schools, LLC under RFP 7270 (CRTARP22-019) for virtual, online tutoring services through June 30, 2024 in the amount of $999,995. Services include one to one high dosage tutoring for identified students. In addition, students have access to the Virtual Tutoring On Demand service in all subject areas and unlimited access to the Varsity Tutors Learning Lab at no additional cost. After providing services in the 2022-2023 school year, the value of the remaining services is $604,863.

The Academic Office respectfully requests a no-cost contract amendment with the same termination date. The amendment would provide all of the services listed above plus an option for small-group tutoring sessions at a reduced rate. The value of the current contract will remain $604,863. The additional small group tutoring services will be scheduled during the school day during grade four and five small group time in math and reading twice weekly.

The aforementioned services are consistent with the scope of the previously signed procurement agreement between the City of Waterbury and Varsity Tutors for Schools, LLC.,

Respectfully Submitted,

Janet Frenis

Janet Frenis
Chief Academic Officer

AMENDMENT 1
to
PROFESSIONAL SERVICES AGREEMENT
RFP No. 7270
for
Virtual Tutoring – Elementary Math and Reading
between
The City of Waterbury, Connecticut
and
Varsity Tutors for Schools LLC

THIS AMENDMENT 1 ("Amendment 1"), effective on the date signed by the Mayor, is by and between the City of Waterbury, 235 Grand Street, Waterbury, Connecticut (the "City") and Varsity Tutors for Schools LLC, (the "Contractor"), a Missouri limited liability company located at 101 S. Hanley Road, Suite 300, St. Louis, Missouri 63105 (Jointly referred to as the "Parties" to this Amendment).

WHEREAS, Contractor submitted a proposal in response to RFP No. 7270, and the City selected the Contractor to perform the requested services; and

WHEREAS, the City and the Consultant entered into a Contract with an effective date of November 9, 2022 (the "Agreement") providing for virtual tutoring for elementary schools; and

WHEREAS, the parties now desire to amend the Agreement to expand the scope of services at no additional cost to the City.

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. The foregoing recitals are incorporated by reference as if fully stated herein.

2. Section 1.1 of the Agreement shall be deleted in its entirety and replaced with the following:

1.1. The Project consists of and the Contractor shall provide virtual tutoring in elementary reading and math for Waterbury Public School students in grades K-12, including any related curriculum, materials, equipment, and supplies, as detailed and described in the Bid Documents in **Attachment A** and which are hereby made material provisions of this Contract, specifically including but not limited to:

1. Weekly, monthly, and yearly data on student enrollment, attendance and progress toward goals. Reports shall also include local student identification number.

2. Virtual, 1:1 live tutoring sessions based on student needs for 30 minute sessions up to three times a week per student.
3. Supports and reports for parents/guardians to promote family engagement.
4. Interactive lessons utilizing engaging online tools such as JamBoard, Pear Deck, or similar service.
5. Communication with classroom teacher and family.
6. Small group tutoring sessions with a teacher-student ratio of no higher than 1:5.
7. Access to various virtual services through the Varsity Tutors for Schools Platform.
8. Any other services described in the Contract Documents.

as further detailed and described in **Attachment A** and are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or are otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 The City's solicitation documents, RFP No. 7270, attached hereto;
1.1.2 Contractor's Amended Cost Schedule, effective December 29, 2023 and consisting of two (2) pages, attached hereto;
1.1.3 Contractor's Cost Schedule ("Order Form" with an Effective Date of September 15, 2022), attached hereto;
1.1.4 Contractor's Response to RFP No. 7270, attached hereto;
1.1.5 Stockholder's Affidavit; Non-Collusion Affidavit; Debarment Certificate; all incorporated by reference;
1.1.6 Certificates of Insurance, incorporated by reference;
1.1.7 All applicable Federal, State, and local statutes, regulations, charter and ordinances, incorporated by reference;
1.1.8 All required licenses, incorporated by reference;
1.1.9 Required Contract Provisions for ARPA Funded Projects, incorporated by reference;
1.1.10 Contractor's Terms for Education Offerings, attached hereto.

3. Section 1.2 of the Agreement shall be deleted in its entirety and replaced with the following:

1.2. The entirety of **Attachment A** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. In the event that any provision in the Contract Documents conflict with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically:

1.2.1 Any amendments to this Agreement.
1.2.2 Contractor's Amended Cost Schedule, effective December 29, 2023 and consisting of two (2) pages, attached hereto.
1.2.3 Contractor's Cost Schedule ("Order Form" with an Effective Date of September 15, 2022), attached hereto.
1.2.4 The City's solicitation documents, RFP No. 7270.
1.2.5 All applicable Federal, State and local statutes, regulations, charter, and ordinances, and applicable provisions and requirements of the Funding Grants as set forth herein.
1.2.6 Contractor's Terms for Education Offerings, attached hereto.

4. Attachment A to this Amendment 1 shall be fully incorporated herein and made part of both this Amendment and Attachment A of the Agreement, and includes the following:

1. Contractor's Amended Cost Schedule, effective December 29, 2023 and consisting of two (2) pages, attached hereto.

5. Other than as amended herein, all other terms, conditions, and provisions of the November 9, 2022 Agreement shall remain in full force and effect and binding to the Parties hereto.

(Signature Page Follows)

IN WITNESS WHEREOF, the parties hereto execute this Amendment 1 on the dates signed below.

WITNESSES:

Sign: _____
Print name:

Sign: _____
Print name:

CITY OF WATERBURY

By: _____
Paul K. Pernerewski Jr., *Mayor*

Date: _____

WITNESSES:

Sign: _____
Print name:

Sign: _____
Print name:

VARSITY TUTORS FOR SCHOOLS LLC

By: _____

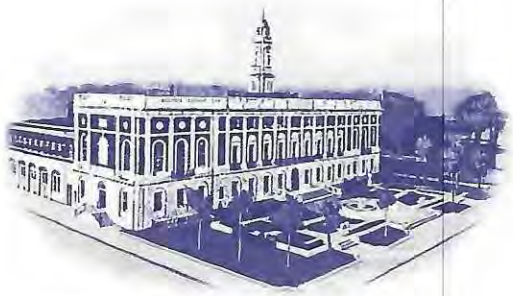
Title: _____

Date: _____

ATTACHMENT A to Amendment #1

1. Contractor's Amended Cost Schedule, effective December 27, 2023 and consisting of two (2) pages, attached hereto.

KEVIN McCAFFERY
DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING

THE CITY OF WATERBURY

CONNECTICUT

To: Janet Frenis, Chief Academic Officer

From: Kevin McCaffery, Director of Purchasing KM

Subject: Waiver Request – Amendment #1 to Contract with Varsity Tutors

Date: October 30, 2023

I have reviewed the attached information provided by Janet Frenis, Chief Academic Officer, concerning the above amendment. In my opinion, since there is no cost change and no change in scope of work, Varsity Tutor can provide small-group tutoring sessions.

The following does apply per § 38.073 **AMENDMENTS TO CONTRACTS**
(B) (1) The amendment is consistent with the scope of the original procurement.
Therefore, you may proceed with the amendment with Varsity Tutors.

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE (203) 574-6749 • FAX (203) 597-3437

WATERBURY
PUBLIC SCHOOLS

Janet Frenis
Chief Academic Officer
203 574 8341
jfrenis@waterbury.k12.ct.us

To: Mr. Kevin McCaffery, Director of Purchasing
From: Janet Frenis, Chief Academic Officer
Date: October 26, 2023
Re: Contract Amendment for Varsity Tutors

Dear Mr. McCaffery,

Waterbury Public Schools established a two-year contract with Varsity Tutors for Schools, LLC under RFP 7270 for virtual, online tutoring services through June 30, 2024 in the amount of $999,995. Services include one to one high dosage tutoring for identified students. In addition, students have access to the Virtual Tutoring On Demand service in all subject areas and unlimited access to the Varsity Tutors Learning Lab at no additional cost. After providing services in the 2022-2023 school year, the value of the remaining services is $604,863.

The Academic Office respectfully requests a no-cost contract amendment with the same termination date. The amendment would provide all of the services listed above plus an option for small-group tutoring sessions at a reduced rate. The value of the current contract will remain $604,863.

The aforementioned services are consistent with the scope of the previously signed procurement agreement between the City of Waterbury and Varsity Tutors for Schools, LLC., Please provide written agreement for an amendment increase of $0 Varsity Tutors for Schools, LLC. Please feel free to contact me for additional information regarding this request.

Best Regards,

Janet Frenis

Janet Frenis
Chief Academic Officer
Waterbury Public Schools

#9

Quineshia Brown-Coles
Family Community Engagement Manager
(203) 346-3520
Quineshia.brown@waterbury.k12.ct.us

MEMORANDUM

TO: Board of Education

FROM: Quineshia Brown-Coles, Family & Community Engagement Manager

DATE: November 27, 2023

RE: Executive Summary

EXECUTIVE SUMMARY

Waterbury Public Schools requests to participate in the Parent Teacher Home Visitors Program (PTHV) in partnership with CREC and CFSP, the Family and Community Engagement Manager will assist the four building admin, of the schools chosen, in recruiting teachers and connecting them to the required and recommended training. Additionally, a Google classroom will be established as a means to offer ease of access for referencing important and required guidelines and protocols for ethical and successful home visiting. In Understanding that the majority of student and family populations in Waterbury Public Schools are BIPOC; also representing the demographics of the four participating Schools, which include a high percentage of minority students, EL students, and students receiving special education, family engagement strategies will include informative participation and preparatory planning participation. This will be achieved through initial phone calls to parents to inform them of the benefits of PTHV, home/community visits, as well as the participation in school/community based programs of engagement, such as; open house, literacy/math nights, and school/community collaborative events, The goal of this form of family engagement is to include use of inclusive language when conversing with families about connection to resources and partnering with school personnel for improving daily attendance. Emphasizing the strictly volunteer involvement in PTHV will also be critical to this process. Access to information is imperative in this form of engagement, specifically for traditionally underserved populations. Parent Square notifications and district social media platforms will also serve as tools to implement this form of participation.

Four district schools will participate in PTHV- Duggan, Reed, Kingsbury, and Wilson School. A minimum of 20 families per school would receive a maximum of 2 visits from PTHV by the May 2024 deadline; one visit in the fall semester, and the last visit during the spring semester. Uniquely, Duggan and Reed are K-8 schools, offering staff the opportunity to provide a larger range of visits to multiple grade and school levels.

Waterbury Public Schools has been awarded Maximum cost for districts serving 4 schools- $18,000, at no cost to the city. A city match is not required.

Quineshia Brown-Coles
Family Community Engagement Manager
(203) 346-3520
Quineshia.brown@waterbury.k12.ct.us

Strategic Area 3 of the present Waterbury Public School Strategic Plan states that we shall "Provide continuous learning on equity in educational practices and family partnerships to strengthen communications and engagement." The implementation of PTHV aligns specifically with this plan, as it will afford parents and school staff an additional layer of reciprocity and accountability to the overall achievement of academic success as it pertains to our students.

Sincerely,
Quineshia Brown-Coles
Quineshia Brown-Coles, MSW
Family and Community Engagement Manager

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CREC
111 Charter Oak Avenue
Hartford, CT 06106
Phone: (860) 247-2732
Website: http://www.crec.org

CREC STATEMENT OF AGREEMENT

Buyer (CREC):	Capitol Region Education Council (CREC) 111 Charter Oak Avenue, Hartford, CT 06106
Seller (City):	City of Waterbury, Waterbury Public School System
From:	Amy Karwan, Director, CREC Resource Group
Regarding:	Implementation, Parent Teacher Home Visiting Program.
Date/s	October 20, 2023 – June 30, 2024.
Services to be performed:	Waterbury Public Schools will provide home visits by eight (8) trained Parent Teacher Home Visit teachers to families in Duggan School, Kingsbury School, Reed School and Wilson School. Forty 40 families will receive two (2) home visits (total of 80 home visits). Funds will be used to stipend trained Waterbury teachers for the home visits and for visit coordination.
Contract Sum:	Total contract = $18,000
Contract Schedule:	October 20, 2023 – June 30, 2024

THIS AGREEMENT IS SUBJECT TO THE TERMS AND CONDITIONS ATTACHED HERETO AND MADE A PART HEREOF (THIS AGREEMENT, COLLECTIVELY WITH THE TERMS AND CONDITIONS, THE 'CONTRACT').

TO THE EXTENT OF ANY CONFLICTS BETWEEN THE CONTRACT AND ANY OTHER DOCUMENT, THE CONTRACT SHALL PREVAIL.

IN WITNESS WHEREOF, this Agreement has been duly executed and delivered, pursuant to proper authority, as of the day and year first written above.

City of Waterbury	**CREC**
	DocuSigned by: Amy Karwan K3BAAEAD9F4...
Thomas Bell, Grants Manager	Amy Karwan, Director, CREC Resource Group
	DocuSigned by: Dr. Greg J. Florio 1F8F0D4259DD4...
Paul K. Pernerewski, Jr., Mayor	Greg J. Florio, Ed.D., Executive Director, CREC
	11/27/2023
Date Signed	Date Signed

For Internal Use Only

DocuSign Envelope ID: 9AC61861-1ADD-4C57-8008-D19D50598C0B

CREC
111 Charter Oak Avenue
Hartford, CT 06106
Phone: (860) 247-2732
Website: http://www.crec.org

CREC TERMS AND CONDITIONS OF PURCHASE

These CREC Terms and Conditions Of Purchase are applicable to the Statement of Agreement by and between CREC and the City ("Agreement", which together with these CREC terms and conditions of purchase collectively, the "Contract") to which it is attached. Terms that are not defined where used herein are defined in the Agreement.

1) Purchase of Services. CREC agrees to purchase from Seller and Seller agrees to sell to CREC the Services pursuant to the Contract.
2) Seller's Obligations.
   (a) Time of Performance. Seller shall perform the Services and/or deliver the Goods in a timely and diligent manner, and in strict accordance with the Contract Schedule. Time is of the essence under the Contract.
   (b) Seller Resources and Personnel; Subcontractors. Seller shall provide, at Seller's expense, the facilities, equipment, materials, services, and other resources necessary to perform the Services under the Contract. Seller is responsible for the acts and omissions of Seller personnel under or relating to the Contract.
   (c) Compliance. Seller shall comply with all applicable laws when performing the Services and/or providing the Goods.
3) CREC Obligations. CREC will facilitate Seller's delivery of the Goods and/or performance of the Services and perform any other Contract tasks required of CREC ("CREC Responsibilities"). Provided that Seller has given CREC reasonable advance notice of Seller's nonperformance, Seller's failure to perform the Contract shall be excused to the extent that Seller provides CREC with written notice that (a) such nonperformance results solely from CREC's failure to perform any CREC Responsibilities; (b) Seller is otherwise in full compliance with all of its obligations under the Contract, and (c) a detailed explanation of how CREC's failure prevented Seller's performance.
4) Contract Sum and Payment. Seller shall invoice CREC on a monthly basis for Services performed based upon the Contract Sum, which Contract Sum is the fixed and total amount of compensation due Seller for the Services and includes all costs and expenses to perform the Services. CREC shall pay invoices within forty-five (45) days of the date of CREC's receipt of an invoice in form and substance acceptable to CREC. In the event CREC fails to pay any amount due and owing under the Contract, such past due amounts shall not be subject to interest charges.
5) Ownership of Materials. Unless otherwise provided in the Agreement, all documents or information prepared or disclosed by Seller pursuant to the Contract, shall remain Seller's property..
6) Liability of the Parties. Each Party shall be responsible for any and all claims arising out of its own negligence and that of its agents, employees, officers, subcontractors and volunteers relating to its obligations under this Agreement, or arising out of its own violation, breach, or default of the provisions of this Agreement.
7) Force Majeure. Any delay or failure of either party to perform under the Contract shall be excused to the extent caused by extreme weather or other act of God, strike or other labor shortage or disturbance, fire, accident, war or civil disturbance, delay of carriers, change in law or other act of government or any other cause beyond such party's reasonable control.
8) Term, Termination or Suspension. The term of the Contract shall be in accordance with the Contract Schedule Either Party may, for its convenience, terminate or suspend all or part of the Contract upon written notice to the other Party. Upon termination, Seller shall immediately stop work on the terminated portion of the Contract and shall submit to CREC an invoice with supporting information setting forth the Contract Sum for the Services performed prior to the date of termination. CREC shall not be liable to Seller for Seller's lost profit on the terminated portion of the Contract or Seller's costs resulting from termination.
9) Confidentiality. The Parties agree to keep the confidential or proprietary information of the other Party that such Party receives or becomes aware of in connection with the Contract ("Confidential Information") in the strictest confidence and not to disclose any Confidential Information to any party other than as required by law. Upon a Party's request, the other Party will return all documents containing Confidential Information and retain no copies thereof. The Parties agree that their obligation to protect Confidential Information is ongoing and shall not cease upon completion or termination of the Contract.
10) Equal Opportunity. CREC is an equal opportunity employer and purchaser. Seller agrees that in Seller's performance of the Contract no employee or applicant for employment or vendor will be discriminated against because of race, color, religious creed, marital status, national origin, ancestry, sex, sexual orientation, age, present or past history of mental disorder, mental retardation or physical disability including but not limited to blindness, or veteran's status.
11) Non-Discrimination and Affirmative Action.
   (a) Seller agrees and warrants that in the performance of the Contract it will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, sexual orientation, mental retardation, mental or physical disability, including, but not limited to, blindness, unless it is shown by Seller that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or the State. Seller further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, sexual orientation, mental retardation, mental disability or physical disability, including, but not limited to blindness, unless it is shown by Seller that such disability prevents performance of the Contract.

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(b) Seller agrees, in all solicitations or advertisements for employees placed by or on behalf of Seller in connection with the Contract, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Connecticut Commission on Human Rights and Opportunities (the "Commission").

(c) Seller agrees to provide each labor union or representative of workers with which Seller has a collective bargaining agreement or other contract or understanding or each vendor with which Seller has a contract or understanding, a notice to be provided by the Commission, advising the labor union or worker's representative of Seller's commitments pursuant to the Connecticut

General Statutes (the "Statutes") Section 4a-60, and to post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) Seller agrees to comply with each provision of Sections 4a-60, 4a-60a, 46a-68f of the Statutes, and with each regulation or relevant order issued by said Commission pursuant to Statutes Sections 46a-56, 46a-68e and 46a-68f.

(e) Seller agrees to provide the Commission and CREC with such information requested by them, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of Seller as relate to the provisions of Statutes Sections 4a-56 and 4a-60. If the Contract is deemed a public works contract, Seller agrees and warrants that it will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials in performance of the Contract.

12) Americans With Disabilities Act Of 1990. Seller represents and warrants that it is familiar with the terms of the Americans with Disabilities Act of 1990 (43 USCS Sections 12101-12189 and Sections 12201-12213) (Supp. 1993); 47 USCS Sections 225.611 (Supp. 1993) (the "Act") and that Seller is in compliance with the Act. The Seller shall hold CREC harmless from any liability imposed upon CREC as a result of any failure of the Seller to be in compliance with the Act. Seller agrees to abide by the provisions of Section 504 of the Federal Rehabilitation Act of 1973, as amended, 29 USC Section 794 (Supp. 1993), regarding access to programs and facilities by people with disabilities.

13) City Required Provisions.

(a) City of Waterbury's Ethics Code Ordinance. CREC hereby acknowledges it is responsible for familiarizing itself with and adhering to Chapter 39 of the City's Ordinance regarding, Ethics and Conflicts of Interest. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: https://www.waterburyct.org/services/city-clerk/code-of-ordinances [click link titled "Code of Ordinances (Rev. 12/31/19)". For Chapter 39, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"].

(b) Prohibition Against Gratuities and Kickbacks (§39.042 of City's Code of Ordinances)

a. No person shall offer, give, or agree to give any current or former public official, employee or member of a board or commission, or for such current or former public official, employee or member of a board or commission to solicit, demand, accept or agree to accept from another person a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter pertaining to any program requirement or a contract or purchase order, or to any solicitation or proposal therefore.

b. No person shall make any payment, gratuity, or offer of employment as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime contractor or higher tier subcontractor or any person associated therewith, under contract or purchase order to the City.

c. The value of anything transferred or received in violation of the provisions of this Chapter or regulations promulgated hereunder by any person subject to this Chapter may be recovered by the City.

(c) Prohibition Against Contingency Fees (§39.47 of City's Code of Ordinances). CREC hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

14) Miscellaneous.

(a) Independent Contractors. The parties and their respective personnel are and shall be independent contractors and neither party by virtue of the Contract shall have any right, power or authority to act or create any obligation, express or implied, on behalf of the other party.

(b) Assignment/Subcontractors. The Seller may not assign any of its rights, duties or obligations under the Contract to any person or entity, in whole or in part, and any attempt to do so shall be deemed void and/or a material breach of the Contract. Further, the Seller shall not subcontract any of the Services without prior written approval of CREC. Subcontractors, if any, shall be bound by all the terms and conditions of the Contract and in no event shall the Seller be relieved of its responsibility for performance of the Contract.

(c) Waiver. No waiver of any provision hereof or of any right or remedy hereunder shall be effective unless in writing and signed by the party against whom such waiver is sought to be enforced. No delay in exercising, no course of dealing with respect to, and no partial exercise of any right or remedy hereunder shall constitute a waiver of any other right or remedy, or future exercise thereof.

(d) Severability. Whenever possible, each provision of the Contract shall be interpreted in such manner as to be effective and valid under applicable law, but if any such provision of the Contract shall be prohibited by or invalid under applicable law, such provision shall be ineffective only to the extent of such prohibition or invalidity, without invalidating the remainder of

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CREC
111 Charter Oak Avenue
Hartford, CT 06106
Phone: (860) 247-2732
Website: http://www.crec.org

such provision or the remaining provisions of the Contract, it being the parties' intention that each and every provision of the Contract be enforced to the fullest extent permitted by applicable law.

(e) Modification. The Contract may be modified only by a written agreement signed by all the parties.

(f) Governing Law. The Contract shall be deemed to be made under the laws of the State of Connecticut and for all purposes shall be governed by and construed in accordance with the law thereof.

(g) Entire Agreement. The Contract is the entire agreement of the parties concerning the subject matter thereof, and in executing the Contract no party has relied upon any statements, representations or agreements, whether oral or in writing, relating to the subject matter thereof, except as is expressly set forth therein.

(h) Notices. Any notice pursuant to the Contract shall be given in writing by (a) personal delivery, or (b) reputable national overnight delivery service with proof of delivery, or (c) United States Mail, postage prepaid, registered or certified mail, return receipt requested, or (d) legible confirmed facsimile transmission sent to the intended addressee at the address set forth in the Agreement, and shall be deemed to have been given upon receipt or refusal to accept delivery, or, in the case of facsimile transmission, as of the date of the facsimile transmission provided that an original of such facsimile is also sent to the intended addressee by means described in clauses (a), (b) or (c) above. Unless changed in accordance with the preceding sentence, the addresses for notices given pursuant to the Contract shall be as set forth in the Agreement.

(i) Counterparts. The Agreement may be executed by the parties in separate counterparts, each of which may contain less than all of the parties' signatures, but all of which together shall constitute one and the same instrument.

(j) Tax Exempt. The parties acknowledge that CREC is exempt from state sales tax under Section 12-412 of the Connecticut General Statutes.

(k) No Third-Party Beneficiary. Nothing contained in the Contract shall be deemed to confer upon any person or entity any right as a third-party beneficiary of the Contract.

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WATERBURY
PUBLIC SCHOOLS

#10

Nicholas J. Albini
Chief Operating Officer
(203) 346-2340
nalbini@waterbury·k12·ct·us

EXECUTIVE SUMMARY

DATE: November 30, 2023

TO: Honorable Board of Education Commissioners
Honorable Board of Aldermen Members

FROM: Nicholas J. Albini, Chief Operating Officer

RE: Contract for Kitchen Renovations at Crosby and Wilby High Schools with All Trade Industries, LLC

The Education Department respectfully requests your review and approval of a construction contract for the renovation of the culinary program classrooms at Crosby and Wilby High Schools. Three classrooms at Crosby and one classroom at Wilby will be completely renovated with all appurtenances required to complete fully functional and operational kitchen classrooms in the total amount of $345,000 (Crosby $182,900 base amount; Wilby $102,100 base amount) for work requested and approved by the Education Department under the scope. The total contract amount includes a $60,000 owner controlled contingency. All contractor change order requests are carefully reviewed and evaluated by the architect/engineer of record, program manager and Board of Education designated project owner representative.

The contract was initiated under the Request for Proposal #7844 in which two responses were received with All Trade Industries deemed the most qualified bidder. This Agreement is subject to minor, non-substantive changes to be approved by the Office of the Corporation Counsel. The project is being funded through the American Rescue Plan Act/Elementary and Secondary Schools Emergency Relief funds (ARPA/ESSER). All services will be completed within 150 days from the start of the project. All Trade Industries has performed satisfactorily in the past on City projects.

The Education Department will have a representative present at your upcoming meetings to answer any questions you may have regarding this matter. Thank you for your continued assistance on this matter.

c: Dave Heavener, Mike Konopka

Construction Contract
for
Kitchen Renovations
at
The Crosby and Wilby High Schools
between
City of Waterbury
and
All Trade Industries, LLC

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the **CITY OF WATERBURY**, City Hall, 235 Grand Street, Waterbury, Connecticut 06702 (the "City") and **ALL TRADE INDUSTRIES, LLC**, located at 94 Edwin Avenue, Waterbury, Connecticut 06708, a duly registered Connecticut limited liability company (the "Contractor").

WHEREAS the Contractor submitted a bid to the City in response to **Request for Proposal ("RFP") No. 7844** for kitchen renovations at The Crosby and Wilby High Schools; and

WHEREAS the City accepted the Contractor's bid for **RFP No. 7844**; and

WHEREAS the City desires to obtain the Contractor's services pursuant to the terms set forth in this Contract (the "Project").

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as the "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with **(i)** all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and **(ii)** generally accepted professional standards.

1.1. The Project consists of kitchen renovations at the following schools in Waterbury: Crosby High School (300 Pierpont Road) and Wilby High School (568 Bucks Hill Road). All work shall be performed and completed in accordance with Project's plans and specifications, all of which are more particularly detailed and described in the Bid Documents in **Attachment A**. **Attachment B** includes the **ARPA** (defined below) required contract provisions and, along with **Attachment A**, are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 City's **RFP No. 7844**;

1.1.2 Addendums N/A to **RFP No. 7844** (attached hereto);

1.1.3 Contractor's Price Proposal (revised), dated October 27,2023, consisting of one page (attached hereto);

1.1.4 Contractor's Response with associated attachments to **RFP No. 7844**, dated October of 2023, consisting of 109 pages, (attached hereto);

1.1.5 "City of Waterbury, Board of Education, **RFP No. 7844**, Scope of Services" (also referred to as "Technical Specifications") as shown on the drawings referenced in **Section 1.1.6** below, which are accessible through the links contained in **RFP No. 7844**;

1.1.6 "Site Map" with List of Drawings prepared by BL Companies for Wilby High School, dated May 25, 2023, consisting of 11 pages, and for Crosby High School, dated May 12, 2023, consisting of 15 pages, all of which are accessible through the links contained in **RFP No. 7844**;

1.1.7 State of Connecticut Prevailing Wage Schedule dated September 19, 2023, and related information, consisting of 8 pages (attached hereto and as otherwise incorporated by reference).

1.1.8 Contractor's Certificate of Insurance (attached hereto, or otherwise incorporated by reference**);**

1.1.9 Contractor's Performance Bond (attached hereto, or otherwise incorporated by reference);

1.1.10 Contractor's Payment Bond (attached hereto, or otherwise incorporated by reference);

1.1.11 All amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.12 All applicable Federal, State and local statutes, regulations charter and ordinances, including those required for the American Rescue Plan Act of 2021 ("**ARPA**") and the two Elementary and Secondary School Emergency Relief Fund programs (collectively, "**ESSER**") to the extent the Project receives funding from same, are incorporated by reference, as well as Attachment B, titled "**CONSTRUCTION CONTRACTS - REQUIRED CONTRACT PROVISIONS – AMERICAN RESCUE PLAN ACT FUNDED PROJECTS, DATED JUNE 2021**,"; and

1.1.13 All applicable permits and licenses (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument (including **Attachment B**) are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflict with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically:

1.2.1 All applicable Federal, State, and local laws, regulations, charter and ordinances;

1.2.2 Contract Amendment(s) and Change Orders;
1.2.3 The Contract;
1.2.4 Addendums to **RFP No. 7844**;
1.2.5 **RFP No. 7844** including City of Waterbury, Board of Education, **RFP No. 7844**, Scope of Services/Technical Specifications;
1.2.6 Contractor's Price Proposal;
1.2.7 Contractor's Response; and
1.2.8 Drawings.

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Contractor hereby represents that, to the extent required by Federal, State and local statutes, regulations, codes, ordinances, and policies, that the Contractor and/or its employees be licensed, certified, registered, or otherwise qualified, the Contractor and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Contractor shall provide the City with a copy of the Contractor's licenses, certifications, registrations, etc.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibilities to examine and to be thoroughly familiar with the City's bid document, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items, facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submittal of its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP No. 7844** (collectively, the "Bid Documents");

3.1.7. it agrees that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8. it has carefully studied all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations,

investigations, tests, reports or similar data are or will be required by Contractor for such purposes; and

3.1.10 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, state and federal health and safety regulations. Contractor shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall Contractor in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense **(i)** adequate off-site storage space for equipment, materials, incidentals, etc., and **(ii)** all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times; for example, a second shift from 3 p.m. to 11 p.m. may be possible. This provision shall not excuse the Contractor from timely performance under the Contract.

3.5. Cleaning Up. The Contractor shall always keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract

or use the City's name in connection with any publicity unless the City gives prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the Contractor shall be made only with the prior written consent of an authorized representative of the City's Using Agency.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. Contractor's Employees. The Contractor shall always enforce strict discipline and good order among its employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are **(i)** subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or **(ii)** unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed; the Contractor shall thereafter wait for written instructions from the City before proceeding under such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, or necessary, or prudent for the performance of the Contractor's obligations under this Contract., and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions like those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents (including KBE Building Corporation) to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment.

3.15. ARPA/ESSER. The Contractor possesses the knowledge and understanding of **ARPA** and **ESSER** and recognizes this Project is subject to the rules, regulations and mandatory contract provisions required by same.

3.16. Activities, Work, and Services Performed in Department of Education Facilities, on School Grounds, at Student Sporting Events, and/or where City Students are Present. For all activities in school facilities and/or Department of Education facilities, the Contractor shall first be required to coordinate all on-site visits and activities with the appropriate Department/personnel in Education, or the designated person and shall obtain any necessary clearance, ID badges, etc. Contractor shall enter and exit all school facilities and Department of Educational facilities as designated as authorized by the appropriate Department/personnel in Education, or the designated person.

3.17. Criminal Background Check and DCF Registry Check. The Contractor shall comply with the requirements of C.G.S. 10-222 c (g) and shall ensure, and represents to the City, that any employee who will be on school grounds/Department of Education Property/at Department of Education events and/or where City students are present, that will or may have direct contact with a student's while providing services pursuant to this Agreement, has stated, in writing, whether such person has ever been convicted of a crime or whether criminal charges were ever pending against such person. The Contractor shall further ensure, and represents to the City, that any person who will have direct contact with a student has submitted to a records check of the Department of Children and Families Child Abuse and Neglect Registry established pursuant to Conn. Gen. Stat. §17a-101k, as well as State and National criminal history records checks conducted in accordance with Conn. Gen. Stat. §29-17a, the Federal National Child Protection Act of 1993, and the Federal Volunteers for Children Act of 1998. The Contractor shall not permit any person with a disqualifying criminal history

to have contact with a student. The contractor agrees the "direct contact" shall include the contractor and its employees providing services under this contract if said services are performed on school grounds/Department of Education Property/at Department of Education events and/or where City students are present.

4. Responsibilities of the City and City Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities; initially, the Department of Education's School Inspector's Office and KBE Building Corporation are so designated.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract within **one hundred twenty (120) consecutive calendar days** of the City's written Notice to Proceed and shall reach Final Completion within **one hundred fifty (150) consecutive days** of the City's written Notice to Proceed ("Contract Time").

5.1. Attachment C is the Project's schedule. On a monthly basis, the Contractor shall deliver to the City a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will ensure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **Five Hundred and 00/100 Dollars ($500)** per consecutive calendar day for each calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damages from any monies due to the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire Section 5, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for satisfactory provision of all the goods and services set forth in this Contract as follows in this Section 6. No claims for additional compensation will be considered for conditions made known to the Contractor prior to bidding. No claims for additional compensation will be considered on account of failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this Section 6, the fee payable to the Contractor shall not exceed **DOLLARS ($345,000)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Bid set forth in **Attachment A**, which is summarized below and inclusive of the required payment and performance bonds:

A. Crosby High School

i. $182,900 (base payment)

B. Wilby High School

i. $102,100 (base payment)

C. Owner Controlled Contingency

i. $60,000 (Owner Controlled Contingency subject to Section 6.1.1).

6.1.1 Owner Controlled Contingency. At the sole discretion and control of the City, the Contingency amount as set forth in Section 6.1 above shall be utilized for the payment to the Contractor for additional work not covered by this contract and requested and approved by the City in writing to be performed by the Contractor. The basis for payment for the additional work under the Contingency shall be separate and apart from the Base Payment set forth above. The Owner Controlled Contingency shall be the funding source for any City approved additional work and services not provided for in this Contract. Unless properly approved in writing by the City (see Section 27), Contractor shall not be entitled to any compensation from such contingency. The parties agree that a Change Order Form shall be utilized to set forth the additional services, cost of additional services and time for Contractor to provide said service.

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage of five percent (5%) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not include additional sums that the City may withhold due to the Contractor's failure to comply with provisions of this Contract.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc., all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Contractor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP No. 7844** shall be borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final City payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all the foregoing payment obligations have been fully completed.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fees.

6.7. Attorney's Fees and Costs. The prevailing party in any litigation arising hereunder shall be entitled to attorney's fees and costs from the losing party.

6.8. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.9. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final

Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.10. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.10.1 Submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment by the City's or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment cannot be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide, at the City's request, reasonable documentation to substantiate Contractor's Application for Payment.

6.10.2 Progress and Final Payments

The City will make progress payments on account of the Contract Price based on the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be based on the progress of the Scope of Services as determined by the City, according to the schedule of values provided for in the Contract Documents and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents, subject to reasonable monetary holdback for punch list items.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i)** 365 calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees and assign same to the City and the City shall avail itself of same to the fullest extent provided by the terms thereof. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and

guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. The City's beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon the City's final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project worksite and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project worksite without securing the prior written consent of an authorized City Using Agency employee.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, Board of Education or any of City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials by the Contractor or any employee of the Contractor , any subcontractor or consultant, anyone directly or indirectly employed by any of them

or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, the Board of Education, any of City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees and officials as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** 365 calendar days after the Final Completion Date referenced elsewhere in this Contract.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City and KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, always during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance: $1,000,000.00 per occurrence, **$2,000,000.00** aggregate and **$2,000,000.00** Products and completed operations aggregate; providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance: $1,000,000.00 combined single limit (CSL); providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employers' Liability:

EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance: Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances -- **$1,000,000.00** each occurrence and **$1,000,000.00** Aggregate.

11.4.5 Contractors Pollution Liability Insurance: $1,000,000.00 each claim and **$1,000,000.00** aggregate coverage. The foregoing per claim coverage plus appropriate aggregate coverage depending on the size of the job for contractor caused pollution events such as asbestos or lead abatement, but not limited to only these pollution causes of loss. There is absolutely no exclusion for hazardous materials, including but not limited to asbestos and lead.

11.4.6 Builder's Risk Insurance: coverage equaling the value of the construction component of the Project. "All Risk" Builders Risk insurance (also known as "course of construction") coverage with limits equal to or better than the maximum possible loss of all materials of construction used or contemplated under this Contract, including all materials in transit and all materials in storage wherever stored and the value of all subsequent Contract changes. This insurance shall include the interests of the City, Department of Education, KBE Building Corporation, the Contractor and all subcontractors. If deemed necessary by the City's Risk Manager, this insurance shall also include coverage for the total value of the Project's constructed property and shall be valid until a certificate of occupancy is issued. Upon the issuance of said certificate, the City will assume responsibility for insuring said property.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury and KBE Building Corporation shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: The Contractor's General, Automobile, Builder's Risk, Pollution Liability and Excess/Umbrella Liability Insurance policies shall be

endorsed to add the City and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees as an additional insured and provide waiver of subrogation on all policies except Builder's Risk and Pollution Liability. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury and its Board of Education and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are listed as additional insured on all lines of coverage except Pollution Liability and waiver of subrogation applies to all lines of coverage except Pollution Liability and Builder's Risk as their interest may appear".** The City's Invitation to Bid Number must be shown on the certificate of insurance to assure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy(ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of than thirty (30) calendar days has been mailed to the City's Using Agency and a copy to the City's Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

11.8. No later than thirty (30) calendar days after Contractor receipt, the Contractor shall deliver to the City a copy of the Contractor's insurance policies and endorsements and riders.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: **EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT**, as supplemented in the Department of Labor Regulations (29 CFR, Part 3); **DAVIS BACON ACT** as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the **HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974**, as amended; **TITLE 31** and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn. Gen. Stat. 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.2.2 The Contractor is aware of, and shall comply with, as applicable, the provisions of the Federal Davis-Bacon Act, the American Rescue Plan Act, Pub. L. No. 117-2 (March 11, 2021), the Elementary and Secondary School Emergency Relief Supplemental Appropriations Act of 2021 signed into law December 27, 2020 (ESSER II Fund) and the American Rescue Plan Elementary and Secondary School Emergency Relief Fund signed into law March 11, 2021, all the provisions of which are hereby incorporated by reference and made a part of this Contract.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as specified herein. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements and will require the same of all subcontractors.

13.3. Contractor Corrective Action.

13.3.1. Pursuant to Conn. Gen. Stat. § 4a-60, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every quasi-public agency project contract and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take corrective action to insure that applicants with job-related qualifications are employed and that employees are treated when employed

without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, as amended by this act, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56, as amended by this act.

(b) If the contract is a public works contract, municipal public works contract or contract for a quasi-public agency project, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works or quasi-public agency project.

13.3.2. Pursuant to Conn. Gen. Stat. § 4a-60a, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of

Connecticut, and employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

14. Good Jobs Ordinance

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance, and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be

allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term "Good Faith Efforts" shall have the same meaning as it does in the Good Jobs Ordinance.

The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan-of-action shall include the anticipated number of job positions required for the Work. Not later than five (5) business day prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-action and other relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create

weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2 Liquidated Damages Applicable To Section 14.1

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five-day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due to the City, as liquidated damages, because of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated hereunder to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Place Holder.

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation and disbursement of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City if sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the

appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. Regarding third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third-party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any

holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, one or all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

17.3 Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City's Using Agency, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its

requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing, made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract at any time during the period of this Contract or at any time during the twelve-month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional cost or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request.

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP No. 7844** and **(ii)** the Contractor's Bid response to **RFP No. 7844**, dated October of 2023. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party because the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that it waives a trial by jury as to all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor: All Trade Industries, LLC
94 Edwin Avenue
Waterbury, CT 06708

City: City of Waterbury
Corporation Counsel's Office
Third Floor
City Hall
235 Grand Street
Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10 The Contractor hereby acknowledges receipt of a copy of Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text

of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on **"TITLE III: ADMINISTRATION",** then click **on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM"**. For Chapter 39, click on **"TITLE III: ADMINISTRATION"**, then click on **"CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"**].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1 Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2 Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3 Bidder: A person, partnership, corporation or other business organization submitting a bid on the form for the Work contemplated.

35.4 City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5 Construction Supervisor: An employee of the City of Waterbury, or another City duly authorized person.

35.6 Contract Time: The number of days as stated in the Contract to: **(i)** achieve Substantial Completion and **(ii)** Final Completion.

35.7 Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8 Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized City representative's, written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9 Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.10 Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11 Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.12 Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13 Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14 Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15 Substantial Completion: The time at which, in the opinion of the Engineer, the Project (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Project (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Project mean Substantial Completion thereof.

35.16 Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17 Supplementary General Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18 Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19 Using Agency: School Inspector's Office, Department of Education.

SIGNATURE PAGE FOLLOWS

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

_____

_____

CITY OF WATERBURY

By:_____
Neil M. O'Leary, Mayor

Date: _____

WITNESSES:

_____

_____

ALL TRADE INDUSTRIES, LLC

By:_____
John Orsini, duly authorized

Date: _____

ATTACHMENT A

ATTACHMENT B

ATTACHMENT C

REQUEST FOR PROPOSAL
NO. 7844
BY
THE CITY OF WATERBURY
DEPARTMENT OF EDUCATION
FOR
KITCHEN RENOVATIONS
AT THE
CROSBY AND WILBY HIGH SCHOOLS

The City of Waterbury, Department of Education (hereinafter "City"), is seeking proposals for kitchen renovations at the two high schools listed below (the "Project") from third parties ("proposers" or "contractors") to furnish all labor, materials, tools, and equipment necessary to execute and properly finish the Project, as detailed and described herein:

- Crosby High School Kitchen Renovations
- Wilby High School Kitchen Renovations

Please find the link to all pertinent documents (drawings and specifications for the Project):

DRAWINGS - CROSBY HIGH SCHOOL KITCHEN

DRAWINGS - WILBY HIGH SCHOOL KITCHEN

A. Background and Intent

The Waterbury Board of Education (the "BOE") is seeking to engage a qualified vendor to provide ALL Selective Demolition and **ALL** new work for kitchen renovations to Crosby High School and Wilby High School, including all appurtences required for complete, fully functional and fully operational installation all as described in the contract documents. BOE plans to award a contract for requested services as detailed in this RFP.

The BOE is the recipient of Secondary School Emergency Relief ("ESSER") funds being passed through the State Department of Education. The BOE anticipates a portion of the ESSER funding will be appropriated by the BOE for the Project.

B. Qualifications

Eligible proposers will be those consultants, businesses, and institutions possessing the following qualifications:

1. Experience and expertise in regard to providing the types of, or similar services, as those set forth in the Scope of Services. Provide a minimum of three (3) examples of projects by which the proposer believes satisfies this qualification.
2. Experience on school construction projects of similar scope and technical requirements within the last five (5) years. Specifically, experience working with the CT Department of Administrative Services ("DAS"), Office of School Construction Grants and Review ("OSCG&R") and a thorough understanding of

policies and procedures with school construction grants.

3. A proven track record in providing these types of or similar services in the Connecticut municipal market and understanding of standards and requirements typical for such services.
4. Adequate staff/employees to perform/complete the work in a timely manner.
5. Knowledge of, and compliant with, all applicable federal and state laws and regulations governing the services to be provided under this RFP.
6. At the time of contract award has or will have sufficient capacity, facilities, equipment, labor, financial capability, and experience to provide all services required hereunder throughout the Contract Term, plus any extensions thereof, and to conduct all such services in a regulatory-compliant and reliable manner.
7. Provide a minimum of three (3) examples of projects by which the proposer believes satisfies the above qualifications.

C. Scope of Services

I. Scope of Project

1. **Project – Complete Renovation of Culinary Arts 123D, Culinary Arts 107E and Classroom 106 in Crosby High School, and renovations to the Culinary Arts Room at Wilby High School as required by the contract documents, included but not limited to the following:**

   a. All General Requirements;
   b. All Concrete Work
      - Any required concrete floor patching for new equipment and fixtures as shown on the contract drawings;
   c. All Masonry;
   d. All Metals;
   e. All Wood, Plastics and Composites;
   f. All Openings;
   g. All Finishes
      - Protection of existing finishes and fixtures.
      - Replacement of any damaged or missing floor and/or ceiling tiles;
   h. All Specialties;
   i. Receiving, Storage, Handling and Installation of **ALL** equipment furnished by the City and installed by contractor. Storage, handling and installation of ALL equipment, specialties, fixtures shown to be relocated.
      - All labor, equipment, materials required to tie-in equipment furnished by others is the responsibility of the contractor. All coordination with electrical, plumbing requirements for owner furnished equipment is the responsibility of the contractor;
   j. All Plumbing; and
   k. All Electrical.
2. Tracing of all control and power wiring for the existing control wiring and BAS control system. Cut, cap and remove as required for new work.

3. Removal and legal disposal of all packing materials, crating and other materials used for delivery and installation.
4. Repair, clean, and turn over all impacted existing to remain areas to proper functioning condition.
5. All warranty, close-out, commissioning, or maintenance of equipment as indicated in drawings and specifications .

D. Agreement Period

The agreement period for any contract or purchase order resulting from this RFP is anticipated to be **one hundred twenty (120)** days from Notice to Proceed to Substantial Completion and **one hundred fifty (150)** days to Final Completion.

E. Insurance

The respondent shall provide insurance as set for in **Attachment D** provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-"Best's Rating and at least a Class V3 or better financial category as shown in the most current A.M. Best Company rating. General Information.

F. General Information

1. The City is an Equal Opportunity and Affirmative Action employer and does not discriminate in its hiring, employment, or business practices. The City is committed to complying with the Americans with Disabilities Act of 1990 (ADA) and does not discriminate on the basis of disability in admission to, access to, or operation of its programs, services, or activities.

2. **There will be a mandatory Information Session with respect to this RFP on October 2, 2023 at 2:00 p.m., starting at Crosby High School. THOSE NOT ATTENDING ALL Information Sessions WILL NOT BE ELIGIBLE TO SUBMIT A PROPOSAL.**

List of Schools:

Crosby High School	300 Pierpont Road
Wilby High School	568 Bucks Hill Road

3. Proposers must sign the items and any forms included in **Attachment A**. (Contract Compliance Packet).

4. All questions and communications about this request for Proposal and submission requirements must be directed to the City of Waterbury ProcureWare website and must be received **by 2:00 p.m. on October 5, 2023**. Prospective proposers must limit their contact regarding this RFP to the Purchasing Director or such other person otherwise designated by the Purchasing Director. Responses to questions submitted by the above date or identified at any Information Session to be held in regard to this RFP, **along with any changes or amendments to this RFP**, will be available via

the City of Waterbury ProcureWare website **by 2:00 p.m. on October 10, 2023**. It shall be the responsibility of the proposer to download this information. If you have any procedural questions in this regard, please call the Purchasing Director at (203) 574-6748.

G. Management

Any contract or purchase order resulting from this RFP will be managed by The City of Waterbury School Inspector's Office and KBE Building Corporation.

H. Conditions

All those submitting proposals must be willing to adhere to the following conditions and must positively state this in the proposal:

1. All proposals in response to this RFP are to be the sole property of the City. Proposers are encouraged **not** to include in their proposals any information which is proprietary. All materials associated with this procurement process are subject to the terms of state laws defining freedom of information and privacy and all rules, regulations and interpretations resulting from those laws.

2. Any product, whether acceptable or unacceptable, developed under a contract awarded as a result of the RFP is to be the sole property of the City.

3. The City will ultimately determine the timing and sequence of events resulting from this RFP.

4. The proposer agrees that the proposal will remain valid for a period of **ninety (90) days** after the closing date for the submission and may be extended beyond that time by mutual agreement.

5. The City may amend the terms or cancel this RFP any time prior to the execution of a contract or purchase order for these services if the City deems it to be necessary, appropriate or otherwise in the best interests of the City. Failure to acknowledge receipt of amendments in accordance with the instructions contained in the amendments; may result in a proposal not being considered. At his option, the City's Director of Purchasing may provide all proposers with a limited opportunity to remedy any technical deficiencies identified by the City in their initial review of proposals.

6. The proposer must certify that the personnel identified in its response to this RFP will be the persons actually assigned to the Project. Any additions, deletions or changes in personnel from the proposal during the course of the agreement period must be approved by the City, with the exception of personnel who have terminated employment. Replacements for personnel who have terminated employment are subject to approval by the City. At its discretion, the City may require the removal and replacement of any of the proposer's personnel who do not perform adequately, regardless of whether they were previously approved by the City.

7. All subcontractors hired by the proposer awarded a contract or purchase order as a

result of this RFP must have prior approval from the City prior to and during the agreement period.

8. Any costs and expenses incurred by proposers in preparing or submitting proposals are the sole responsibility of the proposer.

9. A proposer must be prepared to present evidence of experience, ability, financial standing, and any other information deemed necessary by the City to satisfactorily meet the requirements set forth or implied in the proposal.

10. No additions or changes to the original proposal will be allowed after submittal, except as may be allowed by the City, at its option, in accordance with Section G.5. of this RFP. While changes are not permitted, clarification of proposals may be required by the City at the proposer's sole cost and expense. The final price and scope of services of any contract or purchase order resulting from this RFP may be negotiated with responsible proposers.

11. The proposer may be required to give presentations to the extent necessary to satisfy the City's requirements or needs. In some cases, proposers may have to give presentations or further explanations to any RFP selection committee established by the City.

12. The proposer represents and warrants that the proposal is not made in connection with any other proposer and is in all respects fair and without collusion or fraud. The proposer further represents and warrants that it did not participate in any part of the RFP development process, had no knowledge of the specific contents of the RFP prior to its issuance and that no agent, representative or employee of the City participated directly in the proposer's proposal preparation.

13. All responses to the RFP must conform to instructions. Failure to include any required signatures, provide the required number of copies, to meet deadlines, answer all questions, follow the requested format or fail to comply with any other requirements of this RFP may be considered appropriate cause for rejection of the response.

14. The proposer must accept the City's standard agreement language. **See Attachment B**.

15. Any contract or purchase order resulting from this RFP process will represent the entire agreement between the proposer and the City and will supersede all prior negotiations, representations, or agreements, alleged or made, between the parties. The City shall assume no liability for payment of services under the terms of the contract or purchase order until the successful proposer is notified that the contract or purchase order has been accepted and approved by the City. Any contract resulting from this RFP may be amended only by means of a written instrument signed by the proposer and signed by the Mayor.

I. Proposal Requirements & Required Format

One original (clearly identified as such) and **five (5)** paper copies of the proposal, as well

as a copy of the original proposal in pdf format on a CD or flash drive, must be received at the following address no later than **10:30 a.m. on October 17, 2023.**

Mr. Kevin McCaffery,
Director of Purchasing
City of Waterbury
235 Grand Street
Room 103
Waterbury, CT 06702

Proposals submitted must be bound, paginated, indexed and numbered consecutively. Proposers shall complete **Attachment C** addressed to Mr. McCaffery, which, in part, includes a statement by the proposer accepting all terms and conditions and requirements contained in the RFP, and which shall be signed by a duly authorized official of the organization submitting the proposal. Proposers shall also, as indicated in **Attachment C**, identify the name of a contact person, along with their telephone number, email address, if applicable, and address, who can be contacted for the purpose of clarifying the information contained in their response to this RFP. In addition to any other information required in **Attachment C**, proposers shall provide their firm's authorization and a request to any persons, firm, or corporation to furnish any information requested by the City of Waterbury in the verification of the recitals included in its response to this RFP.

Proposals must set forth accurate and complete information for each of the items listed below; at the City's discretion, failure to do so could result in disqualification.

1. Proposer's Information: Please provide the following information:
   a. Firm Name
   b. Permanent main office address
   c. Date firm organized.
   d. Legal Form of ownership. If a corporation, indicate where incorporated.
   e. How many years have you been engaged in services you provide under your present name?
   f. Names, titles, reporting relationships, and background and experience of the principal members of your organization, including officers.

2. Experience, Expertise and Capabilities
   a. Philosophy Statement and Business Focus. A statement of the proposer's philosophy and approach in undertaking the services of the nature outlined in the RFP, as well as a description of its primary business focus.
   b. Summary of Relevant Experience. A listing of all projects that the proposer has completed within the last three (3) years must be provided, as well as all projects of a similar nature to those included in the Scope of Services in this RFP. The following information shall be provided for each organization listed under this subsection:
      - Organization name and the name, title, address and telephone number of a responsible contact person.
      - Nature of services provided and dates services started and actually completed. Please indicate, for each assignment, if it was completed

within the original contract timeframe and budget. If not, please explain.

- For each Project done for a municipality or other government agency, please indicate the gross cost of the agreement.
- Additionally, please list any contracts or purchase orders in the last three (3) years between the proposer and any agency of the City of Waterbury.

c. Personnel Listing. A complete listing of the staff identified in the work plan by job classification, along with their resumes. Each resume shall include the individual's qualifications and experience in the subject area.

d. Conflict of Interest. Disclose any current (within the last 3 years) business, financial, personal or other types of relationships which may pose a conflict of interest.

3. Statement of Qualifications and Work Plan

a. Qualifications. Please describe your firm's qualifications, experience and capabilities as they pertain to each of the areas of qualifications listed, as well as those of the personnel to be assigned to this Project.

b. Work Plan. Please describe the approach that would be generally followed in undertaking the Scope of Services in Section C above.

c. Services Expected of the City. Identify the nature and scope of the services that would be generally required of the City in undertaking these projects.

4. Cost Schedule. Proposals shall include a single price for work to be performed in accordance with this RFP, inclusive of all personnel and non-personnel expenses. This price should encompass the entire Scope of Services in this RFP. The City reserves the right to negotiate costs, the scope of services, and key personnel based on provider proposals. In order for the City to evaluate the proposed cost, proposers must include each element in the Work Plan outlined in Section H.3.b. above, the staff, hours, hourly rates and the total cost. Include details generally associated with non-personnel costs as an additional cost section.

Since the City may desire to consider the proposer's experience, qualifications, statement of work, and other aspects of the RFP prior to the Cost Proposal, the Cost Proposal shall be sealed in a separate envelope marked "Confidential: Cost Proposal".

NOTE: The City is exempt from the payment of excise, transportation and sales taxes imposed by the Federal Government and/or the State. Such taxes must not be included in prices.

5. Information Regarding: Failure to Complete Work, Default and Litigation.

Please respond to the following questions:

a. Have you ever failed to complete any work awarded to you? If so, where and why?;

b. Have you ever defaulted on a contract? If so, where and why?;

c. Is there any pending litigation which could affect your organization's ability to perform this agreement? If so, please describe;
d. Has your firm ever had a contract terminated for cause within the past five years? If yes, provide details;
e. Has your firm been named in a lawsuit related to errors and omissions within the past five years? If yes, provide details;
f. During the past seven years, has your firm ever filed for protection under the Federal bankruptcy laws? If yes, provide details; and
g. Are there any other factors or information that could affect your firm's ability to provide the services being sought about which the City should be aware?

6. Exceptions and Alternatives. Proposers wishing to take any exceptions to any requirement in the RFP shall state and explain such exceptions. The City may accept proposals which take exception to any requirements in this RFP, or which offer any alternative to a requirement herein, as well as consider such exceptions and alternatives in evaluating responses. Any exception or alternative must be clearly delineated and cannot materially affect the substance of this Request for Proposals.

7. Additional Data. Any additional information which the proposer wishes to bring to the attention of the City that is relevant to this RFP.

J. Evaluation of Proposals; Selection Process

1. Evaluation Criteria

Certain criteria will be considered during the selection process. The following criteria are listed as a guide for the proposer in understanding the City's requirements and expectations for this Project and are not necessarily all inclusive or presented in order of importance:

a. Proposed statement of work. Emphasis will be on grasp of the issues involved, soundness of approach and the quality of the overall proposal.
b. Proposed cost schedule.
c. Experience, expertise, and capabilities of the proposer. Background, qualifications, and previous experience of personnel to be assigned to the Project and their demonstrated competence, experience and expertise in the type of work to be performed. The type of experience, expertise, capabilities, and qualifications desired are outlined in Section B. - Qualifications of this RFP. The City may contact one or more of the organization references listed in Section H.2.b. of this RFP as part of assessing the experience, expertise and capabilities of the proposers or those selected as the finalist(s).
d. Time, Project and Cost Schedule. Emphasis will be on the proposer's record with completing tasks and producing the necessary products within required time frames and within budget.

2. Selection Process

The City of Waterbury may elect to have the proposals evaluated by a committee as part of making a selection. If deemed necessary, the City reserves the right to

schedule interviews/oral presentations as part of the selection process, which invitations for interviews may involve a short-listing of the proposals received.

K. Rights Reserved To The City

The City reserves the right to award in part, to reject any and all proposals in whole or in part for misrepresentation or if the proposer is in default of any prior City contract, or if the proposal limits or modifies any of the terms and conditions and/or specifications of the RFP. The City also reserves the right to waive technical defects, irregularities and omissions if, in its judgment, the best interest of the City will be served.

L. Federal, State and Local Employment Requirements

Contractors shall be obligated to fully comply with the attached Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects, i.e., City of Waterbury Ordinances Chapter 34 ("Good Jobs Ordinance"), Federal Davis- Bacon Act, Federal American Recovery and Reinvestment Act of 2009, and the Housing and Urban Development Section 3 Clause, all as further specified in the attached City of Waterbury Contract form. Also attached hereto, is a full copy of the aforesaid City of Waterbury Ordinance, commonly referred to as the "Good Jobs Ordinance":

1. The City's Good Jobs Ordinance (Code of Ordinances Chapter 34) applies to this Project. Proposes attention is further directed to the aforesaid City of Waterbury Ordinance, commonly referred to as the "Good Jobs Ordinance," attached hereto as Attachment B-3; and

2. Wage rates for this Project are subject to the minimum wage rates as per State of Connecticut Labor Department "Prevailing Wage Rates" and Federal Davis-Bacon Act.

M. State Set-Aside Requirements – Not Applicable

The contractor who is selected to perform this municipal public works project, funded in whole or part by the State, must comply with **CONN. GEN. STAT**. §§ 4a-60, 4a-60a, 4a- 60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5. An Affirmative Action Plan must be filed with and approved by the Commission on Human Rights and Opportunities prior to the commencement of construction.

State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of **CONN. GEN. STAT.** § 4a-60g, as amended. (25% of the work with DAS-certified Small and Minority owned businesses, and 25% of that work with DAS-certified Minority, Women and/or Disabled owned businesses.) The contractor must demonstrate good faith effort to meet the 25% set-aside goals.

For municipal public works contracts, the contractor must file a written or electronic non-

discrimination certification with the Commission on Human Rights and Opportunities.

Forms can be found at:

**********.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806.

N. State DAS Requirements for Construction Projects

If applicable, proposers shall submit with their Proposals their DAS Contractor Prequalification Certificate along with a current Updated Bid/Proposal Statement. In addition, any named subcontractor whose subcontract value is equal to or greater than $500,000 shall hold a current DAS Contractor Prequalification Certificate in the closest applicable Classification of the work that the subcontractor will complete in the contract. The proposer must submit, with their proposal, all applicable Subcontractor DAS Prequalification certificates. Any Proposal submitted without a copy of the DAS Prequalification Certificate and an Updated Bid/Proposal Statement for the proposal and DAS Prequalification Certificates for subcontractors whose subcontract value is equal to or greater than $500,000 shall be invalid.
The successful proposer and each of its subcontractors having subcontracts in value equal to or greater than $500,000 shall maintain and keep current their respective DAS Contractor Prequalification Certificates at all times during the term of the Contract and any warranty period set forth in the Contract Documents.

O. Bid Bond

Each proposal shall be submitted and be accompanied by a Proposal Security in the amount of ten (10) percent of the Total Proposal Price.

P. Performance/Payment Bonds

The proposer to whom a contract is offered must furnish to the City if that contract has a total cost greater than $50,000.00, a 100 percent Performance Bond with a surety, and in a form acceptable to the City. In the City's sole discretion, it may also require a 100 percent Payment Bond and/or other additional security with a surety and in a form acceptable to the City.

Five (5) Attachment A Documents

- ANNUAL STATEMENT OF FINANCIAL INTEREST
- DEBARMENT CERTIFICATION
- CITY OF WATERBURY DISCLOSURE OF OUTSTANDING OBLIGATIONS
- CORPORATE RESOLUTION
- LLC RESOLUTION

One (1) Attachment B Document

- SAMPLE CONTRACT
- AMERICAN RESCUE PLAN ACT FUNDED PROJECTS, DATED JUNE 2021

One (1) Attachment C Document

- ADDENDUM/CERTIFICATION/NOTICE OF ACCEPTANCE

One (1) Attachment D Document

- INSURANCE REQUIREMENTS

One (1) Attachment E Document

- PRICING SHEET

One (1) Attachment F Document

- PREVAILING WAGES

One (1) Attachment G Document

- GOOD JOB ORDINANCE

ATTACHMENT A

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

I. Outstanding Purchase Orders of Contracts with the City

A. Contracts

No Contracts with the City ☐

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

B. Purchase Order(s).

No Purchase Order(s) with the City ☐

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

II. Financial Interest Disclosure

(Public Officials, Employees or Board and Commission Members with interest in Person or Entity Conducting Business with the City)

No Officials, Employees or Board and Commission Members with Financial Interest ☐

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc…)

Interest Held By:
Self ☐ Spouse ☐ Joint ☐ Child ☐

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc…)

Interest Held By:
Self ☐ Spouse ☐ Joint ☐ Child ☐

1. I certify that this Annual Statement of Financial Interests is a complete and accurate statement of those matter required to be disclosed by me pursuant to §39.061 of the Code of Ordinances.

2. I understand that if I fail to file an Annual Statement (or amendment thereto) or an inaccurate Statement I will be in violation with Chapter 39 of the Code of Ordinance and, thereby, subject to the remedies set forth in §§38.71 and 39.101 of said Code.

3. I understand that I must file with the City Clerk, within fifteen (15) days following any reportable occurrence, any amendments to the Annual Statement.

I have read and agree to the above certification.

_____
(Name of Company, if applicable)

_____ _____
Signature of Individual (or Authorized Signatory) Date

_____
Print or Type Name and Title (if applicable)

DELIVERED | By Mail ☐ Hand-Delivered ☐

City of Waterbury Certification
Regarding
Debarment, Suspension, Ineligibility and Exclusion

If the transaction is Federally funded, in whole or in part (including pass through grants to state and/or municipal government), this certification is required by the regulations implementing one or more Presidential Executive Orders. If this transaction is funded by the State of Connecticut, in whole or in part, this certification is required in accordance with one or more State of Connecticut general statutes.

1. By signing and submitting the attached proposal and/or this document, the prospective lower tier participant, vendor, or contractor is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant, vendor, or contractor knowingly rendered an erroneous certification, in addition to other remedies available to the Federal , State, or City government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant, vendor or contractor shall provide immediate written notice to the person to which the attached proposal and/or this document is submitted if at any time the prospective lower tier participant, vendor or contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction", "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principal", "proposal", and "voluntarily excluded", as used herein, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 and/or State of Connecticut statutes and regulations. You may contact the person to which this proposal and/or this document is submitted for assistance in obtaining a copy of the foregoing.
5. The prospective lower tier participant, vendor or contractor agrees by submitting the attached proposal and/or this document that, should the proposed covered transaction be entered into, it shall not knowingly enter into any covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant, vendor or contractor further agrees by submitting the attached proposal and/or this document that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion-Lower Tier Covered Transactions", without modification, in all covered transaction and in all solicitations for covered transactions.
7. A participant in a covered transaction may rely upon the certification of a prospective participant in a covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may but is not required to, check the Non-procurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required herein. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 herein, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal, State or Municipal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification

(1) The prospective recipient of monies hereby certifies, by submission of its attached proposal and/or by execution of this document, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, disqualified, or voluntarily excluded from bidding or participation in the proposed transaction by any Federal, State, or Municipal department or agency or by the statutes, regulations or ordinances of the foregoing departments and agencies.

(2) Where the prospective recipient of monies is unable to certify to any of the statements in this certification, such prospective participant shall attach a written explanation hereto.

Full Legal Name and address of Recipient, Vendor, or Contractor: _____
_____
_____.

Print Name and Title of Authorized Representative: _____

Signature of Authorized Representative: _____

Date: _____

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

For the purposes of this Disclosure of Outstanding Financial Obligations, the following definitions apply:

(a) "Contract" means any Public Contract as defined below.

(b) "Person" means one (1) or more individuals, partnerships, corporations, associations, or joint ventures.

(c) "Public Contract" means any agreement or formal commitment entered into by the city to expend funds in return for work, labor, services, supplies, equipment, materials or any combination of the foregoing, or any lease, lease by way of concession, concession agreement, permit, or per agreement whereby the city leases, grants or demises property belonging to the city, or otherwise grants a right of privilege to occupy or to use said property of the city.

(d) "City" means any official agency, board, authority, department office, or other subdivision of the City of Waterbury.

State of_____

SS.:_____

County of_____

_____, being first duly sworn, deposes and says that:

1. I am the ***owner, partner, officer, representative, agent or*** _____ of _____(Contractor's Name), the Contractor that has submitted the attached agreement.

2. I am fully informed respecting the preparation and contents of the attached Agreement and of all pertinent circumstances respecting such Agreement;

3. That as a person desiring to contract with the City (check all that apply):

____ The Contractor and each owner, partner, officer, representative, agent or affiliate of the Contractor has filed a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor are required to file a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, owes back taxes to the City of Waterbury

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, has any other outstanding obligations to the City of Waterbury

4. The following list is a list of the names of all persons affiliated with the business of the Contractor, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1				
2				
3				
4				

5. That as a person desiring to contract with the City:

(a) The Contractor or an owner, partner, officer, representative, agent or affiliate of the Contractor provides, or has provided, services or materials to the City within one (1) year prior to the date of this disclosure, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1				
2				
3				
4				

(b) The Contractor possesses an ownership interest in the following business organizations, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized) :

Organization Name	Address	Type of Ownership
1		
2		
3		
4		

(c) The following persons possess an ownership interest in the Contractor. If the Contractor is a corporation, list all of the officers of the corporation and the names of each stockholder whose shares exceed twenty-five

(25) percent of the outstanding stock, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	DOB	Stock %
1			
2			
3			
4			

(d) Of the following of the affiliates, individuals or business entities identified in this affidavit, list each that owns, owned, or within one (1) year prior to the date of this disclosure has owned, taxable property situated in the City of Waterbury, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Address	DOB
1				
2				
3				
4				

(e) If the Contractor conducts business under a trade name, the following additional information is required: the place where such entity is incorporated or is registered to conduct such business; and the address of its principal place of business, if none, state none:

TRADE NAME	PLACE OF INCORPORATION/REGISTRY	PRINCIPAL PLACE OF BUSINESS
1		
2		
3		
4		

I hereby certify that the statements set forth above are true and complete, and I understand that any incorrect information or omission of information from this affidavit may result in the immediate termination of the Contractor's agreement with the City of Waterbury.

For Partnership/Sole Proprietor

In presence of:

_____ _____
Witness Name of Partnership/Business

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

By: _____
Name of General Partner/ Sole Proprietor

_____
Address of Business

State of _____)

) SS

County of _____)

_____ being duly sworn,

Deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202_.

_____
(Notary Public)

My Commission Expires: _____

For Corporation

_____
Witness

_____
Name of Corporate Signatory

_____
Address of Business

Affix
Corporate
Seal

By:_____
Name of Authorized Corporate Officer

Its:_____
Title

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

State of _____)

) SS

County of _____)

_____ being duly sworn,

deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202__.

_____
(Notary Public)

My Commission Expires: _____

CORPORATE RESOLUTION

I, _____, hereby certify that I am the duly elected and acting Secretary of _____, a corporation organized and existing under the laws of the State of _____, do hereby certify that the following facts are true and were taken from the records of said corporation.

The following resolution was adopted at a meeting of the corporation duly held on the _____ day of _____, _____.

"It is hereby resolved that _____ is authorized to make, execute and approve, on behalf of this corporation, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the corporate seal of said _____ corporation this _____ day of _____, 202__.

_____
Secretary

TO BE SIGNED ON DATE OF CONTRACT EXECUTION

LIMITED LIABILTY COMPANY RESOLUTION

I, _____, hereby certify that I am the duly authorized and acting Member / Manager (circle one) of_____, a limited liability company organized and existing under the laws of the State of_____, do hereby certify that the following facts are true and were taken from the records of said LLC.

The following resolution was adopted at a meeting of the LLC duly held on the _____ day of _____, _____.

"It is hereby resolved that _____is authorized to make, execute and approve, on behalf of this LLC, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the company seal of said _____ , LLC this _____ day of _____, 202__.

_____
Manager/Member

.

TO BE SIGNED ON DATE OF CONTRACT EXECUTION

ATTACHMENT B

Construction Contract for Kitchen Renovations at The Crosby and Wilby High Schools between City of Waterbury and

_____

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the **CITY OF WATERBURY**, City Hall, 235 Grand Street, Waterbury, Connecticut (the "City") and _____, **LLC**, located at _____, Connecticut, a duly registered Connecticut limited liability company (the "Contractor").

WHEREAS the Contractor submitted a bid to the City in response to **Request for Proposal ("RFP") No. 7844** for kitchen renovations at The Crosby and Wilby High Schools; and

WHEREAS the City accepted the Contractor's bid for **RFP No. 7844**; and

WHEREAS the City desires to obtain the Contractor's services pursuant to the terms set forth in this Contract (the "Project").

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as the "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with **(i)** all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and **(ii)** generally accepted professional standards.

1.1. The Project consists of kitchen renovations at the following schools in Waterbury: Crosby High School (300 Pierpont Road) and Wilby High School (568 Bucks Hill Road). All work shall be performed and completed in accordance with Project's plans and specifications, all of which are more particularly detailed and described in the Bid Documents in **Attachment A**. **Attachment B** includes the **ARPA** (defined below) required contract provisions and, along with **Attachment A**, are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

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1.1.1 City's **RFP No. 7844**;

1.1.2 Addendums _ through _ to **RFP No. 7844** (attached hereto);

1.1.3 Contractor's Price Proposal, dated _____, 2022, consisting of one page (attached hereto);

1.1.4 Contractor's Response with associated attachments to **RFP No. 7844**, dated _____, 2022, consisting of __ pages, (attached hereto);

1.1.5 "City of Waterbury, Board of Education, **RFP No. 7844**, Attachment _ Scope of Services" (also referred to as "Technical Specifications"), consisting of 506 pages and dated November 30,2022 (attached hereto);

1.1.6 "Site Map" with List of Drawings prepared by BL Companies for Wilby High School, dated May 25, 2023, consisting of 11 pages, and for Crosby High School, dated May 12, 2023, consisting of 15 pages, all of which are accessible through the links contained in **RFP No. 7844**;

1.1.7 State of Connecticut Prevailing Wage Schedule dated September 19, 2023, and related information, consisting of 8 pages (attached hereto and as otherwise incorporated by reference).

1.1.8 Contractor's Certificate of Insurance (attached hereto, or otherwise incorporated by reference**);**

1.1.9 Contractor's Performance Bond (attached hereto, or otherwise incorporated by reference);

1.1.10 Contractor's Payment Bond (attached hereto, or otherwise incorporated by reference);

1.1.11 All amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.12 All applicable Federal, State and local statutes, regulations charter and ordinances, including those required for the American Rescue Plan Act of 2021 ("**ARPA**") and the two Elementary and Secondary School Emergency Relief Fund programs (collectively, "**ESSER**") to the extent the Project receives funding from same, are incorporated by reference, as well as Attachment B, titled "**CONSTRUCTION CONTRACTS - REQUIRED CONTRACT PROVISIONS – AMERICAN RESCUE PLAN ACT FUNDED PROJECTS, DATED JUNE 2021**,"; and

1.1.13 All applicable permits and licenses (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument (including **Attachment B**) are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflict with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically:

1.2.1 All applicable Federal, State, and local laws, regulations, charter and ordinances;

1.2.2 Contract Amendment(s) and Change Orders;

1.2.3 The Contract;

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1.2.4 Addendums to **RFP No. 7844**;

1.2.5 **RFP No. 7844** including City of Waterbury, Board of Education, **RFP No. 7844**, Scope of Services/Technical Specifications;

1.2.6 Contractor's Price Proposal;

1.2.7 Contractor's Response; and

1.2.8 Drawings.

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Contractor hereby represents that, to the extent required by Federal, State and local statutes, regulations, codes, ordinances, and policies, that the Contractor and/or its employees be licensed, certified, registered, or otherwise qualified, the Contractor and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Contractor shall provide the City with a copy of the Contractor's licenses, certifications, registrations, etc.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibilities to examine and to be thoroughly familiar with the City's bid document, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items, facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or

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products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submittal of its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP No. 7844** (collectively, the "Bid Documents");

3.1.7. it agrees that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8. it has carefully studied all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes; and

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3.1.10 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, state and federal health and safety regulations. Contractor shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall Contractor in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense **(i)** adequate off-site storage space for equipment, materials, incidentals, etc., and **(ii)** all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times; for example, a second shift from 3 p.m. to 11 p.m. may be possible. This provision shall not excuse the Contractor from timely performance under the Contract.

3.5. Cleaning Up. The Contractor shall always keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity unless the City gives prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables,

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incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the Contractor shall be made only with the prior written consent of an authorized representative of the City's Using Agency.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. Contractor's Employees. The Contractor shall always enforce strict discipline and good order among its employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are **(i)** subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or **(ii)** unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed; the Contractor shall thereafter wait for written instructions from the City before proceeding under such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, or necessary, or prudent for the performance of the Contractor's obligations under this Contract., and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for

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use under conditions like those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents (including KBE Building Corporation) to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment.

3.15. ARPA/ESSER. The Contractor possesses the knowledge and understanding of **ARPA** and **ESSER** and recognizes this Project is subject to the rules, regulations and mandatory contract provisions required by same.

3.16. Activities, Work, and Services Performed in Department of Education Facilities, on School Grounds, at Student Sporting Events, and/or where City Students are Present. For all activities in school facilities and/or Department of Education facilities, the Contractor shall first be required to coordinate all on-site visits and activities with the appropriate Department/personnel in Education, or the designated person and shall obtain any necessary clearance, ID badges, etc. Contractor shall enter and exit all school facilities and Department of Educational facilities as designated as authorized by the appropriate Department/personnel in Education, or the designated person.

3.17. Criminal Background Check and DCF Registry Check. The Contractor shall comply with the requirements of C.G.S. 10-222 c (g) and shall ensure, and represents to the City, that any employee who will be on school grounds/Department of Education Property/at Department of Education events and/or where City students are present, that will or may have direct contact with a student's while providing services pursuant to this Agreement, has stated, in writing, whether such person has ever been convicted of a crime or whether criminal charges were ever pending against such person. The Contractor shall further ensure, and represents to the City, that any person who will have direct contact with a student has submitted to a records check of the Department of Children and Families Child Abuse and Neglect Registry established pursuant to Conn. Gen. Stat. §17a-101k, as well as State and National criminal history records checks conducted in accordance with Conn. Gen. Stat. §29-17a, the Federal National Child Protection Act of 1993, and the Federal Volunteers for Children Act of 1998. The Contractor shall not permit any person with a disqualifying criminal history to have contact with a student. The contractor agrees the "direct contact" shall include the contractor and its employees providing services under this contract if said services are performed on school grounds/Department of Education Property/at Department of Education events and/or where City students are present.

4. Responsibilities of the City and City Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor

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with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities; initially, the Department of Education's School Inspector's Office and KBE Building Corporation are so designated.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract within **one hundred twenty (120) consecutive calendar days** of the City's written Notice to Proceed and shall reach Final Completion within **one hundred fifty (150) consecutive days** of the City's written Notice to Proceed ("Contract Time").

5.1. Attachment C is the Project's schedule. On a monthly basis, the Contractor shall deliver to the City a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will ensure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **Five Hundred and 00/100 Dollars ($500)** per consecutive calendar day for each calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as

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delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damages from any monies due to the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire Section 5, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for satisfactory provision of all the goods and services set forth in this Contract as follows in this Section 6. No claims for additional compensation will be considered for conditions made known to the Contractor prior to bidding. No claims for additional compensation will be considered on account of failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this Section 6, the fee payable to the Contractor shall not exceed _____ **DOLLARS ($_____)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Bid set forth in **Attachment A**, which is summarized below and inclusive of the required payment and performance bonds:

A. Crosby High School

i. $_____ (base payment); and
ii. $_____ (Owner Controlled Contingency subject to Section 6.1.1).

B. Wilby High School

i. $_____ (base payment); and

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ii. $_____ (Owner Controlled Contingency subject to Section 6.1.1).

6.1.1 Owner Controlled Contingency. At the sole discretion and control of the City, the Contingency amount as set forth in Section 6.1 above shall be utilized for the payment to the Contractor for additional work not covered by this contract and requested and approved by the City in writing to be performed by the Contractor. The basis for payment for the additional work under the Contingency shall be separate and apart from the Base Payment set forth above. The Owner Controlled Contingency shall be the funding source for any City approved additional work and services not provided for in this Contract. Unless properly approved in writing by the City (see Section 27), Contractor shall not be entitled to any compensation from such contingency. The parties agree that a Change Order Form shall be utilized to set forth the additional services, cost of additional services and time for Contractor to provide said service.

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage of five percent (5%) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not include additional sums that the City may withhold due to the Contractor's failure to comply with provisions of this Contract.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc., all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Contractor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP No. 7844** shall be borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

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6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final City payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all the foregoing payment obligations have been fully completed.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fees.

6.7. Attorney's Fees and Costs. The prevailing party in any litigation arising hereunder shall be entitled to attorney's fees and costs from the losing party.

6.8. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.9. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.10. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.10.1 Submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment by the City's or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not

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received by the fifteenth calendar day of the month, payment cannot be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide at the City's request, reasonable documentation to substantiate Contractor's Application for Payment.

6.10.2 Progress and Final Payments

The City will make progress payments on account of the Contract Price based on the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be based on the progress of the Scope of Services as determined by the City, according to the schedule of values provided for in the Contract Documents and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents, subject to reasonable monetary holdback for punch list items.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i)** 365 calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees and assign same to the City and the City shall avail itself of same to the fullest extent provided by the terms thereof. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. The City's beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon the City's final payment for the Project.

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8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project worksite and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project worksite without securing the prior written consent of an authorized City Using Agency employee.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, Board of Education or any of City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials by the Contractor or any employee of the Contractor , any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, the Board of Education, any of City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors,

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shareholders, commissions, agents, employees and officials as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** 365 calendar days after the Final Completion Date referenced elsewhere in this Contract.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City and KBE Building Corporation and all affiliated entities and each of their respective members, managers,

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partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, always during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance: $1,000,000.00 per occurrence, **$2,000,000.00** aggregate and **$2,000,000.00** Products and completed operations aggregate; providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance: $1,000,000.00 combined single limit (CSL); providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employers' Liability:

EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance: Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances -- **$1,000,000.00** each occurrence and **$1,000,000.00** Aggregate.

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11.4.5 Contractors Pollution Liability Insurance: $1,000,000.00 each claim and **$1,000,000.00** aggregate coverage. The foregoing per claim coverage plus appropriate aggregate coverage depending on the size of the job for contractor caused pollution events such as asbestos or lead abatement, but not limited to only these pollution causes of loss. There is absolutely no exclusion for hazardous materials, including but not limited to asbestos and lead.

11.4.6 Builder's Risk Insurance: coverage equaling the value of the construction component of the Project. "All Risk" Builders Risk insurance (also known as "course of construction") coverage with limits equal to or better than the maximum possible loss of all materials of construction used or contemplated under this Contract, including all materials in transit and all materials in storage wherever stored and the value of all subsequent Contract changes. This insurance shall include the interests of the City, Department of Education, KBE Building Corporation, the Contractor and all subcontractors. If deemed necessary by the City's Risk Manager, this insurance shall also include coverage for the total value of the Project's constructed property and shall be valid until a certificate of occupancy is issued. Upon the issuance of said certificate, the City will assume responsibility for insuring said property.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury and KBE Building Corporation shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: The Contractor's General, Automobile, Builder's Risk, Pollution Liability and Excess/Umbrella Liability Insurance policies shall be endorsed to add the City and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees as an additional insured and provide waiver of subrogation on all policies except Builder's Risk and Pollution Liability. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury and its Board of Education and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are listed as additional insured on all lines of coverage except Pollution Liability and waiver of**

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subrogation applies to all lines of coverage except Pollution Liability and Builder's Risk as their interest may appear". The City's Invitation to Bid Number must be shown on the certificate of insurance to assure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy(ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of than thirty (30) calendar days has been mailed to the City's Using Agency and a copy to the City's Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

11.8. No later than thirty (30) calendar days after Contractor receipt, the Contractor shall deliver to the City a copy of the Contractor's insurance policies and endorsements and riders.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: **EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT**, as supplemented in the Department of Labor Regulations (29 CFR, Part 3); **DAVIS BACON ACT** as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the **HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974**, as amended; **TITLE 31** and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new

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construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn. Gen. Stat. 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.2.2 The Contractor is aware of, and shall comply with, as applicable, the provisions of the Federal Davis-Bacon Act, the American Rescue Plan Act, Pub. L. No. 117-2 (March 11, 2021), the Elementary and Secondary School Emergency Relief Supplemental Appropriations Act of 2021 signed into law December 27, 2020 (ESSER II Fund) and the American Rescue Plan Elementary and Secondary School Emergency Relief Fund signed into law March 11, 2021, all the provisions of which are hereby incorporated by reference and made a part of this Contract.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as specified herein. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

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13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements and will require the same of all subcontractors.

13.3. Contractor Corrective Action.

13.3.1. Pursuant to Conn. Gen. Stat. § 4a-60, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every quasi-public agency project contract and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take corrective action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

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(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, as amended by this act, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56, as amended by this act.

(b) If the contract is a public works contract, municipal public works contract or contract for a quasi-public agency project, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works or quasi-public agency project.

13.3.2. Pursuant to Conn. Gen. Stat. § 4a-60a, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of Connecticut, and employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

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14. Good Jobs Ordinance

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor

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providing construction work and all lower tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term "Good Faith Efforts" shall have the same meaning as it does in the Good Jobs Ordinance.

The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan-of-action shall include the anticipated number of job positions required for the Work. Not later than five (5) business day prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-

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action and other relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2 Liquidated Damages Applicable To Section 14.1

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to

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achieve the Hiring Goals during a full five-day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due the City, as liquidated damages, because of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated hereunder to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Place Holder.

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

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16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation and disbursement of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City if sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

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16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. Regarding third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third-party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, one or all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

DRAFT - CITY RESERVES THE RIGHT TO MODIFY

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

17.3 Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City's Using Agency, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing, made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

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20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract at any time during the period of this Contract or at any time during the twelve-month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

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27.1. Requests for Change Orders. The City reserves the right on its own volition or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional cost or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request.

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

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27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP No. 7844** and **(ii)** the Contractor's Bid response to **RFP No. 7844**, dated _____. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party because the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that it waives a trial by jury as to all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

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32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor: _____
_____
_____

City: City of Waterbury
Corporation Counsel's Office
Third Floor
City Hall
235 Grand Street
Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular

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matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

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34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10 The Contractor hereby acknowledges receipt of a copy of Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on **"TITLE III: ADMINISTRATION",** then click **on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM"**. For Chapter 39, click on **"TITLE III: ADMINISTRATION"**, then click on **"CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"**].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

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34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1 Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2 Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3 Bidder: A person, partnership, corporation or other business organization submitting a bid on the form for the Work contemplated.

35.4 City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5 Construction Supervisor: An employee of the City of Waterbury, or another City duly authorized person.

35.6 Contract Time: The number of days as stated in the Contract to: **(i)** achieve Substantial Completion and **(ii)** Final Completion.

35.7 Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8 Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized City representative's, written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9 Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

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35.10 Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11 Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.12 Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13 Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14 Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15 Substantial Completion: The time at which, in the opinion of the Engineer, the Project (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Project (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Project mean Substantial Completion thereof.

35.16 Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17 Supplementary General Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18 Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19 Using Agency: School Inspector's Office, Department of Education.

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IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

_____

_____

CITY OF WATERBURY

By:_____
Neil M. O'Leary, Mayor

Date: _____

WITNESSES:

_____

_____

_____**, LLC**

By:_____

Date: _____

ATTACHMENT A

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ATTACHMENT B

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ATTACHMENT C

CONSTRUCTION CONTRACTS - REQUIRED CONTRACT PROVISIONS – AMERICAN RESCUE PLAN ACT FUNDED PROJECTS, DATED JUNE 2021

Contractor shall comply with all applicable Federal statutes, regulations, executive orders, the American Rescue Plan Act, and any interpretive guidance by other parties in any agreements it enters with other parties relating to these funds. Compliance requirements specifically include Sections 602 (b) and 603 (b) of the Social Security Act as added by Section 9901 of the American Rescue Plan Act, Pub. L. No. 117-2 (March 11, 2021).

In addition:

1. Contractor shall comply with regulations adopted by the Treasury pursuant to section 602(f) of the Social Security Act, and guidance issued by the Treasury regarding the foregoing and shall comply with all other applicable federal statutes, regulations, and executive orders.

   Federal regulations applicable to this contract include, without limitation, the following:

   1.1 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2, C.F.R. Part 200
   1.2 Universal Identifier and System for Award Management (SAM), 2 C.F.R. Part 25, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 25 is hereby incorporated by reference.
   1.3 Reporting Subaward and Executive Compensation Information, 2 C.F.R. Part 170, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 170 is hereby incorporated by reference.
   1.4 OMB Guidelines on Governmentwide Debarment and Suspension (Non-Procurement), 2 C.F.R. Part 180, including the requirement too include a term or condition in all lower tier covered transactions (contracts and subcontracts described in 2 C.F.R. Part 180, subpart B) that the award is subject to 2 C.F. R. Part 180 and treasury's implementing regulation at 31 C.F.R. Part 19.
   1.5 Recipient Integrity and Performance matters, pursuant to which the award term set forth in 2 C.F.R. Part 200, Appendix XII to Part 200 is hereby incorporated by reference.
   1.6 Governmentwide Requirements for Drug-Free Workplace, 31 C.F.R. Part 20.
   1.7 New Restrictions on Lobbying, 31 C.F.R. Part 21.
   1.8 Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (42 U.S.C. §§4601-4655) and implementing regulations.
   1.9 Generally applicable federal environmental laws and regulations.
   Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) and Treasury's implementing regulations at 31 C.F.R. Part 22, which prohibits discrimination based on race, color, or national origin under programs or activities receiving federal financial assistance.
   1.10 The Fair Housing Act, Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§ 3601 et seq.) which prohibits discrimination in housing based on race, color, religion, national origin, sex, familial status or disability.

1.11 Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination based on disability under any program or activity receiving federal financial assistance.

1.12 The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.) and Treasury's implementing regulations at 31 C.F.R. Part 23, which prohibits discrimination based on age in programs or activities receiving federal financial assistance.

1.13 Title II of the American with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.), which prohibits discrimination based on disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereof.

1.14 The contractor, its subcontractors and assigns, shall comply with following assurances:

1.14.1 Contractor ensures its current and future compliance with Title VI of the Civil Rights Act of 1964, as amended, which prohibits exclusion from participation, denial of benefits of, or subjection to discrimination under programs and activities receiving federal financial assistance, of any person in the United States on the ground of race, color, or natural origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of Treasury Title VI regulations at 31 CFR Part 22 and other pertinent executive orders such as Executive Order 13166, directives, circulars, policies, memoranda, and/or guidance documents.

1.14.2 Contractor acknowledges that Executive Order 13166, "Improving Access to Persons with Limited English Proficiency," seeks to improve access to federally assisted programs and activities for individuals who, because of national origin, have Limited English proficiency (LEP). Contractor understands that denying a person access to its programs, services, and activities because of LEP is a form of national origin discrimination prohibited under Title VI of the Civil Rights Act of 1964 and the Department of the Treasury's implementing regulations. Accordingly, Contractor shall initiate reasonable steps, or comply with the department of Treasury's directives, to ensure that FEP persons have meaningful access to its programs, services, and activities. Contractor understands and agrees that meaningful access may entail providing language assistance services, including oral interpretation and written translation where necessary, to ensure effective communication in the Contractor's programs, services, and activities.

1.14.3 Contractor agrees to consider the need for language services for LEP persons when Contractor develops applicable budgets and conducts programs, services and activities. As a resource the Department of Treasury has published its LEP guidance at 70 CFR 6067. For more information on taking reasonable steps to provide meaningful access to LEP persons, please visit http://www.lep.gov.

1.14.4 Contractor acknowledges and agrees that compliance with the assurances constitutes a condition of continued receipt of federal financial assistance and is binding upon Contractor and Contractor's successors, transferees, and assigns for the period in which such assistance is provided.

1.15 The sub-grantee, contractor, subcontractor, successor, transferee, and assignee shall comply with Title VI of the Civil Rights Act of 1964, which prohibits recipients of federal financial assistance from excluding from a program or activity, denying benefits of, or otherwise discriminating against a person on the basis of race, color, or national origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of Treasury's Title VI regulations, 31 CFR Part 22, which are herein incorporated by reference and made a part of this contract (or agreement). Title VI also includes protection to persons with "Limited English Proficiency" in any program or activity receiving federal financial assistance, 42 U.S.C. § 2000 et seq., as implemented by the Department of Treasury's Title VI regulations, 31 CFR Part 22, and herein incorporated by reference and made a part of this contract or agreement.

1.16 Seat Belt Use. Contractor is encouraged to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company=owned, rented or personally owned vehicles.

1.17 Reducing Text Messaging When Driving. Contractor is encouraged to adopt and enforce policies that ban text messaging while driving.

1.18 If Contractor produces any publication with funds from an ARPA funded project, Contractor will include in the publication the following language: "This project is supported, in whole or in part, by federal award number _____ awarded to the City of Waterbury, by the U.S. Department of Treasury.

1.19 The Contractor shall protect all Whistleblowers as follows:

a) Contractor shall inform its employees in writing of the rights and remedies provided under this section, in the predominant native language of the workforce.
b) In accordance with 41 U.S.G. §4712, Contractor may not discharge, demote or otherwise discriminate against an employee in reprisal for disclosing to any of the list of persons or entities provided below, information that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, and abuse of authority relating to a federal contract or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal contract (including the competition for or negotiation of a contract) or grant.
c) The list of persons and entities referenced in the paragraph above includes the following:
    i. A member of Congress or a representative of a committee of Congress;
    ii. An Inspector General;
    iii. The Government Accountability Office;
    iv. A Treasury employee responsible for contract or grant oversight or management;
    v. An authorized official of the Department of Justice or other law enforcement agency;
    vi. A court or grand jury; or
    vii. A management official or other employee of the City of Waterbury, contractor, or subcontractor who has the responsibility to investigate, discover, or address misconduct.

ATTACHMENT C

ATTACHMENT C

KEVIN MC CAFFERY
DIRECTOR OF PURCHASING
235 GRAND STREET, ROOM 103
WATERBURY, CT 06702

The undersigned declares that the only persons or parties interested in this Proposal as principals are as stated; that the Proposal is made without any collusion with other persons, firms, or corporations; that Proposer has carefully examined the entire Request for Proposal; that Proposer has informed itself fully in regard to all conditions pertaining to the Work and the place where it is to be performed; and that with this representation, the undersigned makes this Proposal. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Proposal and Form are a part.

The undersigned agrees and covenants that the Contract Time shall commence on delivery of the City of Waterbury's written notice to proceed, which shall occur after contract execution by both parties.

The undersigned acknowledges receipt of addenda numbered: (insert date)

1 _____ 4 _____

2 _____ 5 _____

3 _____ 6 _____

All Work for this Project shall be performed at the Proposal Prices as described in the Proposal Documents.

The undersigned hereby certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____
Social Security Number
or Federal Identification Number

_____
Signature of Individual or Corporate Name

_____
Corporate Officer
(if applicable)

City notice of acceptance should be mailed, telegraphed or delivered to the undersigned Proposer at the following address:

Name _____
By: _____
(Title)
Business Address: _____
(City, State, Zip Code)
_____
_____
Phone: _____
Email:_____
Date: _____

Note: If the Proposer is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

ATTACHMENT D

ATTACHMENT D

Insurance Requirements

Contractor/Vendor shall agree to maintain in force at all times during the contract the following minimum coverages and shall name the City of Waterbury and the Waterbury Board of Education as an Additional Insured on a primary and non-contributory basis to all policies, except Workers Compensation. All policies should also include a Waiver of Subrogation. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's rating of"A-"VIII.

If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

Original, completed Certificates of insurance must be presented to The City of Waterbury and the Waterbury Board of Education prior to contract issuance. Contractor/Vendor agrees to provide replacement/renewal certificates at least 30 days prior to the expiration date of the policies. Should any of the above described policies be canceled, limits reduced o,r coverages altered, 30 days written notice must be given to the City of Waterbury and the Waterbury Board of Education.

General Liability: **$1,000,000 each Occurrence**
$2,000,000 General Aggregate
$2,000,000 Products/ Completed Operations Aggregate

Auto Liability: **$1,000,000 Combined Single Limit each Accident**
Any Auto, All Owned and Hired Autos

Workers Compensation: **WC Statutory Limits**
Employer Liability (EL)
$1,000,000 EL each Accident
$1,000,000 EL Disease each Employee
$1,000,000 EL Disease Policy Limits

Excess/ Umbrella Liability: **$1,000,000 each Occurrence**
$1,000,000 Aggregate

Builder's Risk/Installation Floater Insurance: **Coverage equaling the completed value of the project**

Contractors Pollution Liability Insurance: **$1,000,000 each Occurrence/Claim**
$1,000,000 Aggregate
There will be no exclusion for Hazardous materials, including Asbestos and Lead

Wording for Additional Insured Endorsement and Waiver of Subrogation:

The City of Waterbury, its Board of Education and KBE Building Corporation (all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employee) is listed as an Additional Insured on a primary and non-contributory basis on all policies except Workers Compensation. All policies shall include a Waiver of Subrogation except Builders Risk.

ATTACHMENT E

ATTACHMENT E
PRICING PROPOSAL

Demo & Renovations at Crosby and Wilby High School Culinary Kitchens

RFP#7844

Date: _____

1. Demolition	$
2. Masonry	$
3. Misc Metals	$
4. Door/Frames/Hardware	$
5. Finishes	$
6. Kitchen Equipment (Installation Only)	$
7. Plumbing	$
8. HVAC	$
9. Electrical	$
Crosby High School Culinary Kitchen TOTAL	**$**
1. Demolition	$
2. Finishes	$
3. Kitchen Equipment (Installation Only)	$
4. Plumbing	$
5. HVAC	$
6. Electrical	$
Wilby High School Culinary Kitchen TOTAL	**$**
GRAND TOTAL	**$**

In the event of mathematically incorrect calculations of individual items or totals, the mathematically correct amount as determined by the City shall govern in determining the TOTAL PROPOSAL PRICE.

The undersigned also agrees that the quantities indicated are for Proposal comparison purposes only and are not represented to be actual quantities for completion of the Work.

The undersigned hereby certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair, and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____
Social Security Number or Federal Identification Number

_____
Company Name

_____
Signature of Individual or Corporate Name

_____
Corporate Officer (if applicable)

Minimum Rates and Classifications
for Building Construction

ID#: 23-52850

Connecticut Department of Labor
Wage and Workplace Standards

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: 7844 Project Town: Waterbury
State#: FAP#:
Project: Crosby Wilby Kitchen Renovation

CLASSIFICATION	Hourly Rate	Benefits
1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**		
1c) Asbestos Worker/Heat and Frost Insulator	45.56	32.65
2) Boilermaker	45.21	29.05
3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	39.4	34.62 + a
3b) Tile Setter	37.1	30.52
3c) Tile and Stone Finishers	30.0	25.30
3d) Marble & Terrazzo Finishers	31.07	24.23
3e) Plasterer	42.77	29.63

As of: September 19, 2023

------LABORERS------

4) Group 1: General laborers, carpenter tenders, concrete specialists, wrecking laborers and fire watchers.	33.5	25.59
4) Group 1a: Acetylene Burners (Hours worked with a torch)	34.5	25.59
4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofer/mixer/nozzleman (Person running mixer and spraying fireproof only).	33.75	25.59
4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	34.0	25.59
4c) **Group 4: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license) (the pipelayer rate shall apply only to one or two employees of the total crew who primary task is to actually perform the mating of pipe sections) P6 and P7 rate is $26.80.	34.5	25.59
4d) Group 5: Air track operator, sand blaster and hydraulic drills.	34.25	25.59
4e) Group 6: Blasters, nuclear and toxic waste removal.	36.5	25.59
4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped).	36.5	25.59
4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew.	31.78	25.59
4h) Group 9: Top men on open air caisson, cylindrical work and boring crew.	31.24	25.59
4i) Group 10: Traffic Control Signalman	20.1	25.59

As of: September 19, 2023

4j) Group 11: Toxic Waste Removers A or B With PPE	36.5	25.59
5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	37.61	27.61
5a) Millwrights	38.02	28.41
6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	43.4	32.07+3% of gross wage
7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	61.42	37.335+a+b
-----LINE CONSTRUCTION----		
Groundman	26.5	6.5% + 9.00
Linemen/Cable Splicer	48.19	6.5% + 22.00
8) Glazier (Trade License required: FG-1,2)	41.18	24.55 + a
9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	42.37	40.02 + a
----OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone; Hoisting Engineer (2 drums or over). (Trade License Required)	52.78	27.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and Over	48.37	27.80 + a

As of: September 19, 2023

Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	52.41	27.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	51.51	27.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer)	48.0	27.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Finegrade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	47.1	27.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper); Goldhofer.	46.64	27.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Spreader, Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24 mandrel).	45.92	27.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	45.92	27.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	45.55	27.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under mandrel).	45.14	27.80 + a
Group 8: Mechanic; Grease Truck Operator; Hydroblaster; Barrier Mover; Power Stone Spreader; Welding; Work Boat Under 26 ft.; Transfer Machine; Rigger Foreman.	44.67	27.80 + a
Group 9: Front End Loader (under 3 cubic yards); Skid Steer Loader regardless of attachments; (Bobcat or Similar); Forklift, Power Chipper; Landscape Equipment (including Hydroseeder); Vacuum Excavation	44.14	27.80 + a

As of: September 19, 2023

Truck and Hydrovac Excavation Truck (27 HG pressure or greater).

Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	41.69	27.80 + a
Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	41.69	27.80 + a
Group 12: Wellpoint Operator.	41.61	27.80 + a
Group 13: Compressor Battery Operator.	40.92	27.80 + a
Group 14: Elevator Operator; Tow Motor Operator (solid tire no rough terrain).	39.54	27.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	39.06	27.80 + a
Group 16: Maintenance Engineer.	38.28	27.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator; Portable Grout Plant Operator; Portable Water Filtration Plant Operator.	43.46	27.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (Minimum for any job requiring a CDL license); Rigger; Signalman.	40.54	27.80 + a

------PAINTERS (Including Drywall Finishing)------

10a) Brush and Roller	37.62	24.55
10b) Taping Only/Drywall Finishing	38.37	24.55

As of: September 19, 2023

10c) Paperhanger and Red Label	38.12	24.55
10e) Blast and Spray	40.62	24.55
11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	48.28	35.50
12) Well Digger, Pile Testing Machine	37.26	24.05 + a
Roofer: Cole Tar Pitch	44.5	23.30 + a
Roofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	43.0	23.30 + a
15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	41.89	43.22
16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	48.28	35.50
------TRUCK DRIVERS------		
17a) 2 Axle, Helpers	32.16	30.51 + a
17b) 3 Axle, 2 Axle Ready Mix	32.27	30.51 + a
17c) 3 Axle Ready Mix	32.33	30.51 + a
17d) 4 Axle	32.39	30.51 + a
17e) 4 Axle Ready Mix	32.44	30.51 + a

As of: September 19, 2023

17f) Heavy Duty Trailer (40 Tons and Over)	34.66	30.51 + a
17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	32.44	30.51 + a
17h) Heavy Duty Trailer up to 40 tons	33.39	30.51 + a
17i) Snorkle Truck	32.54	30.51 + a
18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	47.55	32.27 + a
19) Theatrical Stage Journeyman	25.76	7.34

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.*

***Note: Hazardous waste premium $3.00 per hour over classified rate*

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

As of: September 19, 2023

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: September 19, 2023

As of: September 19, 2023

PREVAILING WAGE BID PACKAGE

- Prevailing Wage Law Poster (PDF, 97KB)
- Section 31-53b: Construction safety and Health Course. Proof of completion required for employees on public building projects.
  - Informational Bulletin - The 10-Hour OSHA Construction Safety and Health Course (PDF, 20KB)
- Notice For All Mason Contractors (PDF, 5KB)
- CT General Statute 31-55a
- Contractor's Wage Certification Form (PDF, 11KB)
- Payroll Certification - Public Works Projects
- Information Bulletin - Occupational Classifications
- Footnotes (Rev. 07/19) (PDF)

Opportunity ★ Guidance ★ Support

CONNECTICUT DEPARTMENT OF LABOR

THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Worker training requirements for public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (h) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 46 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268, and, on or after July 1, 2012, that any plumber or electrician subject to the continuing education requirements of section 20-334d, who has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration five or more years prior to the date such electrician or plumber begins work on such public works project, has completed a supplemental refresher training course of at least four hours in duration in construction safety and health taught by a federal Occupational Safety and Health Administration authorized trainer.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2012, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or, in the case of a supplemental refresher training course, shall include, but not be limited to, an update of revised Occupational Safety and Health Administration standards and a review of required construction hazards training, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety

and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project or, in the case of supplemental refresher training, a student course completion card issued by said Occupational Safety and Health Administration authorized trainer dated not earlier than five years prior to the date such electrician or plumber begins work on such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1; P.A. 10-47, S. 2; P.A. 11-63, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009; P.A. 10-47 made a technical change in Subsec. (a); P.A. 11-63 amended Subsec. (a) by adding provision re supplemental refresher training course for plumbers and electricians subject to Sec. 20-334d, amended Subsec. (c) by adding provisions re regulations and subject matter of refresher training course and refresher training course student completion cards, and made technical changes, effective July 1, 2011.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders -** operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9) -** operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

Sec. 31-55a. Annual adjustments to wage rates by contractors doing state work. Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

(P.A. 02-69, S. 1.)

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

Construction Manager at Risk/General Contractor/Prime Contractor

I,_____of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signed

Subscribed and sworn to before me this _____ day of _____,_____.

_____
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

12/9/2013 *IF REQUIRED
WWS-CP1

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such person is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

_____	_____	_____
(Signature)	(Title)	Submitted on (Date)

*****THIS IS A PUBLIC DOCUMENT*****
*****DO NOT INCLUDE SOCIAL SECURITY NUMBERS*****

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:
Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

*IF REQUIRED

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine *"job classification"* on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- ***ASBESTOS WORKERS***

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- ***ASBESTOS INSULATOR***

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- ***BOILERMAKERS***

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- ***BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS***

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- ***CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS***

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

• The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

• If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

• An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- ***ELECTRICIANS***

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- ***ELEVATOR CONSTRUCTORS***

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ***License required by Connecticut General Statutes: R-1,2,5,6.***

- ***FORK LIFT OPERATOR***

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- ***GLAZIERS***

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- ***IRONWORKERS***

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- ***INSULATOR***

• Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- ***LABORERS***

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- ***PAINTERS***

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- ***LEAD PAINT REMOVAL***

• Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

• Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- ***PLUMBERS AND PIPEFITTERS***

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- ***POWER EQUIPMENT OPERATORS***

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- ***ROOFERS***

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- ***SHEETMETAL WORKERS***

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- ***SPRINKLER FITTERS***

Installation, alteration, maintenance and repair of fire protection sprinkler systems. ***License required per Connecticut General Statutes: F-1,2,3,4.***

- ***TILE MARBLE AND TERRAZZO FINISHERS***

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ***License required, drivers only, per Connecticut General Statutes.***

For example:

• Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
• Hauling material off site is not covered provided they are not dumping it at a location outlined above.
• Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➢ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6790.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

⇨ Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

ATTACHMENT G

CHAPTER 34: CITY POLICY

Section

General Provisions

34.01 Lost articles; state law adopted

Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects

34.10 Title
34.15 Purpose
34.16 Findings
34.17 Definitions
34.18 Hiring goal and implementation
34.19 Referral mechanism
34.20 Monitoring
34.21 Good faith efforts
34.22 Contract requirements for covered services

Cross-reference:

Centralized procurement system, see Ch. 38
Interlocal agreements, see Ch. 40

Statutory reference:

Advertising; sale of perishable goods, see Conn. Gen. Stat. § 50-11
Disposition after expiration of time for making claim, see Conn. Gen. Stat. § 50-14
Duties of finder, see Conn. Gen. Stat. § 50-10
Lost and unclaimed property, see Conn. Gen. Stat. Ch. 859
Procedure if unclaimed, see Conn. Gen. Stat. § 50-13
Restoration to owner if claimed, see Conn. Gen. Stat. § 50-12

GENERAL PROVISIONS

§ 34.01 LOST ARTICLES; STATE LAW ADOPTED.

The provisions of Conn. Gen. Stat. §§ 50-10 through 50-14 are adopted as permitted by Conn. Gen. Stat. § 50-9 and shall apply within the city to the finding of any article of the value of $1 or more. (1967 Code, § 13-11)

Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects

§ 34.10 TITLE.

The City of Waterbury Code of Ordinances §§ 34.10 through 34.22 entitled "Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects" shall also be known and may be cited as the "Good Jobs Ordinance" for the City.

(Ord. passed 5-13-2015)

§ 34.15 PURPOSE.

The purpose of this subchapter is to increase the benefit to the City of Waterbury and its residents from the city's investment of public funds in certain publicly-funded construction projects to allow the city to recognize, as a benefit of such investment, a reduction in the amount of poverty and unemployment that would otherwise exist amongst its residents and also to help reduce the economic burden that would otherwise be placed on the city in having to provide alternative assistance to those residents who, but for their being hired pursuant to the provisions of this ordinance, would remain unemployed.

(Ord. passed 2-21-2012)

§ 34.16 FINDINGS.

The City of Waterbury finds that a substantial number of city residents are not being employed by contractors performing work on publicly-funded construction projects in the City of Waterbury and that the residents, therefor, are not receiving the maximum possible benefit from the City of Waterbury's investment of public funds in the projects. The city further finds that:

(A) Recent research of hiring patterns on construction projects reveals a pattern of low hiring of residents in favor of nonresidents whose hiring is draining significant resources from the city.

(1) Only 14% of work hours performed on the construction of the $138,000,000 waste water treatment plant in 1998 - 1999 were performed by residents;

(2) Only 10% of laborers hours on city street paving in 1999 were performed by residents;

(3) With an average wage of $21 per hour on tax-funded city construction work as exemplified by the waste water treatment plant construction project, more than $13,000,000 in wages was lost by city residents on that project. Due to typical turnover of those funds among businesses

in the community, $13,000,000 - $26,000,000 of additional economic activity from the multiplier affect was lost to city businesses;

(4) As a result of the high percentage of noncity residents on construction projects, fewer Waterbury residents are able to be home owners, thus reducing property taxes to the city. For each resident who loses the opportunity to be a home owner, the city loses an estimated $2,000 in revenue per year.

(5) The migration of benefits caused by the high percentage of noncity residents on construction projects increases the burden on health care providers to provide uncompensated care to Waterbury residents without health insurance. Over the course of the waste water treatment plant project alone, for example, $5,000,000 in health and pension benefits were lost to city residents. If this subchapter were minimally met, it would double the wages and benefits going to city residents; and

(6) The extra cost to tax payers of the under-usage of apprentices on the project compared to what is permissible under state law is estimated at close to $1,000,000.

(B) Waterbury residents face higher rates of unemployment than other towns and cities in the region and state.

(1) The unemployment rate among construction workers who are residents of the city is 50% higher than the statewide unemployment rate among construction workers, and more than double the unemployment rate among construction workers in similarly-sized cities. For example, the Connecticut Department of Labor reports that in September 1999, 324 city residents applied for construction jobs at unemployment offices out of a total construction workforce of 3,600 (9%). Statewide, 3,908 applicants applied out of a total construction labor force of 63,800 (6%). In Danbury, 166 city residents applied out of a total construction workforce of 4,100 (4%).

(2) Since 1984 the city's unemployment rate has been consistently higher than the rate of unemployment in the Naugatuck Valley region and the state. Unemployment is especially severe in some neighborhoods, which faced up to 19% unemployment, compared to the city's 8% unemployment in the 1990 Census.

(C) Poverty is much greater and incomes are much lower in Waterbury than elsewhere in the region and state.

(1) According to the 1990 Census, 12.1% of the city's residents lived below the poverty level, compared to 2.7% in the rest of the region and 6.8% statewide.

(2) Median 1990 household income was $30,533 in Waterbury compared to $41,721 for the state, and compared to $45,000 - $67,500 for towns in the rest of the Naugatuck Valley region. Estimates updating this data to 1997 show little change. Residents on average earn $10,000 less per capita than the statewide average of $28,000.

(3) Poverty is even more pronounced in some neighborhoods with up to 30% of their residents in poverty.

(4) The average wage for residents coming off of welfare in the city is one of the lowest in the State of Connecticut at $5.93 per hour.

(5) Over one-third of female headed households are under poverty.

(6) City children are among the poorest in the State of Connecticut, 61% of students city-wide are eligible for reduced price meals versus 25% statewide.

(Ord. passed 2-21-2012)

§ 34.17 DEFINITIONS.

For the purpose of this subchapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

ADMINISTRATOR. The person(s), city department or agency designated by the Mayor of the city with the responsibility of overseeing the implementation and enforcement of this subchapter.

APPRENTICE. Definition as set forth in Conn. Gen. Stat. § 31-22m and any subsequent amendments approved by the Connecticut General Assembly is incorporated by reference herein.

BASIC SKILLED WORKER. A person who is currently enrolled in or having completed a training program administered by or on behalf of a legally organized labor union or a state-approved standardized craft training program. Specifically excluded from this definition is an APPRENTICE as defined by Conn. Gen. Stat. § 31-22m.

CITY. The City of Waterbury, Connecticut.

CITY FUNDS. Funds originating within the city pursuant to the city's taxing powers or authority to raise money through the sale of public bonds, permit tax abatements and enter into tax fixing agreements and tax increment financing agreements.

CONSTRUCTION. The process of building, altering, repairing, improving or demolishing any public infrastructure facility, including any public structure, public building or other public improvements of any kind to city property or other property or space in which the city has an interest. It does not include the routine operation, routine repair or routine maintenance of any existing public infrastructure facility, including structures, buildings or real property.

CONSTRUCTION PROJECT. Any project for which the primary purpose involves construction, as defined above, deconstruction, the remediation of any hazardous materials as defined in the Connecticut General Statutes, the rehabilitation or renovation of any structure or the creation, extension, reconstruction, reconditioning or rebuilding of any portion of a municipal infrastructure or public utility system.

CONTRACTOR. Any person hired by the city, directly or indirectly through an owner, to perform construction work on covered projects.

COVERED PROJECT. Any construction project taking place in the city with a value of $500,000 or greater, funded in whole or in part by city funds or funds administered by the city in accordance with federal or state grant or loan programs or any other federal or state programs. This definition of ***COVERED PROJECT*** shall include funds derived from the aforementioned federal or state grant, loan or other programs only to the extent permitted by federal and state law. The value of the projects shall equal the total consideration to be paid to all contractors stated in each contract pursuant to which contractors are performing construction work on covered projects.

FIRST-SOURCE REFERRAL PROGRAM. A program whose purpose includes but is not limited to, job training and the referral of qualified residents to contractors. The ***FIRST-SOURCE REFERRAL PROGRAM*** shall use the Good Jobs umbrella coalition of community groups and churches as a priority source for recruitment.

GOOD JOBS ADMINISTRATION BUDGET. The amount of funding required to oversee the implementation and enforcement of this subchapter in a given fiscal year.

HIRING GOAL. The 30% of the total worker hours on each covered project shall be performed by residents. At least 25% of construction trade jobs shall go to apprentices and/or basic skilled workers. At least 70% of all "new hires" (those workers hired by a contractor on a project, other

than existing employees and those referred by union hiring halls with prior seniority in the case of a union job) shall be "economically disadvantaged" individuals, defined as those earning less than 150% of the poverty line at the time of application. A minimum of 5% of the construction workforce labor hours will be local resident, minority artisans. A minimum of 5% of the construction workforce labor hours will be women. A minimum of 10% of the total work hours shall be allocated for minorities. Contractors are expected to employ a workforce that represents the population of the city.

LIAISON COMMITTEE. The committee established by the Board of Aldermen to monitor compliance with the provisions of this subchapter, and make recommendations to the Administrator and the Board of Aldermen regarding administration of this subchapter. The committee shall convene at a minimum of once every quarter in a space open to the public. The committee shall be comprised of two representatives of the Board of Aldermen one to be appointed by the President of the Board of Aldermen and one to be appointed by the Minority Leader on the Board of Aldermen, one representative from the Board of Education to be appointed by the President of the Board of Education, one representative of the Workforce Development Board, and five representatives who are appointed by the Board of Aldermen to represent: one contractor, one union, one civil rights group, one community and one Human Rights Commission. The committee members shall serve for a term of two years, and this nomination and selection process shall be used to fill any vacancy.

NEW HIRE. Those workers hired by a contractor on a project, other than existing employees, and those referred by union hiring halls with prior seniority in the case of a union job.

OWNER. The person who enters into a contract with a contractor for work on a covered project other than the city.

PERSON. An individual or a company, partnership, foreign or domestic corporation, partnership, limited liability company or other business entity.

RESIDENT. Any person whose domicile is the City of Waterbury, Connecticut.

ROUTINE MAINTENANCE. Simple, small-scale activities (usually requiring only minimal skills or training) planned and performed at regular intervals and being necessary to (1) extend the life of, or to delay or prevent the premature failure of, any plant or system or of any structure or structural system, building component or equipment; or (2) protect against normal wear and tear; or (3) maintain a suitable aesthetic appearance. Examples of ROUTINE MAINTENANCE may include, but are not limited to, lawn or grass cutting, hedge trimming, painting, caulking, sealing, plumbing or electrical repairs, carpet cleaning or other cleaning performed at regular intervals.

SUBCONTRACTOR. Any person hired by a contractor to perform construction work on covered projects.

(Ord. passed 2-21-2012; Ord. passed 8-19-2013; Ord. passed 5-13-2015)

§ 34.18 HIRING GOAL AND IMPLEMENTATION.

(A) All contractors and subcontractors performing work on covered projects shall make good faith efforts to satisfy the hiring goal.

(B) Any contractors or subcontractors that fail to meet the hiring goal shall be required to demonstrate to the Administrator's satisfaction that the contractor or subcontractor made good faith efforts to meet the hiring goal.

(C) (1) The Mayor of the city shall appoint an Administrator annually no later than June 30th to serve as the Administrator for the city's fiscal year following such appointment or within 30 days of a vacancy that might arise during any fiscal year. The foregoing not withstanding, an incumbent Administrator shall serve until their successor has been appointed and qualified. If, in the event of a vacancy, the Mayor fails to appoint a replacement Administrator within the first 30 days following the effective date of that vacancy, then the Board of Aldermen shall have the power to fill the vacancy provided that the Board does so:

(a) Within 30 days from the date upon which the power to make the appointment vested in the Board; or

(b) Prior to May 31st if the power to make the appointment vests in the Board on or after May 1st.

(2) Should the Board fail to make the appointment during any 30 day period it has to do so, or prior to May 31st if the power to make the appointment vests in the Board on or after May 1st, then the power of appointment shall revert to the Mayor. Thereafter, throughout the remainder of the then current fiscal year, the power to make the appointment shall alternate between the Mayor and the Board, at 30 day intervals, until an appointment is made or until June 1st at which point in time the power to make the appointment shall vest in the Mayor.

(D) The Mayor shall annually, prior to the adoption of the city's budget for the then next fiscal year and after consultation with the Administrator and all relevant city department heads, establish a Good Jobs Administration Budget for the then next fiscal year and the Mayor shall include a line item in his

annual budget submission to the Board of Aldermen sufficient to fund the Good Jobs Administration Budget. If, during the fiscal year in which the Mayor submits a given Good Jobs Administration Budget as part of his budget submission, the city has received as liquidated damages, pursuant to its contracts for covered projects, an amount greater than or equal to the Good Jobs Administration Budget as then submitted by the Mayor, the city shall be required to fund the Good Jobs Administration Budget as submitted by the Mayor and approved by the Board of Aldermen. To the extent possible, the cost required to oversee the implementation and enforcement of this subchapter for each project shall be funded and paid for through each project.

(Ord. passed 2-21-2012; Ord. passed 5-13-2015)

§ 34.19 REFERRAL MECHANISM.

(A) No less than four (4) weeks prior to the commencement of construction on covered projects, the contractor shall meet with the Administrator and provide the number of job positions to be created by the project by trade and the qualifications by job title. The Administrator shall make reasonable efforts to ensure that adequate job training is available to the extent necessary to achieve the hiring goal and that screening and referral mechanisms are in place so that contractors can access qualified residents. Additionally, the Administrator shall designate a first-source referral program for the city.

(B) In the event a contractor or subcontractor cannot satisfy the hiring goal through its own employees and union hiring halls, the contractor or subcontractor shall next utilize the first source referral program in order to satisfy the hiring goal. The contractor or subcontractor must wait five business days after a request has been submitted before advertising the position elsewhere.

(C) Qualifications required shall be only those relevant to the job. In satisfying the hiring goal, the contractor and any subcontractor shall employ all qualified persons referred by the first source referral program. The contractor and any subcontractor must utilize the first source referral program whenever its hiring needs increase and they are unable to comply with the hiring goals.

(Ord. passed 2-21-2012; Ord. passed 5-13-2015)

§ 34.20 MONITORING.

(A) The owner for a covered project shall require all construction contracts to comply with all provisions of this subchapter, and a copy of this subchapter shall be included with all contracts with contractors and subcontractors performing construction work on covered projects. This subchapter must be a contractual obligation in all contracts.

(B) All contractors and subcontractors performing construction work on covered projects shall submit to the Administrator weekly certified payroll records within five working days of the end of each payroll period. The records must show the person-hours on a craft-by-craft basis and identify the address, social security number, hiring date, ethnicity, gender and trade (journeyperson or apprentice) of all employees on the project. All reports must have an original signature and be signed by an authorized officer or employee of the company. Failure to comply with the provisions of this division (B) shall be deemed by the Administrator to be a violation of this subchapter and shall be subject to, and invoiced, liquidated damages on a weekly basis. Any willful misrepresentation contained in the information requested pursuant to this division (B) shall be deemed by the Administrator to be a violation of this subchapter and shall be subject to, and invoiced, liquidated damages on a weekly basis. The Administrator shall notify the City of Waterbury Department of Finance upon any violation of this subchapter. No portion of any invoice submitted by a contractor that is subject to liquidated damages shall be paid by the city until such time as all liquidated damages relating to that invoice have been paid to the city.

(C) Unless prohibited by federal, state or local law, all records in the city's possession shall be available for public inspection.

(D) The Administrator shall review all information provided pursuant to division (B) hereof and submit monthly reports to the Liaison Committee and to the Board of Aldermen summarizing the information.

(Ord. passed 2-21-2012; Ord. passed 5-13-2015)

§ 34.21 GOOD FAITH EFFORTS.

(A) Contractors shall be deemed to have made good faith efforts if they demonstrate to the satisfaction of the Administrator that they have done all of the following:

(1) Utilize the first source referral program to help satisfy the hiring goal;

(2) Notify the public in the city of the employment opportunities available on covered projects. The notification shall comprise a notice in a newspaper of general circulation in the city of employment opportunities, written notice to construction unions, community organizations and city high schools concerning same, and any other notice required by the Administrator. Contractors shall maintain records of responses to the notices received thereby. All notices must state that all qualified applicants will receive consideration without regard to race, color, religion, sex or national origin. The notice required by this division shall include a statement that the notice is provided pursuant to this subchapter;

(3) Maintain a file on the job site of the names and addresses of each worker referred by the first source referral program. The file shall indicate what action was taken with respect to each referred person, and if the person was not hired, the reasons therefore; provided, however, that this subchapter shall not be construed as requiring contractors to hire any persons who do not satisfy applicable job qualifications;

(4) Participate in State of Connecticut-approved local employment training programs in the city's area, or develop on-the-job training opportunities and participate and assist in any association or employer-group training program relevant to the contractor's employment needs;

(5) Regularly review and evaluate their personnel and promotional opportunities, encourage city residents to seek opportunities and establish a program to monitor compliance with this subchapter; and

(6) Utilize other means of obtaining employees who are residents of the city that are reasonably calculated to assist with achieving the hiring goals.

(B) Contractors shall provide the city with any documentation requested by the Administrator in order to establish compliance with this subchapter.

(Ord. passed 2-21-2012)

§ 34.22 CONTRACT REQUIREMENTS FOR COVERED SERVICES.

(A) This city shall include provisions in Chapter 38, entitled "Centralized Procurement System," of the Code of Waterbury mandating that each contract for a covered project, as that term is defined herein, awarded pursuant to Chapter 38 include provisions addressing compliance with the provisions of this subchapter by the contractor or contractors thereunder and by any subcontractor or subcontractors performing work related to any such contract.

(B) Whenever provisions are included in a contract for a covered project pursuant to division (A) of this section, they shall include provisions establishing liquidated damages for the failure of any contractor or subcontractor to comply with the provisions of this subchapter on a weekly basis. The liquidated damages shall be based on an estimate of the cost the city would incur in having to provide alternative employment opportunities, or alternative economic assistance, to those residents who would have benefited by the city's investment in the covered project if they had been hired by the contractor or subcontractor had they complied with the provisions of this subchapter.

(C) Whenever provisions regarding liquidated damages are included in a contract for a covered project pursuant to division (B) of this section, that contract shall, if applicable, also include provisions addressing the following matters:

(1) Weekly compliance reviews by the Administrator for the purpose of assessing compliance with the provisions of this subchapter, or the lack thereof;

(2) Requiring a separate certification of compliance by the Administrator prior to the payment of any funds by the city under any such contract;

(3) The weekly assessment and invoicing of liquidated damages per noncompliant contractor or subcontractor while said contract is executory;

(4) No portion of any invoice submitted by a contractor that is subject to liquidated damages shall be paid by the city until such time as all liquidated damages relating to that invoice have been paid to the city.

(Ord. passed 2-21-2012; Ord. passed 5-13-2015)

Crosby High School - Kitchen Renovation

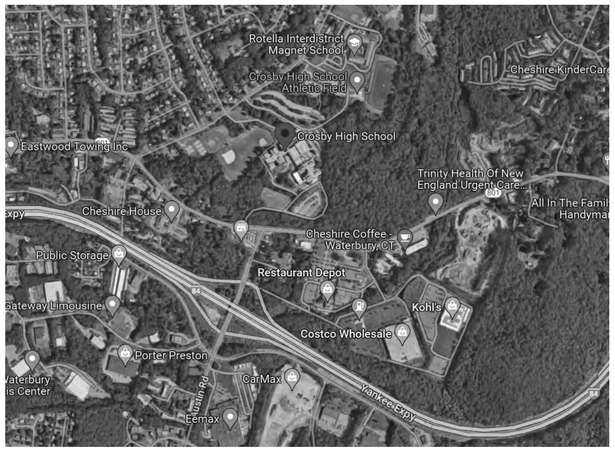
300 Pierpont Road, Waterbury, CT 06705

PERMIT SET

05/12/2023

BL PROJECT No.: 2201480

REV	SHEET NUMBER	SHEET NAME
GENERAL		
	G0.00	COVER SHEET
	G0.01	CODE ANALYSIS
ARCHITECTURAL		
	A1.01	OVERALL FIRST FLOOR PLAN
PLUMBING		
	P0.01	PLUMBING SPECIFICATIONS, NOTES, SYMBOL LEGEND, & ABBREVIATIONS
	PD1.01	PLUMBING DEMOLITION PLAN
	P1.01	CULINARY CLASSROOM PLUMBING PLANS
ELECTRICAL		
	E0.00	ELECTRICAL NOTES, SYMBOL LEGEND, ABBREVIATIONS & SCHEDULES
	E0.01	ELECTRICAL SPECIFICATIONS
	E0.02	ELECTRICAL SPECIFICATIONS
	ED1.01	OVERALL FIRST FLOOR DEMO PLAN- ROOM 123 & 106
	ED1.02	OVERALL FIRST FLOOR DEMO PLAN- ROOM 107
	E1.01	OVERALL FIRST FLOOR ELECTRICAL POWER & LIGHTING PLAN-ROOM 123 & 106
	E1.02	OVERALL FIRST FLOOR ELECTRIC POWER PLAN-ROOM 107
	E4.01	DETAILS, ONE LINE RISER DIAGRAM AND PANELBOARD SCHEDULE
	E4.07	ELECTRICAL DETAILS & FIXTURE SCHEDULE



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PREPARED FOR:

CONSULTANTS:

Issues / Revisions

No.	Date	Description

Seals:

ISSUED FOR PERMIT

Title:

COVER SHEET

Sheet No.

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PROJECT DATA:

PROJECT LOCATION: 300 PIERPONT ROAD, WATERBURY, CT

BUILDING DEPARTMENT: 185 SOUTH MAIN STREET, 5TH FLOOR WATERBURY, CT 06702

APPLICABLE CODES:

BUILDING CODES - CONNECTICUT

ALL CONSTRUCTION SHALL CONFORM WITH THE FOLLOWING CODES:

PURSUANT TO CONNECTICUT GENERAL STATUTE §29-252, AS AMENDED BY PUBLIC ACT 16-215, THE FOLLOWING NATIONAL MODEL CODES, AS AMENDED, ARE ADOPTED AND SHALL BE KNOWN AS THE **2022 CONNECTICUT STATE BUILDING CODE (CSBC)**:

1. 2021 INTERNATIONAL BUILDING CODE
2. 2021 INTERNATIONAL EXISTING BUILDING CODE
3. 2017 ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
4. 2021 INTERNATIONAL PLUMBING CODE
5. 2021 INTERNATIONAL MECHANICAL CODE
6. 2021 INTERNATIONAL ENERGY CONSERVATION CODE
7. 2020 NFPA 70, NATIONAL ELECTRICAL CODE, OF THE NATIONAL FIRE PROTECTION ASSOCIATION INC.

2022 CONNECTICUT STATE FIRE SAFETY CODE (CSFSC)

1. 2021 INTERNATIONAL FIRE CODE (AS AMENDED BY THE STATE OF CONNECTICUT)
2. 2021 NFPA 101 LIFE SAFETY CODE (AS AMENDED BY THE STATE OF CONNECTICUT)

LAST UPDATE: 05/12/2023

CHAPTER 3 - USE & OCCUPANCY CLASSIFICATION:

302.1 - CLASSIFICATION: EXISTING HIGH SCHOOL CLASSROOM KITCHEN RENOVATION.

GROUP	IBC SECTION	DESCRIPTION OF OCCUPANCY	PROPOSED AREA (SF)
E / EDUCATIONAL	305.1	CLASSROOM	30,039 SF (RENOVATED AREA)
-	-	-	-
-	-	-	-

CHAPTER 5 - GENERAL BUILDING HEIGHTS & AREAS:

CONSTRUCTION TYPE: CONSTRUCTION TYPE IIB, SPRINKLERED

ALLOWABLE BUILDING HEIGHT:

MAIN OCCUPANCY GROUP IIB	ALLOWABLE BUILDING HT (TABLE 504.3)	SPRINKLER INCREASE	PROPOSED BUILDING HEIGHT
BUILDING HEIGHT	75 FT	-	N/A
NUMBER OF STORIES	3	-	3

GROSS BUILDING AREA:

OVERALL LEVEL 1: N/A
OVERALL LEVEL 2: N/A
OVERALL LEVEL 3: N/A

TOTAL BUILDING AREA: N/A

ALLOWABLE BUILDING AREA:

TABULAR AREA FROM 506.2: N/A
ALLOWABLE INCREASE (SEE CALCULATIONS BELOW): N/A

TOTAL ALLOWABLE AREA: N/A

CHAPTER 6 - TYPE OF CONSTRUCTION:

CONSTRUCTION CLASSIFICATION: SECTIONS 601 & 602

TYPE IIB - SPRINKLERED

NR = NO RATING
N/A = NOT APPLICABLE, CONDITION NOT PRESENT IN DESIGN
1 HR = 1 HOUR RATING
2 HR = 2 HOUR RATING
3 HR = 3 HOUR RATING
0 HR = UNRATED SMOKE PARTITION

FIRE RESISTANCE RATING REQUIREMENTS (TABLE 601)

BUILDING ELEMENT	REQUIRED FIRE RATING (HOURS)	PROPOSED FIRE RATING (HOURS)
PRIMARY STRUCTURE FRAME	0 HR (a)	0 HR
BEARING WALLS - EXTERIOR (e) (f)	0 HR	0 HR
BEARING WALLS -INTERIOR	0 HR (a)	0 HR
NONBEARING WALLS AND PARTITIONS - EXTERIOR (SEE TABLE 602)	0 HR	SEE TABLE 602
NONBEARING WALLS AND PARTITIONS - INTERIOR (d)	0 HR	0 HR
FLOOR CONSTRUCTION AND ASSOCIATED SECONDARY MEMBERS (SEE SECTION 202)	0 HR	0 HR
ROOF CONSTRUCTION AND ASSOCIATED SECONDARY MEMBERS (SEE SECTION 202)	0 HR (b)	0 HR

STRUCTURAL FRAME AND BEARING WALLS PERMITTED TO BE REDUCED BY 1-HOUR WHERE THEY ARE ONLY SUPPORTING ROOF

a. Roof support: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
b. Except in group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
c. In all occupancies, heavy timber shall be allowed where a 1 hour or less fire resistance rating is required.
d. Not less than the fire resistance rating required by other sections of this code.
e. Not less than the fire resistance rating based on the fire separation distance (see table 602)
f. Not less than the fire resistance rating as referenced in section 704.10

FIRE RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE a, d, g (TABLE 602)

FIRE PROTECTION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H [g]	OCCUPANCY GROUP F-1,M,S-1 [f]	OCCUPANCY GROUP A, B, E, F-2, I, R, S-2, U [h]
x < 5	ALL	3	2	1
5 ≤ X < 10	IA Others	3 2	2 1	1 1
10 ≤ X < 30	IA, IB IIB, VB Others	3 2 2	2 1 1	1[c] 1 1[c]
X ≥ 30	ALL	0	0	0

NOTE: for SI: 1 foot = 304.8mm.

a. Load-bearing exterior walls shall also comply with fire-resistance rating requirements of Table 601.
b. See Section 706.1.1 for party walls.
c. Open parking garages complying with Section 406 shall not be required to have fire resistance rating.
d. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.
e. For special requirements for Group H occupancies, see Section 415.6.
f. For special requirements for Group S aircraft hangers, see Section 412.4.1 .
g. Where Table 705.8 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.
h. For a building containing only a Group U occupancy private garage or carport, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523mm) or greater.

CHAPTER 7 - FIRE RESISTANCE RATED CONSTRUCTION

TABLE 705.8 - SPRINKLERED

MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION

EXTERIOR WALL	FIRE SEPARATION DISTANCE (feet)	DEGREE OF OPENING PROTECTION	ALLOWABLE AREA
NORTH WALL			
EAST WALL			
SOUTH WALL			
WEST WALL			

CHAPTER 8 - INTERIOR FINISHES

OCCUPANCY TYPE IIB	MINIMUM CLASS FINISH ALLOWED
VERTICAL EXITS & EXIT PASSAGEWAYS -	CLASS B
EXIT ACCESS CORRIDORS & OTHER EXITS -	CLASS C
ROOMS AND ENCLOSED SPACES -	CLASS C

CHAPTER 9 - FIRE PROTECTION SYSTEM

AUTOMATIC SPRINKLER SYSTEM PROVIDED — YES
AUTOMATIC SPRINKLER SYSTEM MONITORING AND ALARMS WILL BE PROVIDED — YES
PORTABLE FIRE EXTINGUISHERS - SHALL BE PROVIDED PER THIS SECTION - AS SHOWN ON FIRE EXTINGUISHER PLANS — YES
A FIRE COMMAND CENTER REQUIRED — NO

CHAPTER 10 - MEANS OF EGRESS

EXIT ACCESS REQUIREMENTS	ALLOWABLE	PROVIDED
COMMON PATH OF TRAVEL LIMITS	75' (EDUCATION)	≤ 0'
EXIT ACCESS TRAVEL DISTANCE	250' (EDUCATION)	≤ 0'
MINIMUM CORRIDOR WIDTH	72" (EDUCATION)	≥ 0"
CORRIDOR DEAD END LIMITS	50' (EDUCATION)	≤ 0'

SEE FIRE SAFETY PLANS FOR ADDITIONAL INFORMATION

PLUMBING FIXTURE CALCULATIONS

EXISTING SPACE WITH NO CHANGE TO THE OCCUPANT LOAD.

DEFERRED SUBMITTALS

DEFERRED SUBMITTALS THAT ARE NOT SUBMITTED AT THE TIME OF THE APPLICATION MUST HAVE THE PRIOR APPROVAL OF THE BUILDING OFFICIAL. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS FOR REVIEW BY THE DESIGN PROFESSIONAL IN CHARGE OF THEIR DEVELOPMENT WHO SHALL REVIEW AND FORWARD THEM TO THE BUILDING OFFICIAL WITH NOTATION INDICATING THEY HAVE BEEN REVIEWED AND ARE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING AND TO ALL APPLICABLE CODES.

1. AUTOMATIC FIRE SPRINKLER SYSTEM
2. FIRE ALARM SYSTEM
3. ANCHOR DESIGN FOR ELECTRICAL EQUIPMENT REQUIRED
4. INTERIOR SIGNAGE PACKAGE

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REVISIONS

NO	DATE	DESCRIPTION

Designed: SP
Drawn: NV
Reviewed: JJ
Project No.: 2201480
Date: 05/12/2023
Issued for: PERMIT SET

Title: CODE ANALYSIS

Sheet No. G0.01

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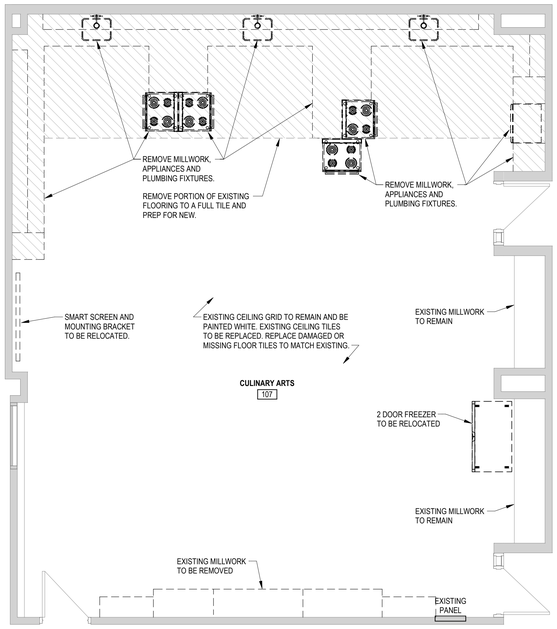
FLOOR PLAN GENERAL NOTES

1. ALL EXISTING TO REMAIN ITEMS ADJACENT TO OR DISTURBED BY NEW CONSTRUCTION ARE TO BE PATCHED / REPAIRED TO MATCH EXISTING OR ADJACENT NEW CONSTRUCTION.
2. PATCH AND/OR PAINT WALLS AND FLOOR SURFACES IMPACTED BY DEMOLITION WORK AND WHERE EXISTING EQUIPMENT, FIXTURES AND UTILITIES ARE REMOVED.
3. CUT AND PATCH WALLS AND FLOORS TO ACCOMMODATE NEW WORK. COORDINATE THE EXTENT OF WORK WITH THE ELECTRICAL AND PLUMBING DRAWINGS. ALL PENETRATIONS IN WALLS OR FLOORS SHALL BE SEALED FOR SMOKE / FIRE RATINGS AS REQUIRED.
4. PREPARE ALL EXISTING SURFACES TO RECIEVE NEW FINISHES AS REQUIRED.

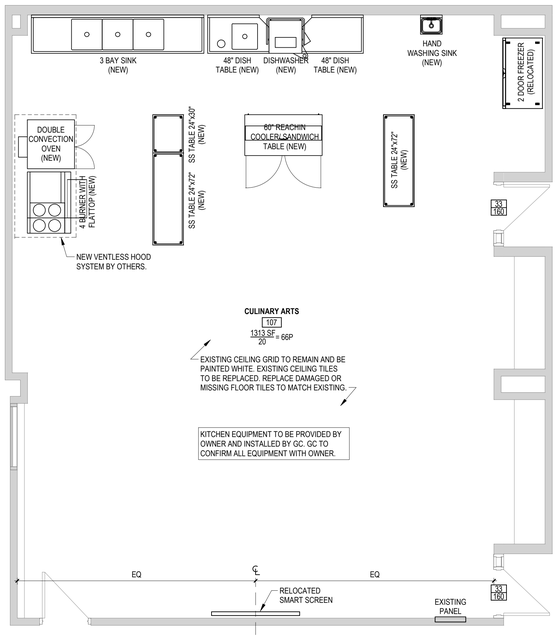
LINTEL SCHEDULE - EXISTING CONSTRUCTION

PROVIDE LINTELS, WHETHER INDICATED OR NOT OVER ALL NEW OPENINGS, OR EXISTING OPENINGS THAT HAVE BEEN MODIFIED, IN EXISTING MASONRY WALLS AS REQUIRED BY STRUCTURAL, ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS. COMBINE VARIOUS WYTHES OF MASONRY AS REQUIRED TO SUIT PROJECT. ALL CONDITIONS MAY NOT OCCUR. ALL LINTELS ARE TO HAVE 8" MINIMUM BEARING AT EACH END.
ALL EXTERIOR LINTELS ARE TO BE GALVANIZED.
ALL EXTERIOR ANGLES TO BE LOCATED 1/2" BACK FROM FACE OF FINISHED WALL.
SEE STRUCTURAL DRAWINGS FOR ALL OPENINGS OVER 8'-4"

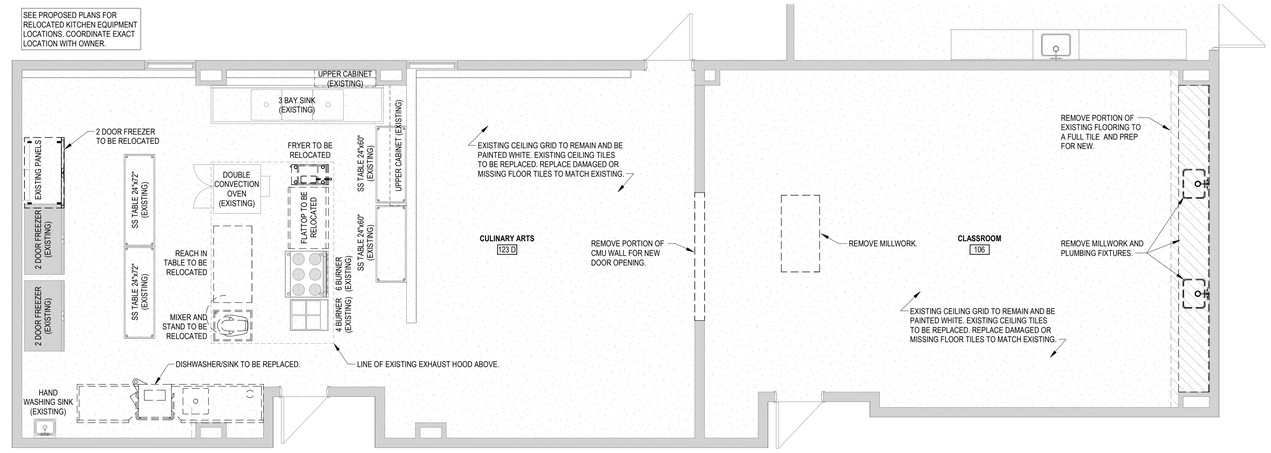
MASONRY OPENING	4" MASONRY	6" MASONRY	8" MASONRY	10" MASONRY	12" MASONRY
UP TO 5'-0"	1L - 3 1/2" X 3 1/2" X 5/16"	WT 7 X 11	2L - 4" X 3 1/2" X 5/16"	2L - 4" X 4" X 5/16"	2L- 5" X 5" X 5/16"
5'-0" TO 6'-0"	1L - 6" X 3 1/2" X 5/16"	WT 7 X 11	2L - 5" X 3 1/2" X 5/16"	2L - 5" X 4" X 3/8"	2L- 5" X 5" X 3/8"
6'-0" TO 7'-4"	1L - 6" X 3 1/2" X 5/16"	WT 7 X 11	2L - 5" X 3 1/2" X 5/16"	2L - 4" X 4" X 3/8"	2L- 5" X 5" X 3/8"
7'-4" TO 8'-4"	1L - 6" X 3 1/2" X 3/8"	WT 7 X 11	2L - 6" X 3 1/2" X 5/16"	2L - 4" X 4" X 3/8"	2L- 5" X 5" X 3/8"



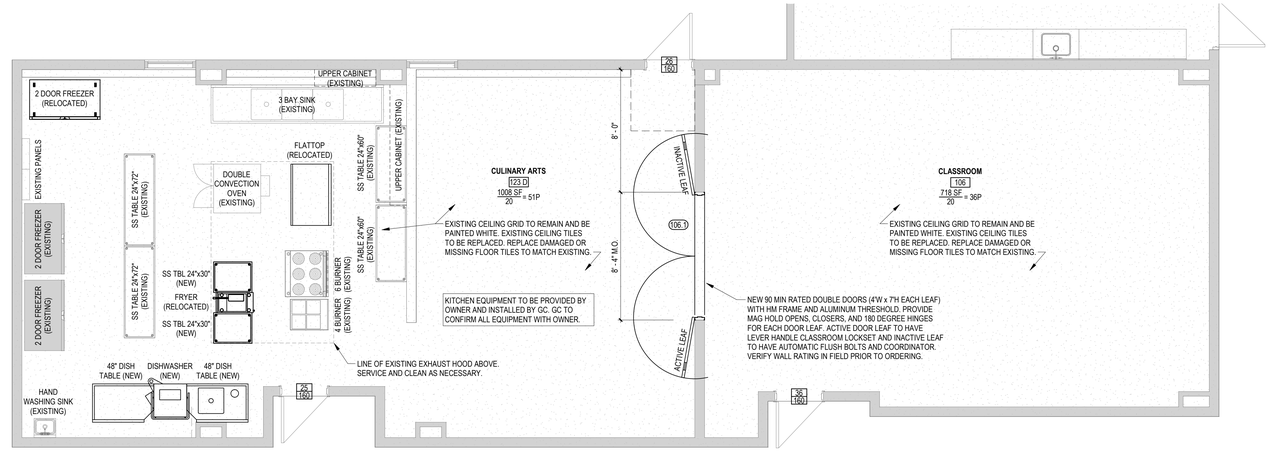
4 EXISTING EQUIPMENT LAYOUT - ROOM 107
1/4" = 1'-0"



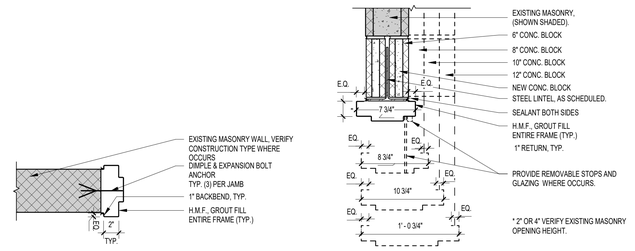
3 PROPOSED EQUIPMENT LAYOUT - ROOM 107
1/4" = 1'-0"



2 EXISTING EQUIPMENT LAYOUT - ROOMS 123D & 106
1/4" = 1'-0"

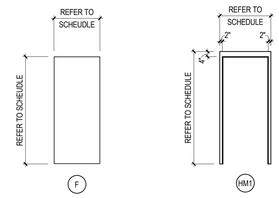


1 PROPOSED EQUIPMENT LAYOUT - ROOMS 123D & 106
1/4" = 1'-0"



8 JAMB @ EXISTING CMU
1 1/2" = 1'-0"

7 HEAD @ EXISTING CMU
1 1/2" = 1'-0"



6 DOOR TYPES
1/4" = 1'-0"

5 FRAME TYPES
1/4" = 1'-0"

TRUE NORTH

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REVISIONS

NO	DATE	DESCRIPTION

Designed: SP
Drawn: NV
Reviewed: JJ
Project No.: 2201480
Date: 05/12/2023
Issued for: PERMIT SET

Title: OVERALL FIRST FLOOR PLAN

Sheet No. A1.01

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PLUMBING SPECIFICATIONS

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO MADE PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIAL WHICH VIOLATES ANY OF THE ABOVE LAWS AND REGULATIONS, ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.

C. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHERE NECESSARY,EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM BUILDING OWNER AND TENANT AT WHAT TIMES OF DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.

D. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. PIPE ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF PIPE TO AVOID OBSTRUCTIONS. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.

E. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

F. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP THE WORK PROPOSAL.

G. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION.

H. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

I. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

J. THE LOCATIONS OF THE EXISTING SERVICES ARE BELIEVED TO BE AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION OF THESE SERVICES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING ANY WORK.

K. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH NON-SHRINKING FIRE PROOF CAULKING OR OTHER NON-COMBUSTIBLE MATERIAL.

L. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPING AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AS REQUIRED.

M. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF THE SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE. ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR

N. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

O. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.

P. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

Q. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

R. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

S. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK, THE CONTRACTOR IS RESPONSIBLE TO INDICATE ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO SUBMITTAL OF BID. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING PIPE SIZES, CLEARANCES ETC. AND CONDITIONS.

T. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

U. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

2. SCOPE OF WORK:

A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMITY WITH THE INTERNATIONAL PLUMBING CODE, STATE SUPPLEMENT, AND ALL OTHER LOCAL CODES AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.

B. THE BASE BUILDING OF DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLEMENTED OR SPECIFIED HEREIN.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

3. SHOP DRAWINGS:

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT PROVIDE COMPLETE SET OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:
1. PROJECT NAME AND LOCATION
2. NAME OF ARCHITECT AND ENGINEER
3. ITEM IDENTIFICATION
4. APPROVAL STAMP OF PRIME CONTRACTOR

C. SUBMISSIONS:
1. SUBMISSIONS 11 IN. X 17IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE (1) PDF ELECTRONIC COPY. ALL CATALOG CUTS SHALL BE COMPLETE.
2. SUBMISSIONS LARGER THAN THAT 11 IN. X 17 IN.: SUBMIT ONE (1) PDF ELECTRONIC COPY.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
1. PIPE AND FITTINGS VALVES
2. PLUMBING FIXTURES AND TRIM
3. PIPING LAYOUTS
4. SUPPORTS, HANGERS AND GUIDES
5. INSULATION

4. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:

A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

5. GENERAL PROVISIONS FOR PLUMBING WORK:

A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL,"SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

B. DEFINITIONS:

1. "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFEREED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
2. "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
3. "FURNISH" OR "SUPPLY": TO PURCHASE, PRODUCE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
4. "WORK": LABOR, MATERIAL, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
5. "WIRING": RACEWAY, FITTINGS, WIRE, BOXES AND RELATED ITEMS.
6. "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
7. "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
8. "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

C. QUALITY ASSURANCE:

1. QUALITY AND GAUGE OF MATERIALS: NEW, BEST OF THEIR RESPECTIVE KINDS, FREE FROM DEFECTS AND LISTED BY UNDERWRITERS LABORATORIES, INC., OR BEARING THEIR LABEL. MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.
2. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.

D. PRODUCT DELIVERY, STORAGE AND HANDLING:

1. MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
2. ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS SHALL BE PERMITTED. CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

E. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC CHROMATE FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGER, RODS, INSERTS AND SUPPORTS/ RED LED OR ZINC CHROMATE WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD APPLIED ZINC CHROMATE PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRON WORK.

F. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED. CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

G. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL PLUMBING FIXTURES SHALL BE VERIFIED BY ARCHITECT

H. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

6. PIPE AND FITTINGS:

A. THE VARIOUS PIPING SYSTEMS ARE CLASSIFIED AS FOLLOWS, AND MATERIALS OF CONSTRUCTION SHALL BE AS SPECIFIED UNLESS OTHERWISE NOTED ON THE DRAWINGS.

B. PIPING, VALVES AND EQUIPMENT USED IN SIMILAR APPLICATIONS SHALL BE PROVIDED FROM THE SAME MANUFACTURER UNLESS NOTED OTHERWISE.

C. ALL EXPOSED PIPING PASSING THROUGH, WALLS, FLOORS, CEILINGS, AND PARTITIONS SHALL BE PROVIDED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.

D. ALL EXPOSED PIPE AND FITTINGS SHALL BE CHROME PLATED BRASS.

1. DOMESTIC WATER ABOVE GROUND
   a. PIPING SYSTEMS
      1. TYPE "L" HARD DRAWN COPPER TUBING PER ASTM B-88 AND FEDERAL SPECIFICATION WWT-799. PIPING, FITTINGS, AND JOINTS TO COMPLY WITH NSF.
   a. FITTINGS
      1. SOLDER OR BRAZED JOINT COPPER FITTINGS PER B16.18 OR 16.22.
      2. GROOVED COOPER FITTINGS WITH FULL FLOW RADIUS ELBOWS.
      3. PRESS FITTINGS RATED AT 200 PSI FOR 4" PIPING AND SMALLER

A. SANITARY, WASTE AND VENT SYSTEMS AND STORM DRAINAGE SYSTEMS ABOVE GROUND:

1. NO-HUB CAST IRON SOIL PIPE PER CISPI 301 AND ASTM A888. FITTINGS: NO-HUB CAST IRON FITTINGS PER CISPI 301 AND ASTM A888. JOINTS FOR NO-HUB PIPE AND FITTINGS SHALL BE PER CISPI 310. WITH STAINLESS STEEL CLAMPS AND NEOPRENE SLEEVE CONFORMING TO ASTM D 564. HEAVY DUTY COUPLINGS ARE REQUIRED ON NO-HUB SYSTEMS AT THE BASE OF STACK AND VERTICAL TO HORIZONTAL OFFSETS ON ALL SANITARY, WASTE AND STORM DRAINAGE SYSTEMS. HEAVY DUTY COUPLINGS SHALL CONFORM TO THE REQUIREMENTS OF ASTM STANDARD C-1540 AND SHALL BE TYPE 304 STAINLESS STEEL SHIELDED COUPLINGS WITH STAINLESS STEEL WORM GEAR CLAMPS. 15 PSI WORKING PRESSURE. ACCEPTABLE MANUFACTURERS: HUSKY SD 4000 OR CLAMP-ALL 12
2. TYPE DWV COPPER TUBE PER ASTM B-306 AND ANSI H-23.6. FITTINGS: DWV SOLDER JOINT FITTINGS PER ANSI B16.29 OR B16.23. JOINTS: ALL SOLDER JOINTS SHALL BE MADE WITH A SOLDER CONSISTING OF 95% TIN AND 5% ANTIMONY.
3. SINGLE AND DOUBLE SANITARY TEE FITTINGS ARE NOT ALLOWED FOR THE PIPING TO ANY PLUMBING FIXTURE; COMBINATION WYE AND EIGHTH BEND FITTINGS SHALL BE INSTALLED.
4. DOUBLE COMBINATION FITTINGS SHALL NOT BE USED FOR CONNECTIONS TO HORIZONTAL DRAINAGE PIPING; SINGLE WYE AND EIGHTH BEND FITTINGS SHALL BE USED FOR ALL CONNECTIONS.
5. FOAM CORE PVC PIPING IS NOT ACCEPTABLE FOR ANY DRAINAGE SYSTEM.

7. VALVES, FLANGES AND UNIONS:

A. GENERAL:
1. ALL SYSTEMS UNDER THIS SECTION SHALL BE PROVIDED WITH VALVES TO PERMIT COMPLETE AND SECTIONAL CONTROL OF THE SYSTEM. THEY SHALL BE LOCATED TO PERMIT EASY OPERATION, REPLACEMENT AND REPAIR. THEY SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS, OR AS HEREIN SPECIFIED. VALVES TO COMPLY WITH NSF 61-G, NSF 61, AND NSF 372. VALVES SHALL BE AS MANUFACTURED BY ONE OF THE FOLLOWING COMPANIES: AMERICAN, ANVIL INTERNATIONAL, FNW, KENNEDY, KITZ, MILWAUKEE, NIBCO, POWELL, STOCKHAM, VICTAULIC, WATTS, OR APPROVED EQUAL, AND SHALL CONFORM TO DESCRIPTION LISTED BELOW.
2. CONTROL VALVES SHALL BE PROVIDED FOR THE DOMESTIC COLD WATER SUPPLY TO ALL RISERS AND SPECIFIC AREAS SUCH AS, EQUIPMENT, HOSE BIBBS AND WALL HYDRANTS, AND BUILDING SEPARATIONS. VALVES SHALL BE LOCATED IN BACK-OF-HOUSE OR SERVICE AREAS WITH ACCESS PANELS OR ABOVE LAY-IN CEILINGS. NO ACCESS PANELS WILL BE PERMITTED IN PUBLIC SPACES WITH GYPSUM CEILINGS.

B. VALVE DESCRIPTION
1. CHECK VALVES:
   a. 2" AND SMALLER, MILWAUKEE UP509, 200 LB., THREADED, LOW LEAD.
   b. 2" AND LARGER, VICTAULIC SERIES 716, GROOVED ENDS.
   c. 2-1/2" AND LARGER, MILWAUKEE FIG. F-2974, 125 LB. FLANGED.
   d. 2-1/2" AND LARGER, STOCKHAM G-939, 175 LB. FLANGE.
2. BALL VALVES:
   a. 2" AND SMALLER, MILWAUKEE UPBA 100 (OR EQUAL)
3. BACKFLOW PREVENTERS:
   a. BACKFLOW PREVENTERS SHALL BE INSTALLED AT ALL LOCATIONS REQUIRED BY CODE AND LOCAL AUTHORITIES, AT ALL CONNECTIONS TO MECHANICAL EQUIPMENT, AND ELSEWHERE AS SHOWN ON THE DRAWINGS. BACKFLOW PREVENTERS SHALL BE REDUCED PRESSURE PRINCIPLE TYPE AND SHALL BE A COMPLETE ASSEMBLY INCLUDING TIGHT-CLOSING SHUTOFF VALVES BEFORE AND AFTER THE DEVICE. THE DESIGN SHALL INCLUDE TEST COCKS AND A PRESSURE-DIFFERENTIAL RELIEF SEATING CHECK VALVES. THE DEVICE SHALL MEET THE REQUIREMENTS OF AND BE CERTIFIED BY ASSE STANDARD 1013, AWWA STANDARD C-506, NSF 61-G, NSF 61, NSF 372, AND USC FOUNDATION FOR CROSS-CONNECTION CONTROL. A STRAINER SHALL BE LOCATED UPSTREAM OF THE DEVICE. ROUTE RELIEF OUTLET FROM CONE RECEIPTOR TO AN AIR GAP FITTING FOR DISCHARGE TO SANITARY SEWER.
   b. ACCEPTABLE MANUFACTURERS ARE AMES COMPANY, APOLLO VALVES, HERSEY PRODUCTS, WATTS REGULATOR, AND ZURN-WILKINS.
4. FLANGES:
   a. ALL FLANGES SHALL BE FACED AND DRILLED FOR NOT LESS THAN 125 POUNDS STEAM WORKING PRESSURE COMPLETE WITH NECESSARY ADAPTER, AND SHALL BE OF SIZE AND MATERIAL OF ADJACENT PIPING. ALL FLANGES SHALL BE FACED (RAISED OR FLAT) TO BE COMPATIBLE WITH CONNECTING VALVES, EQUIPMENT, ETC. THE CONNECTION OF ONE RAISED FACE FLANGE TO A FLAT FACE FLANGE SHALL NOT BE PERMITTED.
5. UNIONS AND JOINTS:
   a. UNIONS ON DRAINAGE PIPES ON FIXTURE SIDE OF TRAPS MAY BE SLIP OR FLANGED JOINTS WITH SOFT RUBBER WASHERS OR GASKETS. UNIONS 2" AND SMALLER ON COPPER PIPE SHALL BE ALL BRASS WITH GROUND JOINT AND SHALL BE 250# COPPER TO COPPER. UNIONS ABOVE 2" SHALL BE FLANGED WITH GASKETS. PROVIDE UNION AT WATER AND GAS CONNECTION TO ALL EQUIPMENT, EXCEPT PLUMBING FIXTURES.
   b. UNIONS AND FLANGES FOR SERVICING AND DISCONNECT ARE NOT REQUIRED IN INSTALLATIONS USING GROOVED JOINT COUPLINGS. (THE COUPLINGS SHALL SERVE AS DISCONNECT POINTS.)

8. INSULATION:

A. THE FOLLOWING SHALL BE INSULATED:
1. ALL DOMESTIC HOT AND COLD WATER PIPING ABOVE GRADE.
2. ALL HORIZONTAL STORM DRAIN PIPING AND ROOF DRAIN BODIES

B. DOMESTIC COLD WATER, PRIMARY STORM DRAINAGE, AND WASTE DAINAGE PIPING SHALL BE INSULATED WITH 4 LB. DENSITY SECTIONAL FIBERGLASS INSULATION WITH A THERMAL CONDUCTIVITY NOT TO EXCEED 0.24 WITH WHITE ALL SERVICE JACKET AND VAPOR BARRIER. ALL JOINTS AND SEAMS SHALL BE SEALED VAPOR TIGHT. ALL SEAMS AND STAPLES SHALL THEN BE COVERED WITH "ALL SERVICE JACKET" THREE-INCH WIDE TAPE.

C. MATERIALS AS SPECIFIED IN THIS SECTION SHALL BE MANUFACURTED BY CERTAINTEED, JOHN MANVILLE, KNAUF, OWENS CORNING OR EQUAL. INSULATION THICKNESS SHALL BE AS SHOWN IN THE FOLLOWING TABLE:

MINIMUM PIPE INSULATION			INSULATION THICKNESS FOR PIPE SIZES				
PIPING SYSTEM TYPES	FLUID TEMPERATURE RANGE		LESS THAN 1"	1" TO 1-1/2"	1-1/2" TO 4"	4" TO 8"	8" AND LARGER
	°C	°F	IN.	IN.	IN.	IN.	IN.
PLUMBING							
DOMESTIC COLD WATER	AMBIENT	AMBIENT	0.5	0.5	1.0	1.0	1.0
DOMESTIC HOT WATER AND HOT WATER RECIRCULATION	40.5 - 60	105 - 140	1.0	1.0	1.5	1.5	1.5
ABOVE GRADE DRAINS AND PIPING RECIEVING, CONDENSATE OR ICE MACHINE DISCHARGE	4.5 - 15.5	40 - 60	0.5	0.5	1.0	1.0	1.0

9. PLUMBING FIXTURES:

A. PROVIDE ALL FIXTURES WITH SUPPLIES, LOOSE KEY STOPS, 17GA P-TRAPS AND SUPPORTS AS REQUIRED.

B. REFER TO FIXTURE SCHEDULE FOR FURTHER REQUIREMENTS AND DESCRIPTION

10. PIPING SUPPORTS:

A. SUPPORT ALL PIPING FROM BUILDING CONSTRUCTION BY PROVIDING INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), AND ACCEPTABLE BRACKETS. SUBMIT ALL METHODS FOR REVIEW.

B. PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR GROUPED LINES AND SERVICES.

C. PROVIDE ADDITIONAL FRAMING WHERE BUILDING CONSTRUCTION IS INADEQUATE. SUBMIT FOR REVIEW.

D. SUSPENDED HORIZONTAL PIPING:

1. ALL PIPING SHALL BE SUPPORTED BY MEANS OF HANGER RODS AND PIPE HANGERS FROM ROOF OR FLOOR CONSTRUCTION USING SUPPLEMENTARY STEEL AND/OR LAGBOLTS. WATER SUPPLY PIPE CONNECTING TO PUMPS, EQUIPMENT, FIXTURES OR FIXTURE SUPPLIES SHALL BE MADE RIGID AT THE CONNECTION POINT.
   a. PIPING SHALL BE SUPPORTED FROM NEW STEEL CONSTRUCTION WITH ANVIL INTERNATIONAL FIG. 131 BEAM CLAMP, FIG. 61 BEAM CLAMP, FIG. 66 WELDED BEAM ATTACHMENT OR FIG. 60 WASHER PLATE WITH ALL-THREAD ROD.
   b. PIPING AND BRACKETS SHALL BE SUPPORTED FROM HOLLOW BLOCK CONSTRUCTION USING MASONRY DRILLED HOLES AND TOGGLE BOLTS.
   c. PIPING SHALL BE SUPPORTED FROM WOOD TRUSS CONSTRUCTION WITH PLATED LAG SCREWS OF BOLTS, B-3227 AND B-3228.
   d. PIPING SHALL BE SUPPORTED FROM NEW CONCRETE WITH ANVIL INTERNATIONAL FIG. 282 INSERTS OR DRILLED EXPANSION ANCHORS.
   e. PIPE SUPPORTS SHALL NOT BE ATTACHED TO FLOOR OR ROOF DECK.
   f. ACCEPTABLE MANUFACTURERS ARE: ANVIL, B-LINE AND FNW.
2. UNLESS OTHERWISE NOTED, HANGERS AND CLAMPS SHALL BE AS LISTED BELOW (ALL MODEL NUMBERS NOTED ARE B-LINE SYSTEMS):
   a. CAST IRON/STEEL PIPE - B3100 OR B3109
   b. INSULATED WATER PIPE - B100 OR B3109 WITH B3151 PLACED OVER INSULATION PROTECTION SADDLE.
   c. UNINSULATED BARE COPPER PIPE - B3170 CTC PLASTIC COATED
   d. ALL SUPPORTS AND MOUNTING HARDWARE ARE TO BE GALVANIZED, CADMIUM PLATED, OR FACTORY ENAMEL PAINTED.
3. ALL SUPPORTS ON INSULATED PIPING SYSTEMS SHALL BE SIZED TO FIT OUTSIDE THE INSULATION AND SHALL BE PROVIDED WITH INSULATION INSERTS AND SHIELDS AT EACH HANGER OR SUPPORT POINT.

E. PROVIDE 180 DEGREE ARC GALVANIZED METAL COVERING SHIELDS ON HANGERS FOR INSULATED PIPING WITHOUT INCOMPRESSIBLE INSULATING BLOCK IN INSULATION AT HANGERS.

F. MAXIMUM HANGER SPACING AS INDICATED.

1. MAXIMUM SPACING BETWEEN PIPE HANGERS SHALL BE:
   a. STEEL PIPE:
      1. 1-1/4" AND SMALLER: 6'-0"
      2. 1-1/2" - 2": 8'-0"
      3. 2-1/2" AND LARGER: 10'-0"
   b. CAST IRON SOIL PIPE:
      1. 2" AND LARGER: 10'-0"
   c. COPPER TUBING:
      1. 1/2" - 1-1/4": 5'-0"
      2. 1-1/2" - 2": 8'-0"
      3. 2-1/2" AND LARGER: 10'-0"
   d. PVC/CPVC AND ALL PLASTIC PIPE:
      1. 1-1/4" AND SMALLER: 3'-0"
      2. 1-1/2" AND LARGER: 4'-0"

G. AT LEAST ONE HANGER SHALL OCCUR WITHIN TWO FEET (2'-0") FROM WHERE A CHANGE IN DIRECTION TAKES PLACE IN THE LINE. WHERE PIPES EXTEND DOWN OR UP TO OTHER FLOORS, PIPE CLAMPS SHALL BE PROVIDED ON EACH FLOOR TO SUPPORT VERTICAL RISERS. VERTICAL PIPING DROPS SHALL BE RIGIDLY ANCHORED TO STRUCTURE AT THE TOP AND BOTTOM OFFSETS AND AT EIGHT FOOT INCREMENTS ALONG THE VERTICAL DROP. EQUAL MANUFACTURERS FOR HANGERS AND CLAMPS ARE B-LINE SYSTEMS, ANVIL INTERNATIONAL, FEE AND MASON, PHD MANUFACTURING, OR APPROVED EQUAL.

H. ALL CONNECTIONS TO PUMPS AND OTHER VIBRATING MACHINERY SHALL BE PROVIDED WITH STAINLESS STEEL BRAIDED FLEXIBLE HOSE CONNECTIONS. CONNECTIONS TO POTABLE WATER SYSTEMS SHALL MEET ANSI/NSF 61 DESIGN STANDARDS.

I. VERTICAL PIPING:

1. PROVIDE SPACING AS INDICATED:
   a. THREADED PIPING SHALL BE EVERY OTHER FLOOR LEVEL, AT A MAXIMUM OF 25 FEET ON CENTERS.
   b. CAST IRON PIPING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 20 FEET ON CENTERS; HUBLESS PIPE IS THE EXCEPTION, REQUIRING A MAXIMUM OF 10 FEET ON CENTERS.
   c. TUBING SHALL BE EVERY FLOOR LEVEL MAXIMUM 10 FEET ON CENTERS.

11. TESTS:

A. DOMESTIC WATER PIPING:

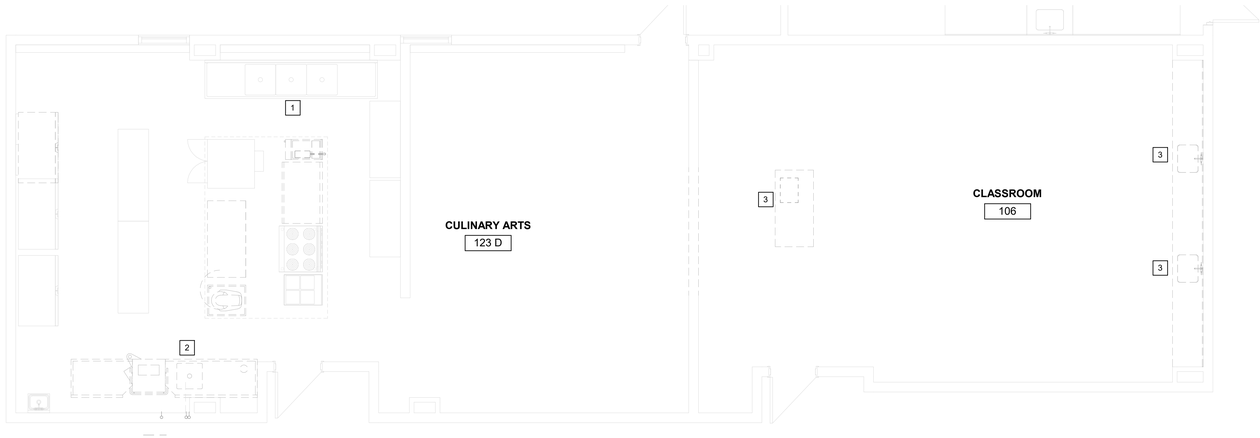
1. TEST PIPING HYDROSTATICALLY AT A PRESSURE OF 125PSI.
2. DURATION OF TEST SHALL BE 2 HOURS WITHOUT A LOSS IN PRESSURE.

B. SOIL, WASTE AND VENT PIPING:

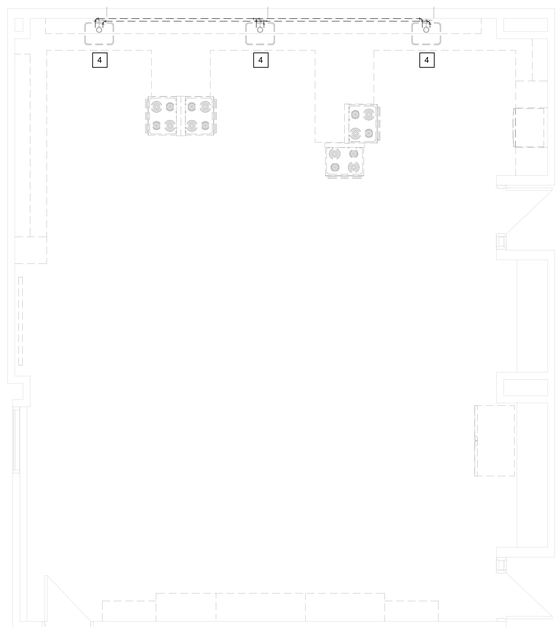
1. CAP ALL OUTLETS AND FILL PIPING SYSTEM TO OVERFLOWING FROM A POINT AT LEAST 10

PLUMBING DEMOLITION KEY NOTES

1. REMOVE DAMAGED/LEAKING PIPING AT EXISTING 3-BAY POT SINK. SEE NEW PLAN FOR NEW SCOPE OF WORK.
2. REMOVE EXISTING DISHWASHER AND PRE-RINSE TABLE WITH WALL FAUCET. EXISTING PLUMBING PIPING (WASTE, VENT, COLD & HOT WATER) TO REMAIN. ALL REMOVED PLUMBING FIXTURES AND EQUIPMENT SHALL BE TURNED OVER TO OWNER, DISPOSED OR SALVAGED AS DIRECTED BY OWNER. SEE NEW PLAN FOR NEW SCOPE OF WORK.
3. EXISTING LAB SINKS TO BE REMOVED. DISCONNECT AND REMOVE ALL ASSOCIATED PIPING AND CAP AT ACTIVE MAINS.
4. EXISTING SINKS TO BE REMOVED. DISCONNECT AND REMOVE DOMESTIC WATER (H&CW) PIPING AND CAP AT ACTIVE MAINS. EXISTING SANITARY TO BE REUSED.



1 PLUMBING DEMOLITION PLAN
1/4" = 1'-0"



2 PLUMBING DEMOLITION PLAN - ROOM 107
1/4" = 1'-0"

TRUE NORTH

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NO	DATE	DESCRIPTION

Designed:	MK
Drawn:	MK
Reviewed:	JJ
Project No.:	2201480
Date:	05/12/2023

Issued for:
PERMIT SET

Title:
PLUMBING DEMOLITION PLAN

Sheet No.
PD1.01

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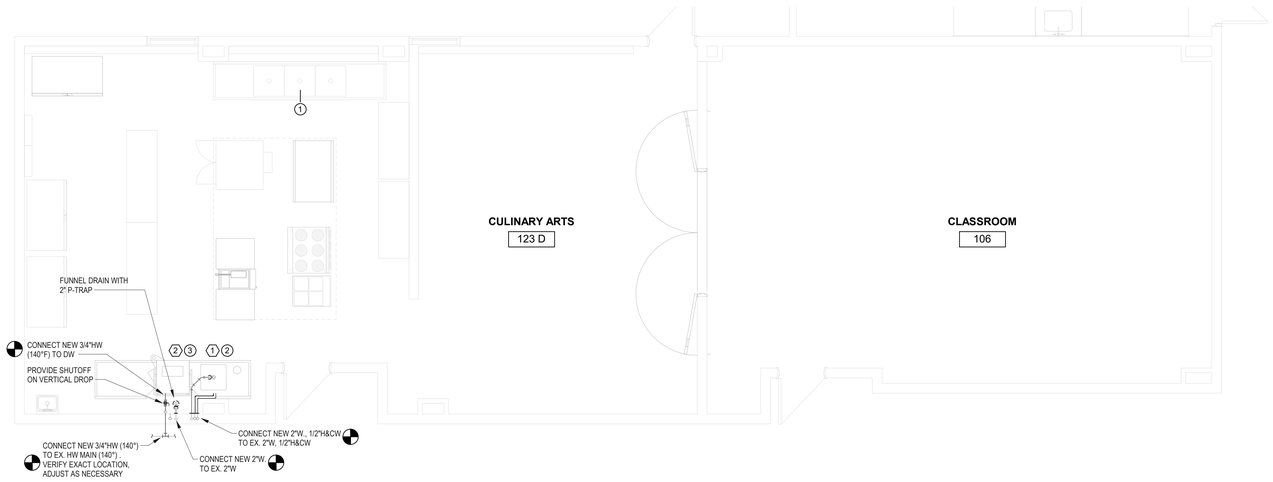

1 PLUMBING PLAN
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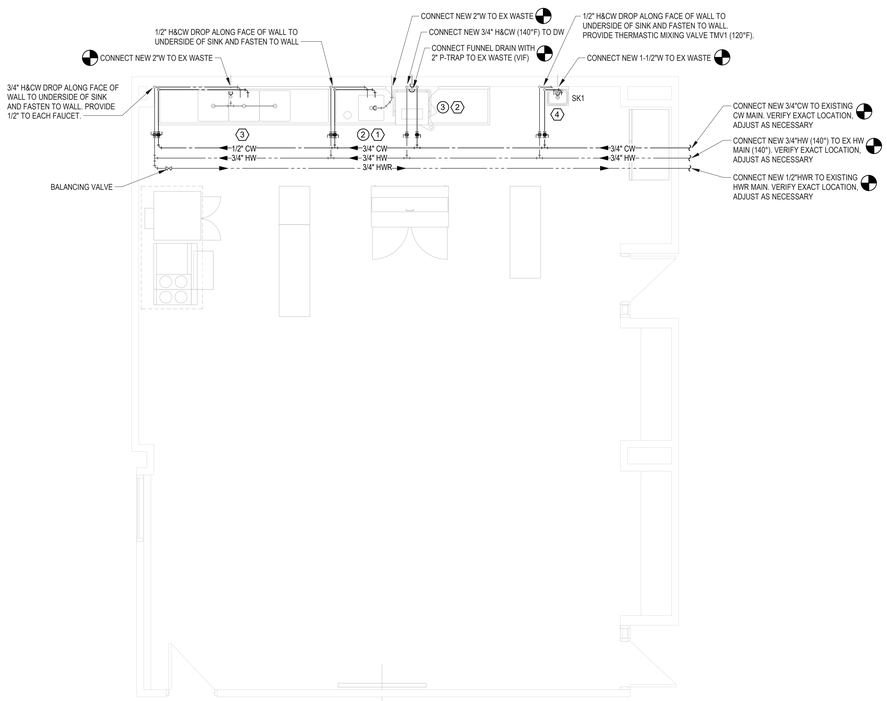


2 PLUMBING PLAN - ROOM 107
1/4" = 1'-0"

PLUMBING KITCHEN EQUIPMENT SCHEDULES

GENERAL NOTES:

1. FOOD SERVICE EQUIPMENT IS TO BE FURNISHED AND SET IN PLACE UNDER OTHER INDIVIDUAL TRADE SECTIONS. CONTRACTOR SHALL COORDINATE AND VERIFY ALL EQUIPMENT LOCATIONS WITH THE KITCHEN EQUIPMENT CONTRACTOR PRIOR TO ANY ROUGH-IN OF DRAINAGE AND WATER PIPING FOR KITCHEN EQUIPMENT CONNECTION. REFER TO AND COORDINATE WITH LATEST APPROVED KITCHEN FOOD SERVICE EQUIPMENT CUTS FOR COMPLETE DESCRIPTIONS & ROUGH-IN LOCATIONS.
2. ALL PIPE SIZES SHOWN ARE FOR SUPPLY AND DRAIN ONLY - SEE LATEST APPROVED KITCHEN EQUIPMENT CUTS FOR ACTUAL CONNECTION SIZES. FURNISH AND INSTALL ALL WASTE, VENT, HOT & COLD WATER PIPING, INCLUDING TRAPS, STOPS WITH SUPPLIES, ESCUTCHEONS, VALVES, AND ALL NECESSARY FITTINGS, ADAPTERS, UNIONS REDUCERS ETC. AS REQUIRED TO MAKE FINAL CONNECTION AND TO COMPLETE INSTALLATION.
3. INSTALL ALL WATER PRESSURE REDUCING VALVES, VACUUM BREAKERS, SOLENOID VALVES, WATER REGULATORS AND ANY OTHER MISCELLANEOUS FITTINGS FOR ALL EQUIPMENT LISTED BELOW.
4. ALL INDIRECT WASTE DRAINS FROM FIXTURES OR EQUIPMENT SHALL BE PIPED TO FLOOR DRAINS/UHUB DRAINS THRU AIR GAP AS NEATLY AND CLEARLY AS POSSIBLE. CUT END OF INDIRECT WASTE PIPE AT 45 DEGREE ANGLE TO AVOID SPLASHING.
5. ALL EXPOSED VALVES, STOPS WITH SUPPLIES, FITTINGS AND WATER WASTE AND VENT PIPING WHICH ARE VISIBLE TO OCCUPANTS IN FINISHED AREAS SHALL BE CHROME-PLATED COPPER WITH CHROME-PLATED ESCUTCHEONS AT WALL PENETRATIONS, REFER TO SPECS FOR MANUFACTURERS.
6. ANY PLUMBING ITEMS NECESSARY FOR PROPER OPERATION OF EQUIPMENT WHICH ARE NOT SHOWN ON THE PLUMBING DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS SHALL BE SUPPLIED BY THE KITCHEN EQUIPMENT PROVIDERS AND INSTALLED BY THE PLUMBING CONTRACTOR
7. (1) INDICATES EQUIPMENT LOCATION

ITEM	DESCRIPTION	CW	HW	W	IW	GAS	REMARKS
1	PRE-RINSE TABLE WITH SINK, GARBAGE DISPOSAL AND WALL MOUNT SPRAYER	1/2"	1/2"	2"	-	-	GARBAGE DISPOSAL TO BE PROVIDED BY KITCHEN EQUIPMENT CONSULTANT
2	DISHWASHER WITH BOOSTER	1/2"	3/4"(140)	-	2"	-	PIPE PUMP DRAIN IW TO HUB DRAIN
3	3-BAY SINK	1/2"	1/2"(140)	-	2"	-	-
4	WALL MOUNTED SINK	1/2"	1/2"(120)	1-1/2"	-	-	PROVIDE TMV1.

PLUMBING FIXTURE SCHEDULE

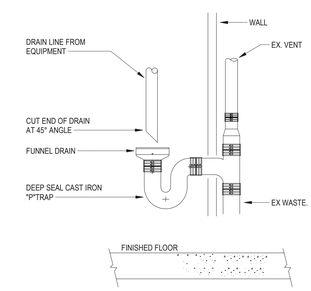
SYMBOL	FIXTURE TYPE	DESCRIPTIONS	CONNECTION			
			S	V	CW	HW
SK1 ♿	SINK WALL MOUNTED	ELKAY MODEL #WCLWO1923OSDC (OR APPROVED EQUAL) 18 GA STAINLESS STEEL SINGLE WALL MOUNT SINK, DRAIN ASSEMBLIES AND MAINTENANCE KIT. 3-HOLE DECK PENETRATIONS, TAILPIECES, P-TRAPS AND SUPPLIES. ELKAY LKD2325BH5C FAUCET, 1.5 GPM, TRUEBRO LAVGUARD 2E-2 PIPE COVERING.	2"	1-1/2"	1/2"	1/2"
TMV1	THERMOSTATIC MIXING VALVE	CASH-ACME 135 SERIES MODEL #25687 (WHERE TEMPERED WATER AND COLD WATER IS REQUIRED), CHROME FINISH, 3/8" COMPRESSION CONNECTIONS, INTEGRAL CHECKS, ASSE 1070 COMPLIANT; LEAD FREE.	---	---	1/2"	1/2"

NOTES:
PROVIDE SUPPLIES WITH 1/4 TURN BALL STOPS, "P" TRAPS, PLUMBING FIXTURE SUPPORTS AND NECESSARY FITTINGS TO MAKE FINAL CONNECTION. REFER TO SPECIFICATION FOR EQUIVALENTS AND ARCHITECTURAL DOCUMENTS FOR EXACT PLUMBING FIXTURE MOUNTING HEIGHTS

PLUMBING NEW KEY NOTES

1. REPLACE ALL DAMAGED/LEAKING PIPING WITH NEW PIPING (WASTE, HOT AND COLD WATER TO EXISTING 3-BAY POT SINK. MODIFY FINAL PIPING CONNECTIONS AS NECESSARY.
2. CONNECT NEW 2"W., 1/2"H&CW TO EX. 2"W., 1/2"H&CW FOR SINK AND WALL MOUNT SPRAYER. MODIFY PIPING CONNECTIONS AS REQUIRED.
3. DISHWASHER: EXTEND 3/4"HW WITH VALVE FROM EXISTING HOT WATER MAIN OF SUFFICIENT SIZE. PROVIDE WITH WATER HAMMER ARRESTOR. PIPE PUMPED DRAIN TO FUNNEL DRAIN, RECONNET TO EXISTING WASTE LINE. PROVIDE AND INSTALL DRAIN TEMPERING VALVE IF NOT INCLUDED WITH DISHWASHER. REFER TO EQUIPMENT CUTS FOR ROUGHING AND INSTALLATION REQUIREMENTS.

   CONTRACTOR TO VERIFY OUTLET TEMPERATURE AND PRESSURE OF HOT AND COLD WATER PRIOR TO INSTALLION OF DISHWASHER. IF NECESARRY, PROVIDE PRESSURE REDUCING VALVE PER MANUFACTURER'S INSTALLATION REQUIREMENTS.



3 TYPICAL FUNNEL DRAIN DETAIL
NTS

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REVISIONS

NO	DATE	DESCRIPTION

Designed:	MK
Drawn:	MK
Reviewed:	JJ
Project No.:	2201480
Date:	05/12/2023
Issued for:	PERMIT SET

Title: CULINARY CLASSROOM PLUMBING PLANS

Sheet No. P1.01

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LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	RECESSED 2X4 LED LIGHT FIXTURE	R	RELAY.
	RECESSED 2X4 LED EMERGENCY LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	P-C	PHOTOCELL (MOUNTED ON ROOF).
	RECESSED 2X2 LED LIGHT FIXTURE	P-P	UNIVERSAL VOLTAGE POWER PACK. SENSOR SWITCH PP20 SERIES.
	RECESSED 2X2 LED EMERGENCY LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	H	DAYLIGHT HARVESTING PHOTOCELL.
	RECESSED LINEAR LED LIGHT FIXTURE	S	SINGLE POLE TOGGLE SWITCH. (48" A.F.F. UNLESS NOTED OTHERWISE)
	RECESSED LINEAR LED EMERGENCY LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	S_3	THREE WAY TOGGLE SWITCH. (48" A.F.F. UNLESS NOTED OTHERWISE).
	RECESSED LED DOWN LIGHT FIXTURE	S_{OC}	OCCUPANCY SWITCH. SENSOR SWITCH WSD SERIES. (48" A.F.F. UNLESS NOTED OTHERWISE).
	RECESSED LED EMERGENCY DOWN LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	S_D	DIMMING SWITCH. SENSOR SWITCH SPODMRD SERIES. (48" A.F.F. UNLESS NOTED OTHERWISE).
	SUSPENDED HIGH BAY LED LIGHT FIXTURE	S_P	SINGLE POLE TOGGLE SWITCH WITH PILOT LIGHT. (48" A.F.F. UNLESS NOTED OTHERWISE).
	SUSPENDED HIGH BAY LED EMERGENCY LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	S_K	SINGLE POLE KEY SWITCH. (48" A.F.F. UNLESS NOTED OTHERWISE).
	SUSPENDED LINEAR LED LIGHT FIXTURE	S_{MT}	SINGLE POLE MOMENTARY SWITCH. (48" A.F.F. UNLESS NOTED OTHERWISE).
	SUSPENDED LINEAR LED LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	OCS_1	CEILING MOUNT STANDARD RANGE 360° DUAL TECHNOLOGY OCCUPANCY SWITCH. SENSOR SWITCH CMR PDT 9 SERIES.
	DECORATIVE LED WALL SCONCE	OCS_2	CEILING MOUNT EXTENDED RANGE 360° DUAL TECHNOLOGY OCCUPANCY SWITCH. SENSOR SWITCH CMR PDT 10 SERIES.
	WALL MOUNTED EXTERIOR LED LIGHT FIXTURE	OCS_3	CEILING MOUNT 360° DUAL TECHNOLOGY OCCUPANCY STEP DIMMING SWITCH. DIM LIGHT FIXTURES TO 50% AFTER NO OCCUPANCY FOR 15 MINUTES.
	WALL MOUNTED EXTERIOR EMERGENCY LED LIGHT FIXTURE	OCS_4^{ZN}	CEILING MOUNT EXTREME TEMPERATURE, DAMP LOCATION RATED 360° PASSIVE INFRARED SENSOR WITH AMBIENT LIGHT CONTROL. EATON OXC-P-2MHO-R. ZN INDICATES LIGHTING ZONE.
	WALL/ CEILING MOUNTED SELF CONTAINED DOUBLE HEAD EMERGENCY LIGHT UNIT	DTD	GENERATOR TRANSFER DEVICE
	WALL MOUNTED EXIT SIGN (NUMBER OF ILLUMINATED FACES AND DIRECTIONAL CHEVRONS INDICATED ON FLOOR PLAN)	EMR	EMERGENCY LIGHTING RELAY
	WALL MOUNTED EXIT SIGN (NUMBER OF ILLUMINATED FACES AND DIRECTIONAL CHEVRONS INDICATED ON FLOOR PLAN)	LCP	LIGHTING CONTROL PANEL
TC	TIME CLOCK.	KP	LIGHTING CONTROLS KEY PAD.

NOTE:

NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS.

LIGHTING CONTROL GENERAL NOTES

(NOT ALL NOTES ARE USED IN THIS PHASE OF DESIGN)

1. COORDINATE ELECTRICAL REQUIREMENTS OF ALL OWNER PROVIDED EQUIPMENT WITH ACTUAL EQUIPMENT PRIOR TO INSTALLATION.
2. ALL LIGHTING CONTROLS SHALL BE PROVIDED BY A SINGLE MANUFACTURER AND ALL CONTROLS SHALL BE COMPATIBLE WITH THE LIGHTING FIXTURES PROVIDED.
3. CONTRACTOR SHALL COORDINATE WITH LIGHTING CONTROL MANUFACTURER TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM. ALL REQUIRED, POWER PACKS, INTERCONNECTION WIRING, ETC. SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
4. CONTRACTOR SHALL COORDINATE DIMMING PROTOCOL (0-10V, DALI PHASE DIMMING, ETC.) OF LIGHTING FIXTURES PROVIDED WITH LIGHTING CONTROLS VENDOR TO ENSURE COMPATIBILITY.
5. CONTRACTOR'S MANUFACTURER WILL ENSURE THAT THEIR BEST SENSING PROTOCOL (ULTRASONIC, INFRARED, MICROWAVE, ETC.) AND EITHER SINGLE OR DUAL TECHNOLOGY DEVICES ARE PROVIDED FOR EACH SPACE TYPE.
6. CONTRACTOR SHALL HAVE THEIR MANUFACTURER PROVIDE SHOP DRAWINGS WITH DETAILED INFORMATION SHOWING ALL REQUIRED LIGHTING CONTROL COMPONENTS AND INTERCONNECTIONS NECESSARY FOR THEIR SYSTEM TO FUNCTION AS DESCRIBED IN DRAWING PLANS AND SPECIFICATIONS. THESE DRAWING WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AND ANY REQUIRED CHANGES WILL BE CORRECT AT NO ADDITIONAL COST TO THE OWNER.
7. WALL SWITCH QUANTITY AND LOCATIONS HAVE BEEN NOTED ON THE LIGHTING PLANS. REFER TO LIGHTING CONTROLS SYMBOLS LEGEND FOR EACH TYPE OF SWITCH REQUIRED (DIMMING, KEYED, THREE-WAY, FOUR-WAY, OCCUPANCY SENSING, ETC.).
8. LIGHTING CONTROLS SHALL BE PROVIDE AND INSTALLED PER IECC (2021) C406.4
9. MAINTENANCE, COMMISSIONING AND TESTING FOR BUILDING SYSTEM SHALL BE PER IECC (2021) C408

POWER SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE. (18" A.F.F. UNLESS NOTED OTHERWISE).		HEAVY DUTY DISCONNECT SWITCH (NON-FUSED)
	QUAD RECEPTACLE. (18" A.F.F. UNLESS NOTED OTHERWISE).		WEATHER PROOF HEAVY DUTY FUSED DISCONNECT SWITCH
GFI	DUPLEX RECEPTACLE EQUIPPED WITH INTEGRAL GROUND FAULT INTERRUPTER. (18" A.F.F. UNLESS NOTED OTHERWISE).		MAGNETIC MOTOR STARTER
WP	WEATHER PROOF DUPLEX RECEPTACLE. (18" A.F.F. UNLESS NOTED OTHERWISE).		MOTOR
CTR	DUPLEX RECEPTACLE. (10" ABOVE COUNTER UNLESS NOTED OTHERWISE).	MD	MOTORIZED DAMPER, PROVIDED BY DIV. 23, WIRED BY DIV. 26
SW	DUPLEX RECEPTACLE. (CENTERED BEHIND MICROWAVE. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT DEVICE MOUNTING LOCATIONS).	S_T	THERMAL OVERLOAD SWITCH.
REF	DUPLEX RECEPTACLE. (REFRIGERATOR MOUNT AT 42" UNLESS NOTED OTHERWISE).	S_M	MOTOR RATED SWITCH.
TC	DUPLEX RECEPTACLE. (TIME CLOCK COORDINATE MOUNTING REQUIREMENTS WITH TELECOMMUNICATIONS PLANS).	TS	SPRING WOUND TIMER SWITCH
SHE	TWIST LOCK RECEPTACLE FOR MATERIAL HANDLING EQUIPMENT. (SO CORD TWIST LOCK 30A, L5-30 COORDINATE ADDITIONAL REQUIREMENTS WITH MATERIAL HANDLING PLANS).	FCP FC	FAN CONTROL PANEL/ FAN CONTROLLER (COORDINATE EXACT REQUIREMENTS WITH MECHANICAL DRAWINGS).
FC	DUPLEX RECEPTACLE MOUNTED TO UNISTRUT FOR STOW-BY-LIGHT SYSTEM LED CONTROLLER		
CR	DUPLEX RECEPTACLE MOUNTED TO UNISTRUT FOR STOW-BY-LIGHT SYSTEM LED RECEIVER	SBLP	STOW-BY-LIGHT PANELBOARD
VM	DUPLEX RECEPTACLE. (VENDING MACHINE RECEPTACLE, MOUNT AT 42" UNLESS NOTED OTHERWISE. COORDINATE EXACT RECEPTACLE CONFIGURATION WITH SUPPLIED VENDING EQUIPMENT).	VRCP	VEHICLE RESTRAINT CONTROL PANEL.
WC	DUPLEX RECEPTACLE. (WATER COOLER RECEPTACLE).		DRIVE IN DOOR STATUS SIGNAL (TRI-LITE INCORPORATED MODEL SG30-115RG-LED OR APPROVED EQUAL
ICE	DUPLEX RECEPTACLE. (ICE MACHINE RECEPTACLE, MOUNT AT 42" UNLESS NOTED OTHERWISE. COORDINATE EXACT RECEPTACLE CONFIGURATION WITH SUPPLIED VENDING EQUIPMENT).	DSCP	DOCK SYSTEM CONTROL PANEL. (KELLEY COMPANY MASTER CONTROL PANEL) PANEL SHALL CONTROL DOCK LEVELER, VEHICLE RESTRAIN, DOOR STATUS SIGNALS AND COMBINATION FAN/ LIGHT.
SD SD	DUPLEX / QUAD RECEPTACLE. (WAREHOUSE SPACE RECEPTACLE. SO CORD/ BUS DROP CABLE COORDINATE EXACT MOUNTING REQUIREMENTS WITH PROJECT CONSTRUCTION MANAGER. SEE DETAIL FOR RECEPTACLE MOUNTING.)		EDGE OF DOCK CONTROL STATION.
	208 VOLT, 2 POLE, RECEPTACLE AMP RATING AS SHOWN ON PLAN. (18" A.F.F. UNLESS NOTED OTHERWISE)	T	TRANSFORMER.
	208 VOLT, 3 POLE, RECEPTACLE AMP RATING AS SHOWN ON PLAN. (18" A.F.F. UNLESS NOTED OTHERWISE)		SURFACE MOUNTED PANEL BOARD
	DUPLEX RECEPTACLE. (FLOOR MOUNTED).		RECESSED MOUNTED PANEL BOARD
	QUAD RECEPTACLE. (FLOOR MOUNTED).		CONTROLLED BRANCH CIRCUIT WIRING.
	208 VOLT, 2 POLE, RECEPTACLE AMP RATING AS SHOWN ON PLAN. (FLOOR MOUNTED)		BRANCH CIRCUIT WIRING.
	208 VOLT, 3 POLE, RECEPTACLE AMP RATING AS SHOWN ON PLAN. (FLOOR MOUNTED)		EMERGENCY BRANCH CIRCUIT, WIRING INSTALLED PER NEC 700.
	QUAD RECEPTACLE AND DATA FLOOR BOX. (COORDINATE DATA REQUIREMENTS WITH TELECOMMUNICATION DRAWINGS).		HOME RUN.
	SURFACE RACEWAY.		EMERGENCY BRANCH CIRCUIT HOME RUN, WIRING INSTALLED PER NEC 700.
J	JUNCTION BOX		ELECTRICAL CONNECTION POINT
J	JUNCTION BOX WITH FLEXIBLE CONNECTION TO EQUIPMENT		

NOTE:

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ELECTRICAL SHEET LIST

SHEET NUMBER	SHEET NAME	ISSUED FOR PERMIT
E0.00	ELECTRICAL NOTES, SYMBOL LEGEND, ABBREVIATIONS & SCHEDULES	X
E0.01	ELECTRICAL SPECIFICATIONS	X
E0.02	ELECTRICAL SPECIFICATIONS	X
E1.01	OVERALL FIRST FLOOR ELECTRICAL POWER & LIGHTING PLAN-ROOM 123 & 106	X
E1.02	OVERALL FIRST FLOOR ELECTRIC POWER PLAN-ROOM 107	X
E4.01	DETAILS, ONE LINE RISER DIAGRAM AND PANELBOARD SCHEDULE	X
E4.07	ELECTRICAL DETAILS & FIXTURE SCHEDULE	X
ED1.01	OVERALL FIRST FLOOR DEMO PLAN- ROOM 123 & 106	X
ED1.02	OVERALL FIRST FLOOR DEMO PLAN- ROOM 107	X

ELECTRICAL GENERAL NOTES (NOT ALL NOTES ARE USED IN THIS PHASE OF DESIGN)

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH AND SHALL CONFORM IN ALL ASPECTS TO THE NATIONAL ELECTRICAL CODE (NFPA CODES & LOCAL BUILDING CODES).
2. ALL PERMITS, LICENSES AND CERTIFICATES COVERING THE COMPLETE INSTALLATION OF THE ELECTRICAL WORK SHALL BE OBTAINED AND PAID FOR BY THE ELECTRICAL CONTRACTOR
3. ALL CORE-BORING, BACKFILLING AND RESURFACING REQUIRED FOR THE ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
4. ALL CUTTING PATCHING AND REFINISHING OF WALLS, FLOORS & CEILINGS REQUIRED FOR THE ELECTRICAL WORK SHALL BE PROVIDED FOR BY THE ELECTRICAL CONTRACTOR.
5. THESE DRAWINGS ARE DIAGRAMMATIC ONLY. EXACT LOCATIONS OF ALL CONDUIT, ETC. MUST BE FIELD DETERMINED AND RUN TO AVOID OBSTRUCTIONS AND MECHANICAL EQUIPMENT.
6. UNLESS OTHERWISE NOTED, MINIMUM WIRE SIZE SHALL BE #12 AWG, THWN OR THHN COPPER; MINIMUM CONDUIT SIZE SHALL BE 3/4"C. UNLESS OTHERWISE SPECIFIED 20A, 120/208V AND 277/480V BRANCH CIRCUIT WIRING SHALL BE 2#12, #12G.
7. ALL WIRING SHALL BE CONCEALED AND RUN IN WALLS OR ABOVE CEILINGS. WIRE MOLDING AND EXPOSED CONDUIT IS NOT PERMITTED WHERE IT CAN BE CONCEALED.
8. WORK NOT INCLUDED IN CONTRACT ('N.I.C.'); ANY WIRING OR EQUIPMENT NOT TO BE FURNISHED BY CONTRACTOR SHALL BE INDICATED ON PLANS AS N.I.C.
9. SITE VISITATION - PRIOR TO SUBMITTING A BID FOR HIS WORK, THE CONTRACTOR SHALL VISIT THE SITE TO INSPECT THE NATURE AND EXTENT OF THE EXISTING CONDITIONS AND EQUIPMENT, AND DETERMINE HOW THEY WILL AFFECT THE INSTALLATION OF ELECTRICAL WORK. NO ADDITIONAL PAYMENT IN EXCESS OF THE CONTRACT PRICE WILL BE AUTHORIZED FOR "EXTRA" WORK PERFORMED DUE TO EXISTING CONDITIONS WHICH ARE OBVIOUS UPON INSPECTION.
10. STEEL JACKETED METAL CLAD CABLE, "MC CABLE" IS ACCEPTABLE ON THIS PROJECT AND MAY BE USED AS APPROVED BY NEC, WHERE RUN CONCEALED IN WALLS, ABOVE CEILINGS, OR IN BASEMENTS.
11. ALL UNUSED CONDUIT AND WIRING SHALL BE DROPPED TO THE FLOOR BY THE ELECTRICIAN FOR REMOVAL FROM THE BUILDING BY THE CONTRACTOR.
12. ALL EQUIPMENT AND DEVICES SHALL BE NEW & BEAR U.L. LABEL. ALL DEVICES SHALL BE "SPECIFICATION" GRADE.
13. WORKMANSHIP. ONLY THE BEST IN WORKMANSHIP IN ACCORDANCE WITH PRESENT STANDARDS WILL BE ACCEPTABLE. ANY WORK INSTALLED AND ADJUDGED BY THE ENGINEER TO BE BELOW STANDARDS SHALL BE TAKEN OUT AND REPLACED WITH PROPERLY DONE WORK AT CONTRACTOR'S EXPENSE.
14. GUARANTEE: CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT AND WIRING TO BE FREE FROM INHERENT MECHANICAL AND ELECTRICAL DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION OF PROJECT. ALL DEFECTS SHALL BE REPAIRED, DURING THIS PERIOD, AT NO CHARGE TO OWNER (MISUSE OR ABUSE CAUSED PROBLEMS EXCEPTED).
15. SUBSTITUTIONS OF EQUIPMENT: SPECIFIED PRODUCTS SHALL BE USED AS THE BASIS OF BID AND SHALL BE PROVIDED; WHERE 2 OR MORE MANUFACTURERS ARE LISTED, THE CHOICE IS AT THE CONTRACTOR'S OPTION. AN APPROVED EQUAL SHALL BE DETERMINED BY ENGINEER.
16. ALL 15A/20A, 120V HOMERUNS GREATER THAN 75' SHALL BE #10AWG MINIMUM; GREATER THEN 120' SHALL BE #8AWG MINIMUM. ALL 15A/20A 277V HOMERUNS GREATER THAN 175' SHALL BE #10AWG MINIMUM; GREATER THAN 280' SHALL BE #8AWG MINIMUM. ALL 15/20A, 480V, SINGLE PHASE HOMERUNS GREATER THAN 300' SHALL BE #10AWG MINIMUM. GREATER THAN 450' SHALL BE #8AWG MINIMUM. EC SHALL PERFORM VOLTAGE DROP CALCULATIONS FOR BRANCH CIRCUITS LONGER THAN SPECIFIED ABOVE AS PER NEC.
17. CONTRACTOR SHALL FIELD VERIFY NAMEPLATE LOADS OF ALL EQUIPMENT (MECHANICAL AND OWNER SUPPLIED) TO INSURE PROPER WIRE SIZING AND OVERCURRENT PROTECTION AND SHALL NOTIFY ENGINEER OF DISCREPANCIES.
18. CONTRACTOR SHALL SEAL ALL ELECTRICAL PENETRATIONS THRU FIRE RATED PARTITIONS WITH FIRE RATED MATERIAL EQUAL TO DOW CORNING SILICONE RTV FOAM AS A MINIMUM. MATERIAL SELECTION SHALL BE BASED ON RATING OF PARTITION PENETRATED.
19. ALL SUPPLEMENTARY STEEL REQUIRED FOR ELECTRICAL WORK SHALL BE PROVIDED BY THE CONTRACTOR.
20. PROVIDE INSULATED GROUNDING CONDUCTOR IN ALL CONDUITS AND CABLE ASSEMBLIES.
21. ALL EMPTY CONDUITS FOR FUTURE WORK SHALL BE PROVIDED WITH A PULL WIRE.
22. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND DETAILS FOR THE EXACT LOCATION OF ALL LIGHTING FIXTURES AND ANY OTHER EQUIPMENT INSTALLED TO THE CEILING SYSTEM. VERIFY EXACT MOUNTING HEIGHTS AND FINISHES WITH ARCHITECT PRIOR TO ROUGH-IN.
23. CONTRACTOR SHALL COORDINATE INSTALLATION OF ELECTRICAL WORK ABOVE THE CEILING TO PROVIDE THE GREATEST POSSIBLE CLEARANCE FOR INSTALLATION OF PLUMBING AND MECHANICAL INSTALLATION. CONDUIT RUNS TO BE THROUGH OR ABOVE TRUSSES WHERE POSSIBLE.
24. ELECTRICAL CONTRACTOR TO COORDINATE EXACT PLACEMENT OF ALL DEVICES SHOWN ON THE ELECTRICAL CONSTRUCTION DOCUMENTS WITH ARCHITECTURAL, MECHANICAL AND PLUMBING DRAWINGS PRIOR TO FINAL PLACEMENT.
25. ALL LOW VOLTAGE WIRE IN CEILING MUST BE PLENUM RATED.
26. NO TELEPHONE WIRE SHALL BE RUN EXPOSED ON BASEBOARDS OR WALLS.
27. WIRING FOR LOW VOLTAGE SYSTEMS SHALL BE RUN CONCEALED WITHIN WALLS AND ABOVE CEILINGS.
28. PANEL DIRECTORIES SHALL BE COMPLETELY FILLED IN AT COMPLETION OF JOB PER NEC 408.4. (TYPED).
29. CONTRACTOR MUST PRODUCE A LETTER ATTESTING THAT WORK HAS BEEN COMPLETED TO THE SATISFACTION OF THE BUILDING MANAGER WHO WILL CONFIRM HIS ACCEPTANCE BY AFFIXING HIS SIGNATURE TO THE LETTER IN A SPACE PROVIDED FOR THIS PURPOSE. WORK WILL NOT BE CONSIDERED AS BEING COMPLETE WITHOUT THIS LETTER.
30. HANGING OF LIGHT FIXTURES IS TO BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL BUILDING CODES AND SEISMIC REQUIREMENTS.
31. AT THE COMPLETION OF THE JOB, IT WILL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO TURN OVER TO THE BUILDING MANAGER AN AS-BUILT DRAWING IN REPRODUCIBLE FORM. THIS DRAWING DOES NOT HAVE TO BE MADE FROM SCRATCH; THE CONTRACT REFLECTED CEILING AND POWER PLANS MAY BE USED AS BACKGROUNDS WITH THE ACTUAL CIRCUITING CHANGES ADDED.
32. PRIOR TO THE CONTRACTOR BEING RELEASED FROM ALL OBLIGATIONS, HE WILL OBTAIN AND TURN OVER TO THE BUILDING MANAGER THE ORIGINAL COPY OF THE "CERTIFICATE OF ELECTRICAL INSPECTION".
33. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS OF EQUIPMENT AND DEVICES WITH ARCHITECT.
34. WIRING SHALL BE WITH COPPER CONDUCTORS UNLESS OTHERWISE NOTED.
35. LOCATIONS AND QUANTITIES OF EQUIPMENT HAVE BEEN BASED ON THE LATEST COMPOSITE PROVIDED BY THE CLIENT.
36. WHERE CONFLICT EXISTS BETWEEN DRAWINGS OR BETWEEN DRAWINGS AND SPECIFICATIONS, THE MOST RESTRICTIVE, THE MOST EXPENSIVE REQUIREMENT SHALL APPLY.
37. THE ELECTRICAL CONTRACTOR CAN USE THE NEWLY INSTALLED PANELS AND CONDUITS WHEREVER SUITABLE. INFORM THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
38. COORDINATE LUMINAIRE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
39. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. ALL FIRE RATED PARTITIONS AND BUILDING EXPANSION JOINTS.
    b. MOUNTING HEIGHTS OF EQUIPMENT.
40. REFER TO THE HVAC DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. MECHANICAL EQUIPMENT, CONTROL PANELS AND MOTORS.
    b. AUTOMATIC TEMPERATURE CONTROL SYSTEM PANELS AND DEVICES.
    c. DUCT MOUNTED SMOKE DETECTORS.
    d. MOTORIZED DAMPERS AND CONTROL VALVES.
41. REFER TO THE PLUMBING DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. ELECTRIC WATER HEATERS.
    b. ELECTRIC FLUSH VALVES.
42. REFER TO THE FIRE PROTECTION/SPRINKLER DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. WATER FLOW AND TAMPER SWITCHES.
    b. PRE-ACTION AND/OR DELUGE SYSTEM CONTROL PANELS.
43. REFER TO THE APPROPRIATE VENDORS APPROVED DIMENSIONED LAYOUT DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. CONDUIT CONNECTIONS TO FURNITURE AND PREFABRICATED MILLWORK.
    b. POWER AND CONTROL WIRING FOR ELECTRICALLY OPERATED DOORS.
44. EQUIPMENT, DEVICES, RACEWAY AND OTHER MATERIALS SHALL BE PROVIDED AND INSTALLED AS REQUIRED FOR THE APPLICABLE SEISMIC DESIGN CATEGORY .
45. PROVIDE SURFACE MOUNTED DEVICE BOXES AND CONDUIT ON MASONRY WALLS AND METAL STRUCTURES.
46. PLANS ARE DESIGNED IN ACCORDANCE WITH THE 2020 NATIONAL ELECTRIC CODE WITH AMENDMENTS.
47. PLANS ARE DESIGNED IN ACCORDANCE WITH 2021 IECC WITH AMENDMENTS.

A. VOLTAGE DROP: THE CONTRACTOR SHALL BE RESPONSIBLE TO ADJUST SPECIFIED FEEDER AND BRANCH CIRCUIT REQUIREMENTS BASED ON THE FOLLOWING:

1. FEEDERS SHALL BE SIZED FOR 2% VOLTAGE DROP, AND BRANCH CIRCUITS SHALL BE SIZED FOR 3% VOLTAGE DROP.
2. THE CONTRACTOR SHALL UTILIZE THE AS-BUILT LENGTHS FOR THE FEEDERS AND BRANCH CIRCUITS WHEN CALCULATING ASSOCIATED VOLTAGE DROP.
3. THE FEEDER AMPERES SHALL BE BASED ON THE FULL LOAD AMPERES OF THE UTILIZATION EQUIPMENT SERVED.
4. THE FEEDER AMPERES FOR PANELBOARDS SHALL BE BASED ON 80% OF THE TRIP SETTING FOR THAT PANELBOARD.
5. WIRING FOR LIGHTING AND RECEPTACLE BRANCH CIRCUITS SHALL BE SIZED IN ACCORDANCE WITH ELECTRICAL GENERAL NOTE 16 ON E0.01.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INCREASING THE SIZE OF THE FEEDER AND/OR BRANCH CIRCUIT WIRING, AND ASSOCIATED CONDUIT AS REQUIRED TO MEET THE ABOVE VOLTAGE DROP REQUIREMENTS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO INCREASE THE SIZE OF THE EQUIPMENT GROUND CONDUCTOR, FOR FEEDERS AND/OR BRANCH CIRCUITS INCREASED IN SIZE DUE TO VOLTAGE DROP (AND/OR OTHER ADJUSTMENT REASONS), IN ACCORDANCE WITH NEC 250.122(B).
8. THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING FOR THE FEEDERS INCREASED IN SIZE DUE TO VOLTAGE DROP FOR REVIEW AND APPROVAL. THE SHOP DRAWING SHALL INDICATE THE FEEDER AMPERES, THE FEEDER SIZE, THE CONDUIT SIZE, AND THE CALCULATED PERCENT VOLTAGE DROP.

ELECTRICAL ABBREVIATIONS

A OR AMP	AMPERES	IG	ISOLATED GROUND	REF	REFRIGERATOR
AAC	ABOVE ACCESSIBLE CEILING	IMC	INTERMEDIATE METALLIC CONDUIT	RGS	RIGID GALVANIZED STEEL
AC	ALTERNATING CURRENT			RMC	RIGID METALLIC CONDUIT
ACT	ABOVE COUNTER TOP	JB	JUNCTION BOX	RTU	ROOFTOP UNIT
AFF	ABOVE FINISHED FLOOR				
AFG	ABOVE FINISHED GRADE	KCMIL	1000 CIRCULAR MILS	SW	SWITCH
AHJ	AUTHORITY HAVING JURISDICTION	KV	KILOVOLTS (1000 VOLTS)	SWBD	SWITCHBOARD
AHU	AIR HANDLING UNIT.	KVA	KILOVOLT AMPERES (1000 VOLT-AMPERES)		
AIC	INTERRUPTING CAPACITY(RMS SYMMETRICAL AMPERES)	KW	KILOWATTS (1000 WATTS)	TC	TIME CLOCK
AIP	AIPHONE			TEL	TELEPHONE
ATS	AUTOMATIC TRANSFER SWITCH	LCP	LIGHTING CONTROL PANEL	TL	TWIST LOCK
BFG	BELOW FINISHED GRADE	LRA	LOCKED ROTOR AMPS	TYP	TYPICAL
BKBD	BACKBOARD			TV	TELEVISION
		MCA	MINIMUM CIRCUIT AMPS	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
C OR COND	CONDUIT	MCB	MAIN CIRCUIT BREAKER		
CT	CURRENT TRANSFORMER	MCC	MOTOR CONTROL CENTER	UF	UNDERFLOOR
CTR	COUNTER	MCM	THOUSAND CIRCULAR MILS	UG	UNDERGROUND
CB, C/B	CIRCUIT BREAKER	MD	MOTORIZED DAMPER	UL	UNDERWRITERS LABORATORIES
CFA	CALL FOR ASSISTANCE	MDP	MAIN DISTRIBUTION PANEL	UP	UP
CLG	CEILING	MFR, MFTR	MANUFACTURER	UTP	UNSHIELDED TWISTED PAIR
CPT	CURRENT POTENTIAL TRANS.	MH	MECHANICALLY HELD		
CU	CONDENSING UNIT.	MIC	MICROPHONE	V	VOLTS
DC	DIRECT CURRENT	MLO	MAIN LUGS ONLY	VP	VAPORPROOF
DE	DUAL ELEMENT	MO	MOTOR OPERATED	VSD	VARIABLE SPEED DRIVE
DISC. SW	DISCONNECT SWITCH	MTD	MOUNTED	VFD	VARIABLE FREQUENCY DRIVE
DN	DOWN	MUA, MAU	MAKE-UP AIR UNIT	VM	VENDING MACHINE
EO	ELECTRICALLY OPERATED	MW	MICROWAVE		
EDH	ELECTRIC DUCT HEATER			W/	WITH
EF	EXHAUST FAN	NC	NORMALLY CLOSED	WC	WATER COOLER
EM	EMERGENCY	NEC	NATIONAL ELECTRIC CODE	WP	WEATHERPROOF
EMT	ELECTRICAL METALLIC TUBING	NF	NOT FUSED	XFMR, TXFMR	TRANSFORMER
EP	ELECTRIC PNEUMATIC SWITCH	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION		
ETR, E	EXISTING TO REMAIN	NIC	NOT IN CONTRACT		
EUH	ELECTRIC UNIT HEATER	NL	NIGHT LIGHT		
EWC	ELECTRIC WATER COOLER				
EWH	ELECTRIC WALL HEATER	NO	NORMALLY OPEN		
		NTS	NOT TO SCALE		
FA	FIRE ALARM				
FACP	FIRE ALARM CONTROL PANEL	OC	OCCUPANCY SENSOR		
FCU	FAN COIL UNIT.				
FLA	FULL LOAD AMPS	P	POLE		
FT	FEET	PB	PULL BOX	**EXISTING ELECTRICAL EQUIPMENT ABBREVIATIONS**	
		PC	PULL CHAIN		
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER	PE	PNEUMATIC ELECTRIC SWITCH	EX, ETR	EXISTING TO REMAIN.
G, GND	GROUND	PM	PROJECT MANAGER	RE	REMOVE EXISTING.
		PH	PHASE	RL	RELOCATE EXISTING.
HOA	HANDS-OFF AUTOMATIC SWITCH	P/T	POTENTIAL TRANSFORMER	NL	NEW LOCATION OF EXISTING RELOCATED.
HP	HORSEPOWER	PVC	POLYVINYL CHLORIDE	NR	NEW TO REPLACE EXISTING.
HVAC	HEATING, VENTILATING AND AIR CONDITIONING	PWU	PURCHASED WITH UNIT	RR	REMOVE AND REPLACE ON NEW SURFACE.

NOTE:
NOT ALL ABBREVIATIONS MAY APPEAR ON THE DRAWINGS.

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REVISIONS

NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJR/CP
Project No.:	2201480
Date:	05/12/2023
Issued for:	PERMIT SET

Title:
ELECTRICAL NOTES, SYMBOL LEGEND, ABBREVIATIONS & SCHEDULES

Sheet No.
E0.00

5/24/2023 4:49:49 PM C:\Users\JPrete\Documents\2201480_MEP_R20_jpreteYR59B.rvt

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ELECTRICAL SPECIFICATIONS

(NOT ALL SPECIFICATIONS ARE USED IN THIS PHASE OF DESIGN)

26-0500 (16050) - ELECTRICAL GENERAL PROVISIONS

A. CODES, REGULATIONS, AND STANDARDS

REGULATORY REQUIREMENTS: ALL WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES. WHERE APPROVAL STANDARDS HAVE BEEN ESTABLISHED BY OSHA, UL, ASME, AGA, AMCA, ANSI, ARI, NFPA, THE STATE FIRE INSURANCE REGULATORY BODY, AND FM, FOLLOW THESE STANDARDS WHETHER INDICATED ON THE DRAWINGS AND SPECIFICATIONS. INCLUDE COST OF WORK REQUIRED TO COMPLY WITH REQUIREMENTS OF THESE AUTHORITIES IN THE ORIGINAL PROPOSAL. COMPLY WITH IEEE C2 WHERE APPLICABLE.

ALL ELECTRICAL SYSTEMS WILL BE DESIGNED TO COMPLY WITH THE REQUIREMENTS OF THE STATE BUILDING CODE INCLUDING ANY SUPPLEMENT(S) AND/OR AMENDMENT(S).

FURTHER, ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING APPROVED CODES AND STANDARDS:

1. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70 - NATIONAL ELECTRICAL CODE (NEC).
2. INTERNATIONAL BUILDING CODE (IBC).
3. INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
4. NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE.
5. NFPA 101 - LIFE SAFETY CODE.
6. UNDERWRITER'S LABORATORY (UL) 924 - STANDARD FOR SAFETY OF EMERGENCY LIGHTING AND POWER EQUIPMENT.
7. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
8. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
9. ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA)
10. AMERICANS WITH DISABILITIES ACT (ADA)
11. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
12. INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS (IEEE)
13. ELECTRICAL TESTING LABORATORIES (ETL)
14. AMERICAN SOCIETY OF HEATING & AIR-CONDITIONING ENGINEERS (ASHREA) 90.1 - ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BDGS.

B. DEFINITIONS

1. "FURNISH": SUPPLY AND DELIVER TO PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS.
2. "INSTALL": UNLOAD, TEMPORARILY STORE, UNPACK, ASSEMBLE, ERECT, PLACE, ANCHOR, APPLY, WORK TO DIMENSION, FINISH, CURE, PROTECT, CLEAN, AND SIMILAR OPERATIONS AT PROJECT SITE.
3. "PROVIDE": FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.
4. "PROJECT SITE": SPACE AVAILABLE FOR PERFORMING CONSTRUCTION ACTIVITIES. THE EXTENT OF PROJECT SITE IS SHOWN ON DRAWINGS AND MAY OR MAY NOT BE IDENTICAL WITH THE DESCRIPTION OF THE LAND ON WHICH PROJECT IS TO BE BUILT.
5. "NEW": MANUFACTURED WITHIN THE LAST TWO-YEARS AND NEVER USED.
6. "EQUAL", "ACCEPTABLE", "EQUIVALENT": ACCEPTABLE FOR USE ON THE PROJECT, AS DETERMINED BY THE ENGINEER, BASED UPON DOCUMENTS PRESENTED FOR SUCH DETERMINATION.
7. "INDICATED": REQUIREMENTS EXPRESSED BY GRAPHIC REPRESENTATIONS OR IN WRITTEN FORM ON DRAWINGS, IN SPECIFICATIONS, AND IN OTHER CONTRACT DOCUMENTS. OTHER TERMS INCLUDING "SHOWN," "NOTED," "SCHEDULED," AND "SPECIFIED" HAVE THE SAME MEANING AS "INDICATED."

C. SCOPE

WORK UNDER THE ELECTRICAL CONTRACT SHALL INCLUDE LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

D. WORK NOT INCLUDED

TELEPHONE EQUIPMENT AND CONDUCTORS (BY OTHERS).
DATA PROCESSING EQUIPMENT AND CONDUCTORS (BY OTHERS).
SECURITY EQUIPMENT AND CONDUCTORS (BY OTHERS).

E. GENERAL REQUIREMENTS

AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, EACH BIDDER SHALL VISIT THE SITE TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED; NO EXTRA COMPENSATION WILL BE AWARDED IF THE CONTRACTOR FAILS TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT HE MAY HAVE NOTICED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.

THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS OF HIS OWN, OR OTHERS, AT THE SITE, & SHALL BE RESPONSIBLE FOR CORRECTNESS OF SAME AS RELATED TO HIS WORK.

ALL CONTROL WIRING ASSOCIATED WITH MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS. SEALANT SHALL BE RATED FOR 3-HOURS.

SLEEVE-SEAL SYSTEMS SHALL BE MODULAR SEALING DEVICE TYPE, DESIGNED FOR FIELD ASSEMBLY TO FILL ANNULAR SPACE BETWEEN SLEEVE AND RACEWAY OR CABLE. SEALING ELEMENTS SHALL BE EPDM RUBBER INTERLOCKING LINKS SHAPED TO FIT THE SURFACE AND PIPE. INCLUDE TYPE AND NUMBER REQUIRED FOR PIPE MATERIAL AND SIZE OF PIPE. PRESSURE PLATES SHALL BE STAINLESS STEEL WITH CONNECTING BOLTS/NUTS OF STAINLESS STEEL, LENGTH AS REQUIRED TO SECURE PRESSURE PLATES TO SEALING ELEMENTS.

PROVIDE DANGER LABELING AT ALL EQUIPMENT AND JUNCTION/PULL BOXES PER CODE.

ALL PANELBOARD COVERS SHALL BE REPLACED AT THE COMPLETION OF EACH DAY'S WORK. MAINTAIN GROUND CONTINUITY THROUGHOUT ALL SYSTEMS.

PRIOR TO ANY CHIPPING, CHASING, OR CHOPPING BEING PERFORMED, THE CONTRACTOR SHALL FIELD INVESTIGATE CONDITIONS AND COORDINATE WITH ALL APPROPRIATE TRADES TO ENSURE THAT WORK WILL BE IN HARMONY WITH OTHER WORK AND NOT AFFECT ANY EXISTING BUILDING SYSTEMS.

AT THE COMPLETION OF LIFE-SAFETY SYSTEM INSTALLATION(S), THE CONTRACTOR SHALL TEST ALL FIRE ALARM AND EMERGENCY LIGHTING DEVICES AND SUBMIT A REPORT TO THE ENGINEER VERIFYING THAT THE SYSTEMS ARE FULLY OPERATIONAL.

WHERE PANELBOARDS, SWITCHES, CIRCUIT BREAKERS, TRANSFORMERS, ETC. ARE EXISTING TO BE REUSED, THE CONTRACTOR SHALL CLEAN AND REFURBISH THE EQUIPMENT. THIS SHALL INCLUDE TIGHTENING ALL CONNECTIONS, REPLACING DEFECTIVE MECHANISMS, AND PROVIDING ANY MISCELLANEOUS COMPONENTS SO THE EQUIPMENT IS IN FIRST CLASS WORKING ORDER.

NOISE AND VIBRATION: PROVIDE OPERATING SYSTEM COMPONENTS FREE OF OBJECTIONABLE VIBRATION OR NOISES. STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT, AND MOUNT OR FASTEN SO THAT NO EQUIPMENT VIBRATION WILL BE TRANSMITTED TO THE BUILDING. RECTIFY OBJECTIONABLE CONDITIONS WITH NO ADDITIONAL COMPENSATION.

F. CLEANING

REMOVE CONSTRUCTION DEBRIS RESULTING FROM THIS WORK. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE DETAILED PROCEDURES SPECIFIED HEREIN, OR AS DICTATED BY OWNER AT SITE.

EXCESS ELECTRICAL MATERIALS AND WASTE SHALL BE REMOVED FROM THE BUILDING AFTER REGULAR BUSINESS HOURS AND SHALL BE TAKEN OFF-SITE NO LATER THAN THE START OF THE NEXT BUSINESS DAY. NO DEBRIS SHALL BE ALLOWED TO ACCUMULATE ON THE SITE. THE CONSTRUCTION SITE SHALL BE SWEPT CLEAN EACH DAY AND NO DUST OR DEBRIS SHALL BE PERMITTED TO ENTER THE AREA DRAINS SERVING THE BUILDING.

ALL EXCESS ELECTRICAL MATERIALS AND WASTE SHALL BE TAKEN FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS. EQUIPMENT REQUIRED TO BE TURNED OVER TO THE OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION (COORDINATE LOCATION AND EQUIPMENT WITH OWNER).

G. PERMITS, FEES AND INSPECTIONS

THE ELECTRICAL CONTRACTOR SHALL:

1. GIVE ALL NECESSARY NOTICES.
2. ARRANGE WITH LOCAL & STATE AUTHORITIES & UTILITY COMPANIES FOR PERMITS & SERVICE CONNECTIONS, VERIFYING LOCATIONS & ARRANGEMENT.
3. SHALL INCLUDE IN HIS BID THE COST OF REQUIRED GOVERNMENT AND STATE SALES TAXES AND ALL APPLICABLE FEES INCLUDING INSPECTIONS.
4. THE CONTR. SHALL FILE ALL DWGS, COMPLETE ALL DOCS & OBTAIN ALL NECESSARY APPROVALS FROM THE PROPER AUTHORITY OR AGENCY HAVING JURISDICTION.
5. SEE THAT ALL REQUIRED INSPECTIONS AND TESTS ARE MADE, AND OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION COVERING HIS WORK.

H. TEMPORARY LIGHT AND POWER

FURNISH AND INSTALL TEMPORARY ELECTRICAL SERVICE OF SUFFICIENT SIZE FOR POWER AND LIGHTING USE BY ALL TRADE CONTRACTORS DURING CONSTRUCTION. ALL TEMPORARY WORK SHALL BE DONE IN COMPLIANCE WITH ALL APPLICABLE ARTICLES IN THE NATIONAL ELECTRICAL CODE, O.S.H.A. AND WITH ALL REQUIREMENTS OF ANY AUTHORITY HAVING JURISDICTION OVER THE WORK.

PROVIDE TEMPORARY POWER CONNECTION TO A CONSTRUCTION TRAILER (AS REQUIRED). THE LOCATION OF THE TRAILER IS TO BE DETERMINED ON SITE. PROVIDE FEEDER TO TRAILER OF SUFFICIENT SIZE TO POWER HEATING, AIR CONDITIONING, GENERAL POWER AND LIGHTING.

I. SUBMITTALS

SHOP DRAWINGS SUBMITTALS SHALL CONSIST OF (1) PDF, OR AS SPECIFIED ELSEWHERE WITH IN THESE DOCUMENTS. SUBMIT SHOP DRAWINGS OF, BUT NOT LIMITED TO, THE FOLLOWING:

1. CONDUIT, CONDUCTORS, AND SURFACE-MOUNTED RACEWAY
2. SAFETY SWITCHES, DISCONNECTS, AND FUSES
3. SWITCHBOARDS, PANELBOARDS, CIRCUIT BREAKERS, AND ENCLOSURES
4. SWITCHES, RECEPTACLES, OCCUPANCY SENSORS, AND DEVICE COVER-PLATES
5. LIGHTING FIXTURES AND LAMPS
6. FIRE ALARM CONTROL PANEL, NOTIFICATION APPLIANCES, INITIATING DEVICES, AND ALL OTHER SYSTEM COMPONENTS
7. RELAY PANEL
8. INVERTER
9. TRANSFORMERS
10. ENCLOSED CONTROLLERS
11. METERING EQUIPMENT
12. SHORT-CIRCUIT AND COORDINATION STUDY
13. ARC-FLASH ANALYSIS

J. MAINTENANCE OF EXISTING FACILITIES AND CONDUCT OF WORK

THIS FACILITY WILL BE OCCUPIED AND IN OPERATION DURING THE PROGRESS OF THE WORK; WHEN NECESSARY TO TEMPORARILY HALT BUILDING EGRESS OR FLOW OF PERSONNEL TRAFFIC, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON; IT IS REQUIRED THAT THE WORK INDICATED AND/OR SPECIFIED SHALL BE CARRIED OUT WITH A MINIMUM OF INTERFERENCE TO THE ESTABLISHED ROUTINE OF THE OCCUPANTS.

THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR ALL COORDINATION OF HIS WORK WITH OTHER TRADES IN ORDER THAT ALL WORK MAY PROCEED WITH A MINIMUM OF DELAY AND INTERFERENCE. THE WORK SHALL BE CAREFULLY LAID OUT IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS, OR OTHER SURFACES; WHERE SUCH WORK IS NECESSARY, THE WORK SHALL BE PATCHED AND/OR REPAIRED IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER.

NO WORK SHALL BE LEFT INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS; AT NO TIME SHALL THE WORK INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.

PROVIDE, ERECT, MAINTAIN AND BE RESPONSIBLE FOR THE SAFE AND LEGAL USE OF SCAFFOLDING OR ADDITIONAL BRACING AND SERVICES THAT MAY BE REQUIRED FOR THE DELIVERY OR ERECTION OF THE EQUIPMENT AND CONSTRUCTION MATERIALS PROVIDED OR INSTALLED UNDER THIS CONTRACT; DETERMINE THE SPECIFIC ARRANGEMENTS FOR FURNISHING AND USE OF SUCH SCAFFOLDING EQUIPMENT, AND REMOVE SUCH EQUIPMENT WHEN IT IS NO LONGER REQUIRED.

WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUIT SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A MUTUALLY AGREED UPON TIME.

MAINTAIN EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATIONS DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED.

K. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY

PROVIDE LABOR, MATERIALS, APPARATUS, AND APPLIANCES ESSENTIAL TO THE COMPLETE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHETHER MENTIONED IN THE CONTRACT DOCUMENTS OR NOT. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND LISTED FOR THE DESCRIBED APPLICATION. WORK SHALL BE FIRST-CLASS IN EVERY RESPECT AND SHALL BE NEATLY PERFORMED IN A PRACTICAL AND WORKMANLIKE MANNER BY PROFICIENT ELECTRICIANS SKILLED IN THE WORK THEY ARE TO DO, USING THE BEST PRACTICES OF THEIR TRADE, AND UNDER CONTINUOUS AND COMPETENT SUPERVISION.

THE WORK SHALL BE WELL ORGANIZED IN OPERATION, AND CARRIED OUT EFFICIENTLY WITHOUT DELAYS WHICH MAY IMPEDE PROGRESS OR THE QUALITY OF THE WORK OF OTHER TRADES AND THE JOB AS A WHOLE.

MATERIAL AND EQUIPMENT PROVIDED SHALL BE NEW AND APPROVED FOR THE APPLICATION AND SHALL CONFORM WITH THE SPECIFIED CODES AND STANDARDS; DEFECTIVE OR DAMAGED MATERIALS SHALL BE REPLACED OR REPAIRED IN A MANNER SATISFACTORY TO THE OWNER.

WHERE AN ITEM IS INDICATED OR REQUIRED BUT NOT SPECIFIED, PROVIDE A STANDARD, FIRST-CLASS QUALITY ARTICLE AS APPROVED BY THE ARCHITECT AND OWNER.

ELECTRICAL MATERIAL AND METHODS SHALL BE UL OR ETL LISTED AND FM APPROVED FOR THEIR INTENDED USE.

L. TESTS, INSPECTION AND APPROVAL

INSPECT EQUIPMENT, COMPONENTS AND MATERIALS INSTALLED OR CONNECTED UNDER THIS CONTRACT TO ENSURE:

1. PROPER CONDITIONS
2. COMPONENTS ARE IN PLACE ALIGNED AND SECURE
3. PROPER INTERNAL CONNECTIONS

BEFORE ENERGIZING ANY FACTORY FABRICATED EQUIPMENT, INSPECT EACH UNIT IN DETAIL; BOLTS AND CONNECTIONS SHALL BE TIGHT (TORQUE/TIGHTEN WHERE REQUIRED), COMPONENTS SHALL BE ALIGNED, AND THE EQUIPMENT SHALL BE IN SAFE, OPERATIONAL CONDITION.

THE COMPLETE ELECTRICAL SYSTEM SHALL BE FREE OF GROUNDS AND SHORT CIRCUITS AND SHALL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

N. SERVICE MANUALS

UPON COMPLETION OF THE WORK, FULLY INSTRUCT THE OWNER AS TO THE OPERATION AND MAINTENANCE OF MATERIAL, EQUIPMENT, AND SYSTEMS. PROVIDE (3) COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING SYSTEMS AND EQUIPMENT.

O. RECORD DRAWINGS

MAINTAIN, AT THE JOB SITE, A SET OF ELECTRICAL DRAWINGS INDICATING ALL CHANGES IN LOCATION OF EQUIPMENT, PANELS, DEVICES, FROM THE ORIGINAL LAYOUT. PLAINLY MARK IN RED, ALL CHANGES ON THE DRAWINGS. AT THE COMPLETION OF THE PROJECT, PROVIDE A COMPLETE SET OF AS-BUILT REPRODUCIBLE DRAWINGS SHOWING ALL CHANGES AND TURN OVER TO THE OWNER.

P. GUARANTEE

FURNISH, IN WRITING, A COMPLETE GUARANTEE AGAINST DEFECTIVE MATERIALS AND IMPROPER WORKMANSHIP, SATISFACTORY TO OWNER, FOR PARTS, COMPONENTS, AND OPERATION FOR A PERIOD OF (1) YEAR FROM THE DATE OF ACCEPTANCE, BY THE OWNER, OF THE COMPLETE INSTALLATION.

GUARANTEE SHALL INCLUDE COMPLETE MAINTENANCE OF SYSTEMS, INCLUDING REPLACEMENT PARTS, LABOR AND MATERIALS TO MAINTAIN THE SYSTEMS IN PROPER OPERATING CONDITION FOR THE GUARANTEE PERIOD.

Q. CUTTING AND PATCHING

ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED FOR THE WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

CUTTING OF BEAMS, FLOORS OR WALLS FOR PIPING OR CONDUIT, SHALL BE DONE ONLY AS APPROVED BY THE OWNER.

PROVIDE DRILLING AND PATCHING FOR EXPANSION BOLTS, HANGERS, AND OTHER SUPPORTS FOR PROPER AND SAFE INSTALLATION OF THE WORK.

PROVIDE UL LISTED ASSEMBLIES FOR FIRE STOPPING AND SEALING AROUND PENETRATIONS THROUGH RATED ASSEMBLIES; REFER TO ARCHITECTURAL SPECIFICATIONS.

PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.

R. PHASE ROTATION TESTS

PROPERLY TEST THE PHASE ROTATION OF NEW FEEDER AND BRANCH CIRCUITS, AND MAKE SUCH CHANGES AND ALTERATIONS NECESSARY TO ENSURE THE CORRECT ROTATION OF MOTOR DISTRIBUTION EQUIPMENT THROUGHOUT THE NEW INSTALLATION.

26-0519 (16120) - LOW-VOLTAGE POWER CONDUCTORS AND CABLES

A. BUILDING WIRE

HOMERUNS, FEEDERS AND BRANCH CIRCUITS NO. 8 AWG AND LARGER: COPPER, STRANDED CONDUCTOR, 600 VOLT INSULATION, THHN/THWN-2 OR XHHW-2, IN ACCORDANCE WITH NEMA WC5 AND NEMA WC3.

HOMERUNS, FEEDERS AND BRANCH CIRCUITS NO. 10 AWG AND SMALLER: COPPER CONDUCTOR, 600 VOLT INSULATION, THHN/THWN-2 OR XHHW-2; SOLID CONDUCTOR IN ACCORDANCE WITH NEMA WC5.

CONTROL WIRING SHALL BE COPPER, STRANDED CONDUCTOR 600 VOLT INSULATION, THHN/THWN, IN SINGLE CONDUCTORS OR PREFERABLY MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES SHALL BE PROVIDED WITH AN OVERALL FLAME-RETARDANT EXTRUDED JACKET, RATED FOR PLENUM USE.

B. WIRING CONNECTIONS AND SPLICES

CONDUCTORS NO. 8 AWG AND SMALLER SHALL BE TWISTED AND MADE MECHANICALLY TIGHT, THEN SECURED WITH PIGTAIL CONNECTORS - SELF-INSULATING, WIRE NUT CONNECTORS. CRIMP TYPE CONNECTORS SHALL NOT BE USED. UTILIZE UL LISTED "SILICON FILLED" PIGTAIL CONNECTORS WHERE LOCATED IN WET ENVIRONMENTS, OUTDOORS, OR IN DATA PROCESSING/COMMUNICATION ROOM RAISED FLOOR CAVITIES.

SPLICE OR TAP STRANDED COPPER CONDUCTORS (NO. 6 AWG AND LARGER) WITH PRESSURE INDENT, HIGH CONDUCTIVITY, WROUGHT COPPER, COLOR-KEYED COMPRESSION TYPE CONNECTORS - BURNDY, NEPCO, T&B, OR O.Z. GEDNEY WITH COMPOSITION INSULATING COVERS. SET SCREW TYPE CONNECTORS ARE ONLY ACCEPTABLE ON THE LOAD SIDE LUGS OF CLASS I AND II SWITCHBOARDS, PANELBOARDS, CIRCUIT BREAKERS, FUSIBLE SWITCHES AND ON INDIVIDUAL MOTOR CONTROLLERS.

WHERE THREE OR MORE CONDUCTORS LARGER THAN NO. 8 AWG ARE SPLICED TOGETHER, UTILIZE A SCREW-TYPE POWER DISTRIBUTION BLOCK SECURELY MOUNTED IN JUNCTION BOX.

C. GENERAL WIRING METHODS

USE NO WIRE SMALLER THAN NO. 12 AWG FOR POWER AND LIGHTING CIRCUITS, AND NO SMALLER THAN NO. 14 AWG FOR CONTROL WIRING. PROVIDE MINIMUM OF NO. 12 AWG FOR ALL SWITCH-LEGS.

PROVIDE NEUTRAL CONDUCTOR OF THE SAME SIZE AS THE PHASE CONDUCTORS IT IS ASSOCIATED WITH. COMMON NEUTRALS SHALL NOT BE USED FOR BRANCH CIRCUITS, UNLESS SPECIFICALLY NOTED OTHERWISE.

HOMERUNS AND BRANCH CIRCUIT CONDUCTOR SIZE FOR 120 VOLT, 20 AMP CIRCUITS SHALL BE AS FOLLOWS:

LENGTH (FT)	BRANCH CIRCUIT WIRE SIZE	HOMERUN WIRE SIZE
UP TO 75'	NO. 12	NO. 12
76' TO 119'	NO. 12	NO. 10
LONGER THAN 120'	NO. 10	NO. 8

HOMERUNS AND BRANCH CIRCUIT CONDUCTOR SIZE FOR 277 VOLT, 20 AMP CIRCUITS SHALL BE AS FOLLOWS:

LENGTH (FT)	BRANCH CIRCUIT WIRE SIZE	HOMERUN WIRE SIZE
UP TO 175'	NO. 12	NO. 12
176' TO 279'	NO. 12	NO. 10
280' AND LONGER	NO. 10	NO. 8

PROVIDE APPROPRIATELY SIZED LUGS AND TERMINATIONS AT ALL EQUIPMENT. DO NOT REDUCE WIRE SIZE AT EQUIPMENT LUGS.

DRAWINGS INDICATE PROPOSED CIRCUITING ONLY, AND DO NOT INDICATE EVERY CONDUCTOR UNLESS INTENT IS UNCLEAR AND FURTHER CLARIFICATION IS REQUIRED. PROVIDE THE NECESSARY TRAVELERS FOR ALL THREE-WAY AND FOUR-WAY SWITCHES.

CONNECTIONS TO MOTORS, TRANSFORMERS, SUSPENDED LIGHT FIXTURES, AND OTHER VIBRATING EQUIPMENT SHALL BE STRANDED.

D. WIRING INSTALLATIONS IN RACEWAY

PULL ALL CONDUCTORS INTO A RACEWAY AT THE SAME TIME. USE UL LISTED WIRE PULLING LUBRICANT. DO NOT EXCEED MANUFACTURER'S RECOMMENDED TENSION.

INSTALL WIRE IN RACEWAY AFTER INTERIOR OF BUILDING HAS BEEN PHYSICALLY PROTECTED FROM THE WEATHER AND ALL MECHANICAL WORK LIKELY TO INJURE CONDUCTORS HAS BEEN COMPLETED.

COMPLETELY AND THOROUGHLY SWAB RACEWAY SYSTEM BEFORE INSTALLING CONDUCTORS.

REMOVE AND DISCARD CONDUCTORS CUT TOO SHORT OR INSTALLED IN WRONG RACEWAY. DO NOT INSTALL CONDUCTORS WHICH HAVE BEEN REMOVED FROM A RACEWAY. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND SHALL NOT BE RE-PULLED.

INSTALL XHHW-2 CONDUCTORS IN RACEWAY FOR SERVICE ENTRANCE CONDUCTORS, AND UNDERGROUND FEEDERS AND BRANCH CIRCUITS.

INSTALL THHN/THWN-2 CONDUCTORS IN RACEWAYS FOR ABOVE-GRADE FEEDERS AND BRANCH CIRCUITS.

SUPPORT CONDUCTORS IN VERTICAL RACEWAYS AT THE TOP OF ANY RACEWAY LONGER THAN 20-FEET. INCLUDE ADDITIONAL SUPPORTS SPACED AT INTERVALS WHICH ARE NOT GREATER THAN 40-FEET. SUPPORT SHALL BE O.Z. GEDNEY TYPE R.

PROVIDE HOMERUN AND FEEDER CONDUCTORS OF CONTINUOUS LENGTH WITHOUT JOINT OR SPLICE FROM OVERCURRENT DEVICE TO FIRST OUTLET.

MAXIMUM CONDUIT FILL SHALL BE THREE PHASE CONDUCTORS (ON DIFFERENT PHASES), THREE INDIVIDUAL NEUTRAL CONDUCTORS (FOR EACH 120V OR 277V BRANCH CIRCUIT) AND GROUND CONDUCTOR.

E. WIRE AND INSULATION APPLICATIONS

- BRANCH CIRCUITS EXPOSED: THHN CONDUCTORS IN CONDUIT, #12 AWG MINIMUM.
- BRANCH CIRCUITS CONCEALED: MC CABLE WITH STEEL JACKET, #12 AWG CONDUCTORS MINIMUM.
- HOME RUNS: THHN CONDUCTORS IN CONDUIT.
- FEEDERS: THHN CONDUCTORS IN CONDUIT.
- FIRE ALARM CIRCUITS: FIRE-RATED MC CABLE WITH STEEL JACKET.
- SHIELDED CABLES: PROVIDE SHIELDED CABLES WHERE REQUIRED BY THE MANUFACTURER(S). INSTALL ON 'J' HOOKS.
- CONTROL CIRCUITS: PLENUM-RATED CABLE. INSTALL ON 'J' HOOKS.
- ALL WIRING WILL BE RUN CONCEALED WITHIN FURRED WALLS AND ABOVE HUNG CEILINGS, EXCEPT AS OTHERWISE NOTED.

26-0526 (16060) - GROUNDING AND BONDING

PROVIDE GROUNDING SYSTEMS, INCLUDING POWER SYSTEM GROUNDING, ELECTRICAL EQUIPMENT AND RACEWAY GROUNDING AND BONDING, STRUCTURAL STEEL GROUNDING, AND MISCELLANEOUS SYSTEM GROUNDING.

BUILDING EQUIPMENT GROUND:

1. PROVIDE A SEPARATE, INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL FEEDERS AND BRANCH CIRCUITS. TERMINATE EACH END ON A GROUNDING LUG, BUS, OR BUSHING. DO NOT USE CONDUIT AS GROUNDING CONDUCTOR.
2. PROVIDE OZ GEDNEY TYPE 'BJ' BONDING JUMPER AT ALL EXPANSION JOINTS, POINTS OF ELECTRICAL DISCONTINUITY OR CONNECTIONS IN CONDUIT WHERE FIRM MECHANICAL BOND IS NOT POSSIBLE, SUCH AS FLEXIBLE CONNECTIONS, INSULATION COUPLINGS, ETC.
3. BOND EVERY ITEM OF EQUIPMENT SERVED BY THE ELECTRICAL SYSTEM TO THE BUILDING EQUIPMENT GROUND SYSTEM. THIS INCLUDES NEW SWITCHBOARDS, PANELBOARDS, DISCONNECT SWITCHES, RECEPTACLES, CONTROLS, FANS, AIR HANDLING UNITS, PUMPS AND FLEXIBLE DUCT CONNECTIONS.

PROVIDE SUPPLEMENTARY GROUND BONDING WHERE METALLIC CONDUITS TERMINATE AT METAL CLAD EQUIPMENT (OR AT THE METAL PULL BOX OF EQUIPMENT) FOR WHICH A GROUND BUS IS SPECIFIED. ACCOMPLISH THIS BY EQUIPPING THE CONDUITS W/ A BUSHING OF THE GROUNDING TYPE CONNECTED INDIVIDUALLY TO GROUND BUS.

ALL GROUND WIRES SHALL BE SUITABLY PROTECTED FROM MECHANICAL INJURY.

BARE COPPER CONDUCTORS:

1. SOLID CONDUCTOR: ASTM B 3.
2. STRANDED CONDUCTORS: ASTM B 8.
3. TINNED CONDUCTORS: ASTM B 33.
4. BONDING CABLE: 28 KCMIL, 14 STRANDS OF NO. 17 AWG CONDUCTOR, 1/4 INCH (6 MM) IN DIAMETER.
5. BONDING CONDUCTOR: NO. 4 OR NO. 6 AWG, STRANDED CONDUCTOR.
6. BONDING JUMPER AND TINNED BONDING JUMPER: COPPER TAPE AND TINNED-COPPER TAPE, BRAIDED CONDUCTORS TERMINATED WITH COPPER FERRULES; 1-5/8 INCHES (41 MM) WIDE AND 1/16 INCH (1.6 MM) THICK.

GROUNDING BUS SHALL BE PRE-DRILLED RECTANGULAR BARS ON ANNEALED COPPER, 1/4 BY 8 INCHES (6.3 BY 200 MM) IN CROSS SECTION MINIMUM, WITH 9/32 INCH (7.14 MM) HOLES SPACED 1-1/8 INCHES (28 MM) APART. STAND-OFF INSULATORS FOR MOUNTING SHALL COMPLY WITH UL 891 FOR USE IN SWITCHBOARDS, 600 V AND SHALL BE LEXAN OR PVC. INSTALL IN ELECTRICAL EQUIPMENT ROOMS, ROOMS HOUSING SERVICE ENTRANCE EQUIPMENT, AND ELSEWHERE AS INDICATED.

CONNECTORS SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR APPLICATIONS IN WHICH USED AND FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS CONNECTED.

WELDED CONNECTORS: EXOTHERMIC-WELDING KITS OF TYPES RECOMMENDED BY KIT MANUFACTURER FOR MATERIALS BEING JOINED AND INSTALLATION CONDITIONS.

GROUND RODS: COPPER-CLAD STEEL; 3/4 INCH BY 10 FEET (19 MM BY 3 M).

26-0529 (16070) - HANGERS AND SUPPORTS

PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF THIS CONTRACT. SECURE EQUIPMENT AND CONDUIT WITH HANGER RODS, CONDUIT CLAMPS, EXPANSION ANCHORS, BEAM CLAMPS OR BOLTS AS REQUIRED.

SUPPORT CHANNEL SHALL BE ROLL-FORMED 12- OR 14-GAUGE STEEL, SOLID BASE OR BOLT HOLE BASE, HOT DIP GALVANIZED FINISH. COMPLETE WITH ANGLE FITTINGS, SPRING NUTS, CONDUIT SUPPORTS, 3/8 INCH THREADED RODS, ETC., MANUFACTURED BY UNISTRUT, KINDORF OR B-LINE SYSTEMS.

FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR STEEL CHANNEL, RIGIDLY WELDED OR BOLTED TO PRESENT A NEAT APPEARANCE. USE HEXAGON HEAD BOLTS WITH SPRING LOCK WASHERS UNDER ALL NUTS.

WHERE MULTIPLE RUNS OF CONDUIT CAN BE RUN GROUPED TOGETHER, RUN CONDUIT IN RACKS SUPPORTED FROM THE BUILDING STRUCTURE. PROVIDE FOR FUTURE USE OF RACK BY PROPERLY PLANNING ROUTING OF CONDUITS IN AND THROUGH RESTRICTED AREAS SUCH AS THROUGH WALLS AND AROUND MECHANICAL AND ELECTRICAL EQUIPMENT.

INTERIOR SUPPORTING DEVICES AND HARDWARE INSTALLED ON INTERIOR SPACES SHALL BE GALVANIZED STEEL (TYPICAL), UNLESS OTHERWISE NOTED.

SUPPORTING DEVICES AND HARDWARE INSTALLED ON EXPOSED EXTERIOR LOCATIONS AND INTERIOR SPACES EXPOSED TO MOISTURE SHALL BE STAINLESS STEEL (TYPICAL), UNLESS OTHERWISE SPECIFIED.

26-0533 (16130/16132) - RACEWAY AND BOXES

A. OUTLET BOXES

PROVIDE GALVANIZED OR CADMIUM-PLATED PRESSED STEEL OUTLET BOXES SUITABLE FOR THE CONDITIONS OF EACH OUTLET. PROVIDE MULTI-GANG OUTLETS OF SINGLE BOX DESIGN OF SUFFICIENT LENGTH TO SUIT CONDITIONS; SECTIONAL BOXES WILL NOT BE ACCEPTABLE.

SWITCH, RECEPTACLE, AND OUTLET BOXES SHALL BE A NOMINAL 4-INCH SQUARE - DEPTH AS REQUIRED BY CODE - WITH A RAISED COVER, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. PROVIDE 3/8-INCH FIXTURE STUD AS REQUIRED.

PROVIDE OUTLET BOXES OF SUFFICIENT VOLUME TO ACCOMMODATE THE NUMBER OF CONDUCTORS ENTERING THE BOX IN ACCORDANCE WITH REQUIREMENTS OF NFPA 70, AND NOT LESS THAN 1-1/2 INCH DEEP UNLESS SHALLOWER BOXES ARE REQUIRED BY STRUCTURAL CONDITIONS AND ARE ESPECIALLY APPROVED BY ENGINEER.

LIGHTING FIXTURE BOXES SHALL BE 4-INCH OCTAGON WITH 3/8-INCH FIXTURE STUD. FOR SUSPENDED CEILING WORK, PROVIDE A 4-INCH OCTAGON BOX WITH REMOVABLE BACK PLATE WHERE REQUIRED.

PROVIDE NON-METALLIC OR STAINLESS STEEL NEMA 4X TYPE OUTLET BOXES AND ENCLOSURES IN CORROSIVE ENVIRONMENTS.

PROVIDE DEEP, CAST METAL OUTLET BOXES LOCATED IN DAMP LOCATIONS, EXPOSED TO WEATHER, INSTALLED IN FLOORS, OR EXPOSED AREAS SUBJECT TO DAMAGE - COMPLETE WITH GASKETED COVER AND THREADED HUBS.

B. PULL AND JUNCTION BOXES

PROVIDE GALVANIZED SHEET METAL BOXES CONFORMING TO NEMA OS 1. PROVIDE HINGED ENCLOSURES FOR ANY BOX LARGER THAN 12 INCHES IN ANY DIMENSION, UNLESS OTHERWISE NOTED.

PROVIDE SEPARATE PULL BOXES AND JUNCTION BOXES FOR ELECTRIC POWER, CONTROL, AND COMMUNICATION SYSTEMS.

PULL BOXES AND JUNCTION BOXES SHALL BE SIZED SO THAT THE MINIMUM BENDING RADIUS CRITERIA SPECIFIED FOR THE WIRES AND CABLE ARE MAINTAINED.

INCLUDE ALL REQUIRED JUNCTION/PULL BOXES AND OUTLET BOXES REGARDLESS OF INDICATIONS ON THE DRAWINGS (WHICH DUE TO SYMBOLIC METHODS OF NOTATION, MAY NOT SHOW ALL THAT ARE REQUIRED.)

WHERE BOXES HAVE ANY SINGLE HORIZONTAL DIMENSION LARGER THAN 36-INCHES THEY SHALL BE FITTED WITH CABLE SUPPORT RACKS CONSISTING OF 1/4 INCH DIAMETER PIPES WITH FLANGED ENDS BOLTED TO THE SIDES OR FRAME OF THE PULL BOXES. EACH PIPE SUPPORT SHALL BE FITTED WITH A CONTINUOUS FIBER INSULATING SLEEVE. THE PIPE SUPPORTS SHALL BE ARRANGED IN TIERS CORRESPONDING TO THE CABLES ENTERING AND LEAVING THE BOX. SUFFICIENT PIPE SUPPORT RACKS WILL BE INCLUDED WITH THE PULL BOX SO THAT NO CABLE SHALL REMAIN UNSUPPORTED FOR A HORIZONTAL DISTANCE GREATER THAN 36-INHES. IN NO CASE SHALL CABLE SUPPORT PIPE RACKS BE MOUNTED SO THAT THEY INTERFERE WITH THE REMOVAL OF SCREW COVERS.

C. OUTLET, PULL, AND JUNCTION BOX INSTALLATION

PROVIDE PULL OR JUNCTION BOXES IN ACCESSIBLE LOCATIONS WHERE SHOWN, AT LEAST EVERY 150-FEET IN STRAIGHT RUNS, AS REQUIRED BY CODE, OR AS NEEDED FOR PROPER INSTALLATION OF WIRING AND JUNCTIONS.

PROVIDE RECESSED OUTLET BOXES IN FINISHED AREAS; SECURE BOXES TO INTERIOR WALL AND PARTITION STUDS, ACCURATELY POSITIONING TO ALLOW FOR SURFACE FINISH THICKNESS.

SET BOXES INSTALLED IN CONCEALED LOCATIONS FLUSH WITH THE FINISH SURFACES, AND PROVIDE WITH THE PROPER TYPE EXTENSION RINGS AND/OR COVERS WHERE REQUIRED.

ALIGN WALL-MOUNTED OUTLET BOXES FOR SWITCHES, THERMOSTATS, AND SIMILAR DEVICES. INSTALL ALL GROUPED DEVICE LOCATIONS NEAT AND SYMMETRICAL COORDINATE WITH A/E BEFORE ROUGH-IN.

LOCATE PULL BOXES AND JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS AND/OR IN UNFINISHED AREAS, UNLESS OTHERWISE NOTED.

ALL EQUIPMENT, DEVICE BOXES, JUNCTION BOXES, PULL BOXES AND OUTLET BOXES SHALL BE INSTALLED TO ALLOW ACCESS TO THE BOX. IF NECESSARY AND APPROVED BY ARCHITECT, PROVIDE ACCESS DOOR OR COVERLETS IN AREAS WHERE UNOBSTRUCTED ACCESS IS NOT POSSIBLE.

IDENTIFY ALL JUNCTION BOXES BY CIRCUIT NUMBER ON COVER WITH LEGIBLE PERMANENT INK MARKER.

BOXES AND ENCLOSURES INSTALLED ON CONCRETE SURFACES SHALL BE PROVIDED WITH 1/4 INCH AIR GAP MINIMUM.

D. CONDUIT MATERIALS

PROVIDE RIGID GALVANIZED STEEL CONDUIT (RGS) AND FITTINGS IN ACCORDANCE WITH ANSI C80.1; HOT DIP GALVANIZED UNLESS OTHERWISE SPECIFIED.

PROVIDE ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS IN ACCORDANCE WITH ANSI C80. 3; HOT-DIPPED GALVANIZED TUBING UNLESS OTHERWISE SPECIFIED.

RIGID NON-METALLIC CONDUIT (RNC) SHALL BE POLYVINYL CHLORIDE (PVC) SCHEDULE 40, UNLESS OTHERWISE NOTED.

THREADED FITTINGS SHALL BE USED WITH RGS CONDUIT. STEEL SET SCREW OR STEEL COMPRESSION FITTINGS SHALL BE USED WITH EMT.

E. CONDUIT SIZING, ARRANGEMENT AND SUPPORT

MINIMUM SIZE OF CONDUIT SHALL BE 3/4-INCH.

CONDUIT SIZES INDICATED ON THE DRAWINGS ARE MINIMUM BASED ON THHN/THWN-2, COPPER WIRE AND LARGER SIZES MAY BE USED FOR CONVENIENCE OF WIRE PULLING.

CONCEAL CONDUIT IN CEILING AND WALLS IN ALL FINISHED AREAS OF THE BUILDING. IN UNFINISHED AREAS WITHOUT CEILINGS, CONDUIT MAY BE RUN EXPOSED OVERHEAD.

INSTALL ALL CONDUIT, INCLUDING CONDUIT ABOVE ACCESSIBLE CEILING, PARALLEL OR PERPENDICULAR TO WALLS AND ADJACENT PIPING. NEATLY ROUTE CONDUIT IN A COMMON RACK WHERE POSSIBLE.

MAINTAIN MINIMUM 6-INCH CLEARANCE BETWEEN CONDUIT AND PIPING. MAINTAIN 12-INCH CLEARANCE BETWEEN CONDUIT AND HEAT SOURCES SUCH AS FLUES, STEAM PIPES, HOT WATER PIPES, AND HEATING APPLIANCES. WHERE CROSSINGS ARE UNAVOIDABLE, CONDUIT SHALL BE KEPT AT LEAST 1-INCH FROM THE INSULATED COVERING OF THE PIPE AND CROSS PERPENDICULAR.

ROUTE CONDUIT TO ALLOW FOR EQUIPMENT ACCESS AND MAINTENANCE.

ARRANGE CONDUIT SUPPORTS TO PREVENT DISTORTION OF ALIGNMENT BY WIRE PULLING OPERATIONS. FASTEN CONDUIT SECURELY TO BUILDING STRUCTURE USING CLAMPS, HANGERS AND THREADED ROD.

EXPOSED CONDUIT WITHIN FINISHED SPACES WILL NOT BE ALLOWED, UNLESS OTHERWISE NOTED (MUST BE CONFIRMED BY THE ARCHITECT PRIOR TO INSTALLATION). IF ALLOWED, FOR INTERIOR SPACES PROVIDE WIREMOLD SERIES 700, STEEL SURFACE-MOUNTED RACEWAY.

THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC; BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCE.

WALL AND/OR FLOOR MOUNTED TELEPHONE/DATA OUTLETS AND SECURITY DEVICES SHALL CONSIST OF 1 INCH EMT EXTENDED SIX INCHES INTO THE ACCESSIBLE HUNG CEILING AND TERMINATED IN A STANDARD 4 INCH BY 4 INCH GALVANIZED STEEL OUTLET BOX WITH SINGLE-GANG MUD RING. PROVIDE NYLON DRAG LINE FOR PULLING OF TELEPHONE AND DATA CABLES (BY OTHERS).

HOMERUNS AND FEEDERS SHALL BE INSTALLED IN CONDUIT: RGS, RNC, AND/OR EMT. MC CABLE SHALL NOT BE ACCEPTABLE FOR HOMERUNS AND FEEDERS. HOMERUNS ARE CONSIDERED THE CIRCUITRY FROM THE PANEL OF ORIGIN TO THE GENERAL AREA OF CONSTRUCTION (A DESIGNATED ROOM AND/OR AREA), WHERE IT WILL THEN BE DISTRIBUTED. FEEDERS ARE CONSIDERED THE CIRCUITRY FROM THE PANEL OF ORIGIN TO EACH PIECE OF EQUIPMENT.

FOR ALL SIZES OF CONDUIT LARGER THEN 1-1/2 INCHES, USE STANDARD MANUFACTURED ELBOWS. IN SMALLER SIZES, FIELD BENDS WILL BE PERMITTED INSTEAD OF USING MANUFACTURED ELBOWS BUT CARE MUST BE TAKEN NOT TO DAMAGE THE CONDUIT. THE RADIUS OF THE INNER CURVE OF ANY BEND SHALL NOT BE ANY LESS THAN THAT PERMITTED BY CODE.

CONDUIT SHALL BE SECURELY FASTENED IN PLACE. HANGERS, SUPPORTS, OR FASTENINGS SHALL BE PROVIDED AT EACH ELBOW AND AT EACH END OF STRAIGHT CONDUIT RUN TERMINATED AT A BOX OR CABINET. WHERE RISER CONDUITS PIERCE FLOOR SLABS, THEY SHALL REST ON EACH FLOOR WITH APPROVED BEAM CLAMPS, PIPE STRAPS OR HEAVY IRON TIES WIRED TO THE STRUCTURAL MEMBERS SUPPORTING EQUIPMENT. SIZE AND TYPE OF ANCHOR SHALL BE BASED ON THE COMBINED WEIGHTS OF CONDUIT, HANGER AND CABLES. ALL HANGERS AND RODS SHALL BE PAINTED WITH ONE COAT OF ENAMEL.

INSTALL CONDUIT EXPANSION FITTINGS IN EACH CONDUIT RUN WHEREVER IT CROSSES AN EXPANSION JOINT AND WHEREVER THE CONDUIT LENGTH EXCEEDS 200-FEET.

CONDUIT USED FOR FIRE ALARM CIRCUITS SHALL HAVE A 2 INCH PAINTED "RED" BAND EVERY 10 FEET.

PROVIDE PULL LINE IN ALL EMPTY CONDUIT.

F. CONDUIT/BOX APPLICATION INDOORS

- EXPOSED AREAS NOT SUBJECT TO PHYSICAL DAMAGE: EMT.
- EXPOSED AREAS SUBJECT TO PHYSICAL DAMAGE: RGS BELOW 48 INCHES AND EMT 48 INCHES ABOVE FINISHED FLOOR. AREAS SUBJECT TO PHYSICAL DAMAGE INCLUDE, BUT ARE NOT LIMITED TO MECHANICAL AND ELECTRICAL ROOMS, RECEIVING AREA, MAINTENANCE SHOP, BOILER ROOM, SPRINKLER ROOM, AND LIKE UTILITY ROOMS, ETC.
- AREAS SUBJECT TO MOISTURE, CORROSIVE AGENTS, PHYSICAL ABUSE, IN UNCONDITIONED SPACES, OR CONDUIT SIZES GREATER THAN 4 INCH: RGS.
- DO NOT USE ELECTRICAL METALLIC TUBING IN AREAS SUBJECT TO MOISTURE, CORROSIVE AGENTS, OR PHYSICAL ABUSE.
- CONCEALED IN CEILINGS AND WALLS: EMT OR MC CABLE WITH STEEL JACKET.
- CAST IN CONCRETE OR BELOW CONCRETE SLABS: RNC - SCHEDULE 40 PVC. EXCEPTION, EXPOSED CONDUIT ENTERING/EXITING THE CONCRETE SHALL BE RGS.
- CONNECTION TO VIBRATING EQUIPMENT: FLEXIBLE METAL STEEL CONDUIT (FMC). VIBRATING EQUIPMENT SHALL BE AS LISTED BUT NOT LIMITED TO - TRANSFORMERS, HYDRAULIC/PNEUMATIC/ELECTRIC SOLENOIDS, MOTOR-DRIVEN EQUIPMENT, ETC.
- CONNECTION TO VIBRATING EQUIPMENT: IN AREAS SUBJECT TO MOISTURE, HIGH HUMIDITY, OR CORROSIVE AGENTS, USE LIQUID-TIGHT FLEXIBLE METAL STEEL CONDUIT (LFMC).
- PLENUM SPACES: WIRING METHODS IN PLENUM SPACES SHALL CONFORM TO THE REQUIREMENTS OF NEC SECTION 300-22. ALL CONDUITS SHALL BE METAL. EXPOSED CABLES, WHERE USED, SHALL BE LISTED AND APPROVED FOR USE IN PLENUM.

G. CONDUIT/BOX APPLICATION OUTDOORS

- EXPOSED OR CONCEALED: RGS.
- CONNECTION TO VIBRATING EQUIPMENT: LFMC.
- BOXES AND ENCLOSURES: NEMA 250, TYPE 3R.
- CAST IN CONCRETE OR BELOW CONCRETE SLABS: RNC - SCHEDULE 40 PVC. EXCEPTION, EXPOSED CONDUIT ENTERING/EXITING THE CONCRETE SHALL BE RGS.
- SERVICE POLE RISERS: RGS.
- BURIED UNDER GRADE FOR SERVICE ENTRANCE PRIMARY AND SECONDARY CONDUCTORS: RNC - SCHEDULE 40 PVC.
- LIGHTING AND POWER BRANCH CIRCUIT CONDUIT BURIED UNDER GRADE: RNC - SCHEDULE 40 PVC.

26-0548 - SEISMIC CONTROLS

PROVIDE SEISMIC RESTRAINTS FOR ALL EQUIPMENT, INCLUDING ALL STRUCTURAL STEEL MEMBERS, INSERTS, ANCHORS, WIRES AND THE REQUIRED ASSEMBLY THEREOF. ALL SEISMIC RESTRAINTS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES HAVING JURISDICTION. SYSTEMS SHALL MAINTAIN EQUIPMENT AND RELATED SYSTEMS IN A CAPTIVE POSITION.

FURNISH SERVICES OF MANUFACTURER FOR FIELD SUPERVISION OF INSTALLATION OF SEISMIC RESTRAINT UNITS, ASSOCIATED HANGERS AND BASES. OBTAIN COPY OF MANUFACTURER'S INSTALLATION INSTRUCTIONS AND DRAWINGS, FOR CONTRACTORS' USE DURING INSTALLATION. INSTALL DEVICES IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. SEISMIC RESTRAINT EQUIPMENT SHALL NOT CAUSE ANY CHANGE OF POSITION OF EQUIPMENT OR WIRING RESULTING IN WIRING STRESSES OR MISALIGNMENT.

SUBMIT FOR REVIEW, SHOP DRAWINGS ON EVERY PRODUCT AND MATERIAL FURNISHED UNDER THIS SECTION. SHOP DRAWINGS SHALL INCLUDE:

1. ITEMIZED LIST DETAILING ELECTRICAL SYSTEMS AND COMPONENTS TO BE SEISMICALLY RESTRAINED, ASSOCIATED SEISMIC RESTRAINT SYSTEM TO BE USED, DEVICE LOADING AND REFERENCE TO SPECIFIC DRAWINGS SHOWING BASE AND CONSTRUCTION WHERE APPLICABLE. LIST SHALL INCLUDE NUMBER AND LOCATION OF SEISMIC RESTRAINTS AND ANCHORS FOR EACH PIECE OF EQUIPMENT.
2. SEISMIC RESTRAINT CALCULATIONS.
3. STRUCTURAL ENGINEER'S SEAL VERIFYING DESIGN AND CALCULATIONS FOR SEISMIC RESTRAINING SYSTEMS. CERTIFICATION SHALL BE BY A PROFESSIONAL STRUCTURAL ENGINEER WITH P.E. REGISTRATION IN THE PROJECT STATE.
4. DETAIL DRAWINGS ON EQUIPMENT BASES INCLUDING DIMENSIONS, STRUCTURAL MEMBER SIZES, SUPPORT POINT LOCATIONS, MAXIMUM LOADING AT EACH LOCATION, AND CONCRETE AND STEEL DETAILS SUCH AS ANCHOR BOLT LOCATIONS.
5. ALL SEISMIC RESTRAINING DEVICES SHALL HAVE A PRE-APPROVED NUMBER FROM THE PROJECT STATE OSHPD OR OTHER RECOGNIZED GOVERNMENT AGENCY SHOWING MAXIMUM RESTRAINT RATINGS.
6. DETAIL DRAWINGS ON SEISMIC RESTRAINT SYSTEMS FOR CONDUIT, LIGHTING, TRANSFORMERS, BUSWAY, CABLE TRAY AND OTHER WIRING SYSTEMS, INCLUDING METHODS OF SUSPENSION, SUPPORT GUIDES, AND MAXIMUM LOADING AT EACH LOCATION.

26-0553 (16075) - IDENTIFICATION

PROVIDE ENGRAVED, THREE-LAYER LAMINATED, SELF-ADHESIVE PLASTIC NAMEPLATES WITH BLACK LETTERS ON A WHITE BACKGROUND FOR ALL NEW EQUIPMENT INCLUDING BUT NOT LIMITED TO: ENCLOSURES, SWITCHBOARDS, PANELBOARDS, VARIABLE FREQUENCY DRIVES, DISCONNECT SWITCHES, MOTOR STARTERS, CIRCUIT BREAKERS, ETC.

PROVIDE ENGRAVED, THREE-LAYER LAMINATED, SELF-ADHESIVE PLASTIC NAMEPLATES WITH BLACK LETTERS ON A WHITE BACKGROUND TO IDENTIFY GROUNDED AND UNGROUNDED CONDUCTOR COLOR CODE INFORMATION IN ACCORDANCE WITH NEC 210.5 (C). INSTALL AT EACH PANELBOARD AND SIMILAR BRANCH CIRCUIT DISTRIBUTION EQUIPMENT LOCATION.

PERMANENTLY LABEL ALL RECEPTACLES, MOTORS, POWER DISCONNECTS, WALL SWITCHES, AND REMOTE LOADS WITH THE PANEL AND CIRCUIT NUMBER SERVING THE DEVICE.

PROVIDE WIRE AND CABLE MARKERS (SPLIT SLEEVE OR TUBING TYPE) ON ALL CONDUCTORS. PROVIDE WIRE MARKERS ON EACH CONDUCTOR IN SPLICE BOXES, PULL BOXES, AND AT FIRST LOAD CONNECTION ON HOMERUN. IDENTIFY WITH BRANCH CIRCUIT OR FEEDER NUMBER FOR POWER AND LIGHTING CIRCUITS, AND WITH CONTROL WIRE NUMBER AS INDICATED ON EQUIPMENT MANUFACTURERS SHOP DRAWING FOR CONTROL WIRING.

FOR RACEWAYS, ENCLOSURES, PANELBOARDS, SWITCHBOARDS, DISCONNECTS, ETC. CARRYING CIRCUITS AT 600 V OR LESS, PROVIDE A LABEL INDICATING VOLTAGE AND SERVICE TYPE, BLACK LETTERS ON AN ORANGE FIELD. MINIMUM NOMINAL SIZE TO BE: 1-1/2 BY 6 INCHES (37 BY 150 MM) FOR RACEWAY AND CONDUCTORS; 3-1/2 BY 5 INCHES (76 BY 127 MM) FOR EQUIPMENT; AS REQIRED BY AUTHORITIES HAVING JURISDICTION.

FLOOR MARKING TAPE: 2 INCH (50 MM) WIDE, 5 MIL (0.125 MM) PRESSURE-SENSITIVE VINYL TAPE, WITH BLACK AND WHITE STRIPES AND CLEAR VINYL OVERLAY.

UNDERGROUND-LINE WARNING TAPE: DETECTABLE THREE-LAYER LAMINATE, CONSISTING OF A PRINTED PIGMENTED POLYOLEFIN FILM, A SOLID ALUMINUM-FOIL CORE, AND A CLEAR PROTECTIVE FILM THAT ALLOWS INSPECTION OF THE CONTINUITY OF THE CONDUCTIVE CORE, BRIGHT COLORED, CONTINUOUS PRINTED ON ONE SIDE WITH THE INSCRIPTION OF THE UTILITY, COMPOUNDED FOR DIRECT BURIAL SERVICE. WIDTH SHALL BE 3 INCHES (75 MM), OVERALL THICKNESS SHALL BE 5 MILS (0.125 MM), FOIL CORE THICKNESS SHALL BE 0.35 MILS (0.00889 MM), WEIGHT SHALL BE 28 LB/1000 SQ. FT. (13.7 KG/100 SQ. M), AND TENSILE SHALL BE ACCORDING TO ASTM D 882: 70 LBF (311.3 N) AND 4600 PSI (31.7 MPA). PRINTING ON TAPE SHALL BE PERMANENT AND SHALL NOT BE DAMAGED BY BURIL OPERATIONS. TAPE MATERIAL AND INK SHALL BE CHEMICALLY INERT AND NOT SUBJECT TO DEGRADATION WHEN EXPOSED TO ACIDS, ALKALIS, AND OTHER DESTRUCTIVE SUBSTANCES COMMONLY FOUND IN SOILS. PROVIDE RED-COLORED TAPE FOR ELECTRIC LINES AND ORANGE-COLORED TAPE FOR TELECOMMUNICATION LINES.

COLOR CODING SHALL BE BUILDING STANDARD. WHERE NO BUILDING STANDARD EXIST IS, FACTORY COLOR CODING SHALL BE AS FOLLOWS:

208Y/120V, 3 PH	PHASE 'A':	BLACK
	PHASE 'B':	RED
	PHASE 'C':	BLUE
240/120V, 1 PH	PHASE 'A':	BLACK
	PHASE 'B':	RED
480Y/277V, 3 PH	PHASE 'A':	BROWN
	PHASE 'B':	ORANGE
	PHASE 'C':	YELLOW
ALL SYSTEMS	NEUTRAL:	GRAY
	EQUIPMENT GROUND:	GREEN
	ISOLATED GROUND:	GREEN/YELLOW STRIPE

26-2726 (16140) - WIRING DEVICES

DUPLEX AND TAMPER-RESISTANT CONVENIENCE RECEPTACLES: 125 V, 20 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, UL 498, AND FS W-C-596.

TAMPER-RESISTANT, USB CHARGER RECEPTACLES: 125 V, 20 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, UL 498, UL 1310, AND FS W-C-596.

GFCI RECEPTACLES: 125 V, 20 A, STRAIGHT BLADE, NON-FEED THROUGH TYPE. COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, UL 498, UL 943 CLASS 'A', AND FS W-C-596. INCLUDE INDICATOR LIGHT THAT SHOWS WHEN THE GFCI HAS MALFUNCTIONED AND NO LONGER PROVIDES PROPER GFCI PROTECTION.

TWIST-LOCK, SINGLE CONVENIENCE RECEPTACLES: 125 V, 20 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION L5-20R, AND UL 498.

PENDANT CORD-CONNECTOR DEVICES: MATCHING, LOCKING-TYPE PLUG AND RECEPTACLE BODY CONNECTOR. NEMA WD 6 CONFIGURATIONS L5-20P AND L5-20R, HEAVY-DUTY GRADE, AND FS W-C-596. NYLON BODY WITH SCREW-OPEN, CABLE GRIPPING JAWS AND PROVISION FOR ATTACHING EXTERNAL CABLE GRIP. CABLE GRIP SHALL BE WOVEN WIRE-MESH TYPE MADE OF HIGH-STRENGTH, GALVANIZED-STEEL WIRE STRAND, MATCHED TO CABLE DIAMETER AND WITH ATTACHMENT PROVISION DESIGNED FOR CORRESPONDING CONNECTOR.

DEVICES SHALL BE SPECIFICATION GRADE, TOTALLY ENCLOSED IN A MOLDED COMPOSITION BASE (U.O.N.) AND SHALL MATCH BUILDING STANDARDS OR EXISTING DEVICES WITHIN THE AREA OF CONSTRUCTION (IF APPLICABLE). DEVICES SHALL BE WHITE UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ARCHITECT AND/OR OWNER.

COVER PLATES: PROVIDE 302/304 SATIN SMOOTH, STAINLESS STEEL FOR INTERIOR AND GASKETED CAST METAL WITH HINGED GASKETED "IN USE" DEVICE COVERS FOR EXTERIOR. A COMMON PLATE SHALL COVER ALL DEVICES WHICH ARE INDICATED AT THE SAME LOCATION.

INSTALL GROUND PIN OF VERTICALLY MOUNTED RECEPTACLES 'UP' AND ON HORIZONTALLY MOUNTED RECEPTACLES TO THE 'RIGHT'. RECEPTACLES TO BE MOUNTED VERTICALLY, U.O.N.

26-2816 (16411) - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PROVIDE HEAVY DUTY; QUICK-MAKE, QUICK-BREAK, LOAD INTERRUPTER ENCLOSED DISCONNECT SWITCHES WITH EXTERNALLY OPERABLE HANDLE INTERLOCKED TO PREVENT OPENING FRONT COVER WITH SWITCH IN 'ON' POSITION. HANDLE LOCKABLE IN 'OFF' POSITION. FUSE CLIPS: DESIGNED TO ACCOMMODATE CLASS 'R' FUSES (AS REQUIRED). PROVIDE A NEUTRAL KIT (AS REQUIRED) AND EQUIPMENT GROUND KIT. RATED FOR ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.

FUSES 600 AMPERES AND LESS: UL 198E, CLASS RK-5; AS INDICATED ON DRAWINGS; TIME DELAY, DUAL ELEMENT, CURRENT LIMITING, 600 VOLT.

FUSES OVER 600 AMPERES: CLASS L, BOLT-ON TYPE WITH TIME DELAY AND CAPABILITY TO HOLD 500 PERCENT RATED FUSE CURRENT FOR A MINIMUM OF FOUR SECONDS AND CLEAR 20 TIMES RATED FUSE CURRENT IN 0.01-SECOND OR LESS. PROVIDE FUSES WITH 'O' RING SEALS BETWEEN END BELLS AND GLASS MELAMINE BARREL SIMILAR TO BUSSMAN TIME DELAY KRP-C.

PROVIDE DISCONNECT SWITCHES, WHERE REQUIRED BY NFPA 70, WHERE INDICATED ON DRAWINGS, AND WHERE REQUIRED BY EQUIPMENT MANUFACTURER, IN A LOCATION CONVENIENT FOR MAINTENANCE ON EACH SWITCH AND ADJACENT EQUIPMENT.

PROVIDE SPARE FUSE CABINET IN MAIN ELECTRICAL ROOM COMPLETE WITH THREE SPARE FUSES FOR EACH RATING INSTALLED FOR FUSE SIZES OVER 600 AMPERES, AND TEN PERCENT SPARE FUSES (MINIMUM OF THREE) OF EACH TYPE AND RATING INSTALLED FOR 600 AMPERES OR LESS.

GENERALLY, MOTORS OF 1/3 HP AND LESS WILL BE RATED 115 V, SINGLE-PHASE. MOTORS OF 1/2 HP AND LARGER WILL BE RATED 480V OR 208V, THREE-PHASE. SOME EQUIPMENT AS MANUFACTURED MAY DICTATE EXCEPTIONS TO THESE RULES.

26-2913 (16420) - ENCLOSED CONTROLLERS

FURNISH AND INSTALL FRACTIONAL HORSEPOWER MANUAL MOTOR STARTERS WITH ON-OFF CONTROL, THERMAL OVERLOAD RELAY AND PILOT LIGHTS.

	GENERAL ELECTRIC	SQUARE 'D'	ALLEN BRADLEY	SIEMENS
1-POLE:	CR101Y11	2510FG1P	600-TAX4	SMFFG1P
2-POLE:	CR101H11	2510FG2P	600-TAX5	SMFFG2P

MAGNETIC CONTROLLERS:

1. FULL VOLTAGE, ACROSS THE LINE, ELECTRICALLY HELD, NON-REVERSING.
2. FIELD COORDINATE CONTROL CIRCUIT WITH MECHANICAL CONTRACTOR; PROVIDE CONTROLLER WITH INTEGRAL CPT, PRIMARY AND SECONDARY FUSES; WITH 50 VA SPARE CAPACITY.
3. MELTING ALLOY OVERLOAD RELAYS WITH INVERSE-TIME-CURRENT CHARACTERISTICS AND CLASS 10 TRIPPING CHARACTERISTICS. HEATERS IN EACH PHASE MATCHED TO NAMEPLATE FULL-LOAD CURRENT OF ACTUAL PROTECTED MOTOR AND WITH APPROPRIATE ADJUSTMENT FOR DUTY CYCLE.
4. N.O., ISOLATED OVERLOAD ALARM CONTACT.
5. EXTERNAL OVERLOAD RESET PUSH BUTTON.

COMBINATION MAGNETIC CONTROLLER:

1. FACTORY-ASSEMBLED COMBINATION OF MAGNETIC CONTROLLER, OCPD, AND DISCONNECTING MEANS.
2. MCCB DISCONNECTING MEANS:
   a. UL 489, NEMA AB 1, AND NEMA AB 3, WITH INTERRUPTING CAPACITY TO COMPLY WITH AVAILABLE FAULT CURRENTS; THERMAL-MAGNETIC MCCB, WITH INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS.
   b. FRONT-MOUNTED, ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT-BREAKER FRAME SIZES 250 A AND LARGER.
   c. LOCKABLE HANDLE: ACCEPTS THREE PADLOCKS AND INTERLOCKS WITH COVER IN CLOSED POSITION.
3. ALL OTHER COMPONENTS, ETC. SAME AS MAGNETIC CONTROLLERS.

ACCESSORIES:

1. PUSH BUTTONS: RECESSED SHROUDED TYPES; MOMENTARY AS INDICATED.
2. PILOT LIGHTS: LED TYPES; COLORS AS INDICATED; PUSH TO TEST.
3. SELECTOR SWITCHES: ROTARY HAND/OFF/AUTO TYPE.

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NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJ/RZ
Project No.:	2201480
Date:	05/12/2023

Issued for:
PERMIT SET

Title:
ELECTRICAL SPECIFICATIONS

Sheet No.
E0.01

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ELECTRICAL SPECIFICATIONS

(NOT ALL SPECIFICATIONS ARE USED IN THIS PHASE OF DESIGN)

26-5119 (16510) - LED INTERIOR LIGHTING

PROVIDE LIGHT FIXTURES OF THE SIZE, TYPE AND RATING INDICATED IN THE LIGHT FIXTURE SCHEDULE – COMPLETE WITH LAMPS, LAMP HOLDERS, REFLECTORS, BALLAST, STARTERS, WIRING AND ACCESSORIES.

INCLUDE THE COST OF PURCHASING FIXTURES, INCLUDING PLASTER FRAMES, MOUNTING BRACKETS AND THE LIKE, AS WELL AS THE COST INVOLVED IN RECEIVING, CHECKING, CLEANING, SAFEGUARDING, WIRING, DISPOSAL OF CRATES FROM THE SITE, ETC., AND ASSEMBLING AND INSTALLATION OF SPECIFIED FIXTURES.

SUPPORT LIGHTING FIXTURES IN ACCORDANCE WITH THE APPLICABLE BUILDING CODES AND THE NATIONAL ELECTRIC CODE. WHERE FIXTURES ARE RECESSED MOUNTED IN CEILING SYSTEM, PROVIDE TRIM AND ACCESSORIES REQUIRED FOR INSTALLATION IN THE SPECIFIED CEILING SYSTEM.

IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS TO INDICATE THE TYPE OF FIXTURE FOR EACH INTENDED USE. IT IS GENERALLY INTENDED THAT ROOMS OF SIMILAR USAGE AND CONFIGURATION WILL HAVE SIMILAR FIXTURE TYPES. WHERE FIXTURE TYPE IS NOT INDICATED, IT IS THE DUTY OF THE CONTRACTOR TO REQUEST CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK.

INSTALL FIXTURES AND LUMINAIRES WITH PROPER FRAMES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

ALL LIGHT FIXTURES SHALL COMPLY WITH CURRENT FEDERAL, STATE AND UTILITY ENERGY EFFICIENCY STANDARD REQUIREMENTS.

BALLASTS FOR FLUORESCENT LIGHT FIXTURES SHALL BE INSTANT START, ELECTRONIC, LESS THAN 20% HARMONIC DISTORTION, CLASS P BALLASTS, EQUIPPED WITH THERMAL, AUTOMATIC RESET PROTECTOR, SOUND RATED "A", HIGH POWER FACTOR TYPE, RATED FOR MINIMUM 95% FULL RATED LUMEN OUTPUT, RATED FOR VOLTAGE OPERATION IN SCHEDULE, AND SHALL CARRY UL LABELS; BALLASTS AND LAMPS SHALL COMPLY WITH LOCAL UTILITY REBATE PROGRAMS.

INSPECT, CLEAN AND SERVICE EXISTING TO REMAIN LIGHT FIXTURES: REPLACE INCANDESCENT LAMPS WITH LED TYPE LAMPS; REPLACE FLUORESCENT OR HID LAMPS IF UTILIZED FOR CONSTRUCTION LIGHTING IMMEDIATELY PRIOR TO FINAL ACCEPTANCE OF PROJECT.

CLEAN AND POLISH EXISTING TO REMAIN LIGHT FIXTURES, EQUIPMENT AND MATERIALS THOROUGHLY, AND RETURN TO "AS NEW" CONDITION.

EXISTING LIGHT FIXTURES THAT ARE TO BE RELOCATED/RENOAVTED SHALL BE CLEANED AND RE-LAMPED SUCH THAT THE ENTIRE CONTRACT AREA IS LAMPED WITH LIKE COLOR AND TYPE BULBS. PROVIDE FLUORESCENT LAMPS WITH 3500K COLOR TEMPERATURE AND 85CRI. INSTALL 2X2 AND 2X4 FLUORESCENT LIGHTING FIXTURES SO THAT LAMPS LINE UP PARALLEL.

LAMPING REQUIREMENTS SHALL MATCH BUILDING STANDARDS, AS REQUIRED.

OCCUPANCY SENSORS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS. SENSORS SHALL BE ADJUSTED TO THE SPACE FOR BEST OPERATION. "OFF" DELAY FOR FLUORESCENT FIXTURES SHALL BE 30-MINUTES MINIMUM AND FOR LED FIXTURES THE "OFF" DELAY SHALL BE 15-MINUTES MINIMUM.

WIRE EMERGENCY LIGHT FIXTURES AND EXIT SIGNS TO LOCAL LIGHTING CIRCUITS, AHEAD OF ANY LOCAL CONTROL OR SWITCHING.

WHERE APPLICABLE, DAY LIGHT HARVESTING WILL BE INCORPORATED IN SPECIFIC SPACES TO TURN ON/OFF/DIM SELECT LIGHT FIXTURES WHEN SUFFICIENT LIGHT LEVELS ARE ATTAINED FROM SUNLIGHT.

ALL EMERGENCY/NIGHT LIGHT FIXTURES & EXIT SIGNS WITHOUT EMERGENCY BATTERY BACKUP SHALL BE WIRED TO A LIVE EMERGENCY 'LIFE SAFETY' PANEL BACKED UP BY AN EMERGENCY GENERATOR. IF EMERGENCY 'LIFE SAFETY' PANEL IS NOT LIVE, THEN EACH EMERGENCY/NIGHT LIGHT SHALL BE WIRED THROUGH A RELAY FROM A NORMAL LIGHTING PANEL SERVING THE AREA & AN EMERGENCY 'LIFE SAFETY' PANEL. RELAYS SHALL BE MOUNTED IN ENCLOSURES ADJACENT TO PANEL & COVERS SHALL BE LABELED WITH NORMAL & EMERGENCY PANELS & CIRCUITS FED FROM.

CONTROLLED EMERGENCY LIGHT FIXTURES SHALL BE WIRED THROUGH AN EMERGENCY BYPASS/SHUNT RELAY WITH 120V OR 277V COIL (VERIFY COIL VOLTAGE WITH EACH APPLICATION) FROM A NORMAL LOCALLY CONTROLLED LIGHTING CIRCUIT & AN EMERGENCY 'LIFE SAFETY' CIRCUIT. RELAY SHALL BE MOUNTED ADJACENT TO EMERGENCY LIGHT FIXTURE. EMERGENCY BYPASS/SHUNT RELAY SHALL BE (FUNCTIONAL DEVICES INC. - RIB #ESR01P FOR 120V OR #ESR02P FOR 277V) OR EQUAL.

EXISTING LIGHT FIXTURES THAT ARE BEING RELOCATED/RENOVATED SHALL BE CLEANED & RE-LAMPED SUCH THAT ENTIRE CONTRACT AREA IS LAMPED WITH LIKE COLOR & TYPE BULBS. PROVIDE FLOURESCENT LOAMPS TO MATCH BUILDING STANDARD FOR WATTAGE, COLOR TEMPERATURE & CRI RATINGS, UNLESS OTHERWISE INDICATED. INSTALL LIGHT FIXTURES SO THAT LAMPS & LENSES LINE UP PARALLEL.

LIGHT LEVELS IN ALL SPACES SHALL MEET IESNA STANDARDS AND CONSIDER THE FOLLOWING FOOT-CANDLE (FC) VALUES (AT WORK SURFACES) IN THE DESIGN:

- SPECIALTY ROOM – 50 FC
- LUNCH/BREAK ROOM AREAS – 30 FC
- MECHANICAL/ELECTRICAL ROOMS – 30 FC
- RESTROOMS AND STORAGE ROOMS – 15 FC
- ENTRY VESTIBULE AND CORRIDORS – 15 FC
- OPEN SPACE AND CONFERENCE ROOMS – 30 FC
- OFFICES – 50 FC
- TELECOMMUNICATION ROOM – 50 FC
- CLASSROOMS – 50 FC

26-0923 (16140) - LIGHTING CONTROL DEVICES

A. SWITCHES, TIME CLOCKS, AND PHOTOCELLS

MANUAL SWITCHES SHALL BE TOGGLE TYPE. 120-277 VOLT AC, RATED 20 AMPERES. SPECIFICATION GRADE, QUIET TYPE WITH SILENT OPERATING MECHANISM, TOTALLY ENCLOSED IN A MOLDED COMPOSITION BASE.

1. MANUFACTURER/SERIES SHALL BE HUBBELL "1221" OR APPROVED EQUAL.
2. PROVIDE WITH INTERNAL OCCUPANCY SENSOR WHERE INDICATED.
3. SWITCHES SHALL BE WHITE TO MATCH EXISTING BUILDING DEVICES OR AS DIRECTED BY OWNER/ARCHITECT.

ELECTRONIC TIME SWITCHES: SOLID-STATE, PROGRAMMABLE, WITH ALPHANUMERIC DISPLAY COMPLYING WITH UL 917. EIGHT ON/OFF SET POINTS ON A 24-HOUR SCHEDULE.

OUTDOOR PHOTOELECTRIC SWITCHES: SOLID-STATE, WITH SPST DRY CONTACTS TO OPERATE CONNECTED RELAY, CONTACTOR COILS, OR MICROPOCESSOR INPUT COMPLYING WITH UL 773A AND COMPATIBLE WITH BALLASTS AND LED LAMPS. LIGHT-LEVEL MONITORING RANGE: 1.5 TO 10 FC (16.14 TO 108 LUX), WITH AN ADJUSTMENT FOR TURN-ON AND TURN-OFF LEVELS WITHIN THAT RANGE, AND A DIRECTIONAL LENS IN FRONT OF THE PHOTOCELL TO PREVENT FIXED LIGHT SOURCES FROM CAUSING TURN-OFF. TIME DELAY: FIFTEEN-SECOND MINIMUM, TO PREVENT FALSE OPERATION. PROVIDE MOUNTING ACCESSORIES AS REQUIRED TO DIRECT SENSOR TO THE NORTH SKY EXPOSURE. FAILURE MODE: LUMINAIRE STAY ON.

B. OCCUPANCY SENSORS AND VACANCY SENSORS

COORDINATE WITH THE OWNER WHICH TYPE OF AUTOMATIC CONTROL IS DESIRED WITHIN EACH TYPE OF SPACE: OCCUPANCY OR VACANCY SENSOR. OCCUPANCY SENSOR WILL TURN LIGHTS ON WHEN COVERAGE AREA IS OCCUPIED AND TURN THEM OFF WHEN UNOCCUPIED, WITH A TIME DELAY FOR TURNING LIGHTS OFF; AND WITH A VACANCY SENSOR THE LIGHTS ARE MANUALLY TURNED ON AND SENSOR TURNS THEM OFF WHEN THE ROOM IS UNOCCUPIED, WITH A TIME DELAY FOR TURNING THEM OFF.

PROVIDE WATTSTOPPER, SENSOR SWITCH, HUBBELL, LEVITON, OR APPROVED EQUAL SENSORS. SENSORS SHALL BE COMBINATION INFRARED AND ULTRASONIC TYPE; PROVIDE CEILING MOUNTED UNITS AND INTEGRATE WITH WALL SWITCH AS INDICATED. REFER TO WIRING DIAGRAMS.

CONTRACTOR'S WORK SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, APPLIANCES CONTROL HARDWARE, SENSORS, WIRE, JUNCTION BOXES AND EQUIPMENT NECESSARY FOR A COMPLETELY OPERATIONAL SENSOR CONTROL SYSTEM, AS DIRECTED HEREIN.

ALL SENSORS SHALL BE EITHER SELF-CONTAINED OR INSTALLED AS PART OF OTHER SPECIFIED SYSTEMS OF THE ULTRASONIC/INFRARED TYPE PROVIDING VOLUMETRIC COVERAGE WITH THE DETECTION AREA. SENSORS SHALL BE SOLID STATE DESIGN AND DESIGN FOR ENERGY CONSERVATION.

ALL REQUIRED POWER PACKS ARE TO BE PROVIDED WITH TRANSFORMERS AND RELAYS.

SENSORS LOCATED IN ADJACENT ROOMS OR SPACES OR CONTROLLING DIFFERENT LIGHT FIXTURES (NOT INTENDED TO BE PART OF THE SAME ZONE) SHALL OPERATE AT DIFFERENT FREQUENCIES TO PREVENT "CROSS-TALK" BETWEEN SENSORS.

SENSORS SHALL BE ABLE TO BE WIRED IN PARALLEL TO ALLOW COVERAGE OF LARGE AREAS.

ALL SENSORS SHALL BE SET AT FULL SENSITIVITY AND MAXIMUM FOOT CANDLES. COVERAGE SHALL REMAIN CONSTANT AFTER SENSITIVITY CONTROL HAS BEEN SET. SENSORS SHALL BE ADJUSTED TO THE SPACE FOR BEST OPERATION. "OFF" DELAY FOR FIXTURES SHALL BE 15-MINUTES MINIMUM OR AS DIRECTED BY THE OWNER.

BEFORE THE TENANT MOVE-IN DATE AND TURNOVER OF THE PROJECT, THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE SENSOR TECHNICAL REPRESENTATIVE TO FIELD ADJUST SENSOR SENSITIVITY AND LOCATION TO ENCOMPASS ENTIRE ROOM OR AREA WITHOUT NUISANCE TRIPPING FROM ADJACENT AREAS.

SENSORS SHALL BE LOCATED AT LEAST 4'-0" FROM HVAC DIFFUSERS. NO REDUCTION IN COVERAGE SHALL OCCUR WHEN AIR-CONDITIONING IS IN OPERATION.

C. DAYLIGHT-HARVESTING DIMMING CONTROLS

SENSING DAYLIGHT AND ELECTRICAL LIGHTING LEVELS, THE SYSTEM ADJUSTS THE INDOOR ELECTRICAL LIGHTING LEVELS. AS DAYLIGHT INCREASES, THE LIGHTS ARE DIMMED. LIGHT CONTROL SET POINT IS BASED UPON TWO LIGHTING CONDITIONS: WHEN NO DAYLIGHT IS PRESENT (TARGET LEVEL); AND WHEN SIGNIFICANT DAYLIGHT IS PRESENT. SYSTEM PROGRAMMING SHALL BE DONE WITH TWO HAND-HELD REMOTE CONTROL TOOLS: INITIAL SETUP TOOL, AND A TOOL FOR OCCUPANTS TO ADJUST THE TARGET LEVELS BY INCREASING THE SET POINT UP TO 25 PERCENT, OR MINIMIZING THE ELECTRIC LIGHTING LEVELS. CEILING-MONTED DIMMING CONTROLS: SOLID-STATE, LIGHT-LEVEL SENSOR UNIT, WITH INTEGRATED AND/OR SEPARATE POWER PACKS(S) TO DETECT CHANGES IN INDOOR LIGHTING LEVELS THAT ARE PRECEIVED BY THE EYE.

D. COVER PLATES

PROVIDE 302/304 SATIN SMOOTH, STAINLESS STEEL FOR INTERIOR AND GASKETED CAST METAL WITH HINGED GASKETED "IN USE" DEVICE COVERS FOR EXTERIOR. A COMMON PLATE SHALL COVER ALL DEVICES WHICH ARE INDICATED AT THE SAME LOCATION.

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NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJRZ
Project No.:	2201480
Date:	05/12/2023

Issued for:
PERMIT SET

Title:
ELECTRICAL SPECIFICATIONS

Sheet No.
E0.02

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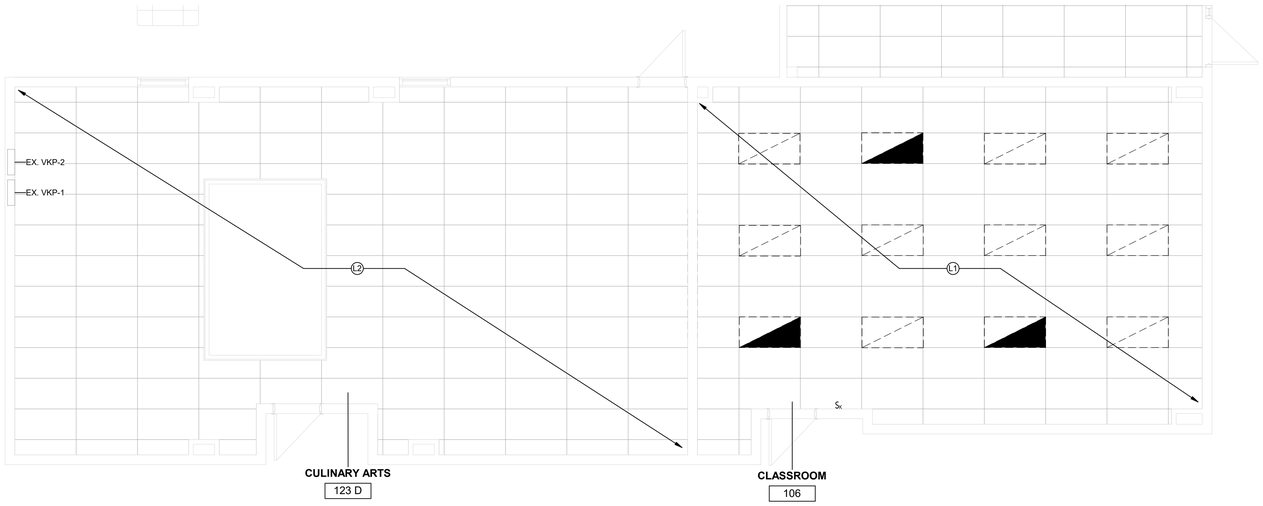
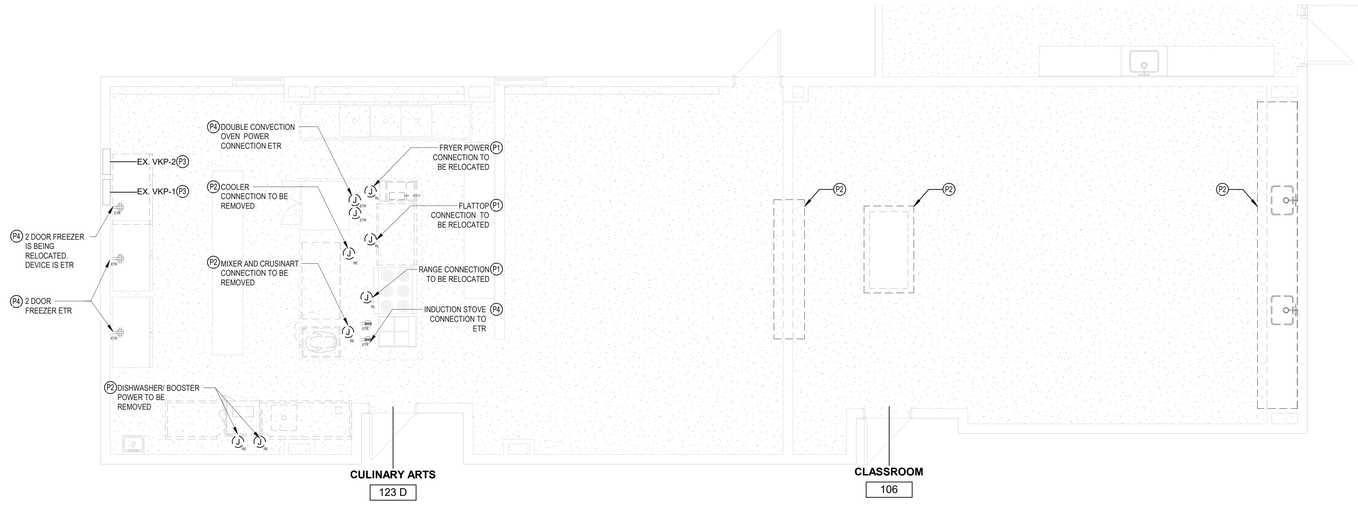


2 OVERALL LIGHTING DEMO PLAN
1/4" = 1'-0"



1 OVERALL POWER DEMO PLAN
1/4" = 1'-0"

DEMOLITION LIGHTING PLAN KEY NOTES:

(NOT ALL KEY NOTES ARE INDICATED ON FLOOR PLAN)

L1 UNLESS OTHERWISE NOTED, DISCONNECT AND REMOVE ALL EXISTING LIGHTING FIXTURES, EXIT SIGNS, LIGHTING CONTROL DEVICES AND WIRING BACK TO SUPPLY SOURCE. MAINTAIN EXISTING BRANCH CIRCUIT CONTINUIT TO REMAINING DEVICES AS REQUIRED.

L2 EXISTING LIGHTING, CONTROLS AND WIRING TO REMAIN. REFER TO OVERALL LIGHTING PLAN FOR ADDITIONAL REQUIREMENTS.

DEMOLITION POWER KEY NOTES:

P1 RELOCATE EXISTING COOKING EQUIPMENT POWER CIRCUIT TO NEW LOCATION, ALTER/ EXTEND CONDUIT/ WIRING AS REQUIRED, NEW CONDUIT/ WIRING TO MATCH EXISTING. PROVIDE NEW DEVICE/ J-BOX AS REQUIRED FOR FINAL EQUIPMENT CONNECTION. COORDINATE EXACT POWER REQUIRMENTS IN FIELD WITH ELECTRICAL CHARATERISTICS ON NAMEPLATE OF COOKING EQUIPMENT WHICH WILL BE SUPPLIED BY CLIENT. IF NEW ELECTRICAL EQUIPMENT EXCEEDS EXISTING BRANCH CIRCUIT AMPACITY, CONTRACTOR SHALL FURNISH AND INSTALL NEW CONDUIT/ WIREING AND OVERCURRENT PROTECTION DEVICE PER EQUIPMENT MANUFACTURER RECOMMENDATIONS. PROPOSED NEW LOCATION IS SHOWN ON THE OVERALL POWER PLAN. COORDINATE EXACT LOCATION WITH CLIENT REPRESENTATIVE PRIOR TO ROUGH IN. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH WALLS, OPENINGS SHALL BE PATCHED, SEALED, AND PAINTED TO MATCH THE SURROUNDING WALL. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH FLOOR, OPENINGS SHALL BE PATCHED AND SEALED TO MATCH SURROUNDING FLOOR. CONSULT ARCHITECT ON LOCATIONS AND MATERIALS REQUIRED. PROVIDE ALL MATERIALS AND EQUIPMENT FOR A COMPLETE INSTALLATION PER GOVERNING CODE AND EQUIPMENT MANUFACTURE INSTALLATION RECOMMENDATIONS

P2 EXISTING POWER DEVICES SHALL BE REMOVED IN ITS ENTIREITY. REMOVE WIRE, CONDUIT AND EQUIPMENT BACK TO SOURCE. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH WALLS, OPENINGS SHALL BE PATCHED, SEALED, AND PAINTED TO MATCH THE SURROUNDING WALL. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH FLOOR, OPENINGS SHALL BE PATCHED AND SEALED TO MATCH SURROUNDING FLOOR. CONSULT ARCHITECT ON LOCATIONS AND MATERIALS REQUIRED. COORDINATE EXACT POWER DEVICES TO BE REMOVED WITH CLIENT REPRESENATIVE PRIOR TO START OF DEMO.

P3 EXISTING ELECTRICAL PANELS ARE EXISTING TO REMAIN.

P4 EXISTING POWER DEVICES FEEDING COOKING EQUIPMENT ARE EXISTING TO REMAIN.

ELECTRICAL DEMOLITION GENERAL NOTES:

(NOT ALL NOTES MAY APPLY TO THIS DRAWING)

1. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENT OF BUILDING DEMOLITION WORK. REFER TO REFLECTED CEILING PLAN FOR EXTENT OF CEILING REMOVALS AND REPLACEMENTS. REFER TO ARCHITECTURAL ELEVATIONS AND SECTIONS FOR EXTENT OF WALL RENOVATIONS, PATCHING AND FINISHES.
2. ELECTRICAL CONTRACTOR SHALL REMOVE ALL EXISTING ELECTRICAL DEVICES LOCATED WITH IN THE NEW TENANT SPACE. REMOVAL OF ALL DEVICES SHALL INCLUDE BUT NOT BE LIMITED TO ALL ELECTRICAL EQUIPMENT, CONDUIT, WIRING, ELECTRICAL PANELBOARDS, TRANSFORMERS, DISCONNECT SWITCHES, JUNCTION BOXES, RECEPTACLES, FIRE ALARM DEVICES, LIGHT FIXTURES, EXIT SIGNS, LIGHT SWITCHES, LIGHTING CONTROLS, ETC. CONDUIT WIRING SHALL BE REMOVED BACK TO SOURCE OF SUPPLY.
3. PRIOR TO BIDDING, ELECTRICAL CONTRACTOR SHALL FIELD VERIFY SCOPE OF DEMOLITION WORK WITH BUILDING OWNER, PROVIDE LABOR AND EQUIPMENT TO COMPLETE WORK AS REQUIRED AND INSPECT PROJECT SITE TO DETERMINE CONDITIONS UNDER WHICH DEMOLITION IS TO BE ACCOMPLISHED ALONG WITH KIND AND AMOUNT OF MATERIALS BEING REMOVED. INCLUDE COST OF WORK REQUIRED TO ACCOMMODATE ALL EXISTING CONDITIONS IN THE BID PROPOSAL.
4. THE OWNER IS RESPONSIBLE FOR REMOVAL OR ABATEMENT OF ANY/ALL ASBESTOS-LADEN OR HAZARDOUS MATERIALS PRIOR TO THE CONTRACTOR COMMENCING WITH WORK. HOWEVER, IF THE CONTRACTOR SHOULD NOTICE OR ENCOUNTER ANY MATERIALS WHICH ARE SUSPECT TO BE LADEN WITH ABBESTOS OR HAZARDOUS, WORK SHALL CEASE AT ONCE. FINDINGS SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY AND WAIT FOR FURTHER INSTRUCTIONS BEFORE STARTING/RESTARTING ANY WORK IN PROJECT AREA.
5. REMOVE ALL JUNCTION BOXES, BACK BOXES, COVER PLATES, WIRING, AND CONDUIT IN ITS ENTIRETY BACK TO SOURCE (NO ABANDONED MATERIAL SHALL REMAIN) OR NEXT EXISTING TO REMAIN DEVICE, ASSOCIATED WITH ALL ELECTRICAL, COMMUNICATION, FIRE ALARM DEVICES, AND LIGHTING REMOVED DURING DEMOLITION, UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
6. REMOVE ALL ELECTRICAL CONTROLS, DISCONNECT SWITCHES, JUNCTION/BACK BOXES, WIRING, AND CONDUIT ASSOCIATED WITH MECHANICAL/PLUMBING EQUIPMENT BEING REMOVED IN THIS PROJECT. (SEE MECHANICAL DEMOLITION CONTRACT DOCUMENTS ON THIS DRAWING).
7. ALL SALVAGEABLE EQUIPMENT REMOVED SHALL BECOME PROPERTY OF OWNER AND SHALL BE STORED ON SITE AS DIRECTED. ALL NON-SALVAGEABLE MATERIALS SHALL BE REMOVED IN ITS ENTIRETY FROM SITE AND DISPOSED OF BY ELECTRICAL CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LAWS.
8. TEMPORARILY RELOCATE ELECTRICAL EQUIPMENT AS REQUIRED TO ACCOMMODATE THE CONSTRUCTION SCHEDULE. ALL AREAS NOT UNDER CONSTRUCTION MUST BE KEPT OPERATIONAL DURING CONSTRUCTION. TO ACCOMPLISH THIS, PROVIDE THE NECESSARY TEMPORARY ELECTRICAL SERVICES. REMOVE TEMPORARY DEVICES UPON COMPLETION OF CONSTRUCTION.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY POWER AND LIGHTING AS REQUIRED DURING THE ENTIRE DURATION OF CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY POWER AND LIGHTING UPON COMPLETION OF THE PROJECT.
10. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY CIRCUITS PASSING THRU PROJECT AREA WHICH FEED ELECTRICAL DEVICES, LIGHTING, LIGHTING DEVICES, DATA DEVICES OR FIRE ALARM DEVICES OUTSIDE OF PROJECT SCOPE. ANY/ALL OF THESE CIRCUITS AFFECTED BY THE ELIMINATION OF CONDUIT, WIRE, CABLING OR JUNCTION BOXES SHALL BE REROUTED & REFED AS REQUIRED TO MAINTAIN CIRCUIT CONTINUITY.
11. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH WALLS, OPENINGS SHALL BE PATCHED, SEALED, AND PAINTED TO MATCH THE SURROUNDING WALL. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH FLOOR, OPENINGS SHALL BE PATCHED AND SEALED TO MATCH SURROUNDING FLOOR. CONSULT ARCHITECT ON LOCATIONS AND MATERIALS REQUIRED.
12. ELECTRICAL CONTRACTOR SHALL SEAL ALL ELECTRICAL PENETRATIONS THROUGH FIRE RATED PARTITIONS, INCLUDING THOSE LEFT DUE TO REMOVAL OF DEVICES OR CONDUIT DURING DEMOLITION, WITH FIRE RATED MATERIAL EQUAL TO DOW CORNING SILICONE RTV FOAM AS A MINIMUM. MATERIAL SELECTION SHALL BE BASED ON RATING OF PARTITION PENETRATED.
13. FURNISH AND INSTALL KNOCKOUT COVERS OR PLUGS ON ALL EXISTING PANELS, EQUIPMENT, AND OUTLET BOX OPENINGS CREATED BY REMOVAL OR RELOCATION OF EXISTING RACEWAYS.
14. ELECTRICAL CONTRACTOR SHALL COORDINATE INSTALLATION OF THE NEW FIRE ALARM DEVICES WITH REMOVAL OF THE EXISTING FIRE ALARM DEVICES. PROVIDE A FIRE WATCH FOR ANY TIME THE FIRE ALARM SYSTEM IS NONFUNCTIONAL OR WHEN BUILDING IS UNPROTECTED.
15. EXTEND/REROUTE WIRING AND CONDUIT, AS REQUIRED, TO ALL ELECTRICAL DEVICES, TELECOMMUNICATION, AND FIRE ALARM DEVICES, RELOCATED DURING DEMOLITION UNLESS SPECIFICALLY NOTED OTHERWISE.
16. COORDINATE POWER SHUTDOWN REQUIREMENTS WITH OWNER A MINIMUM OF 2 DAYS IN ADVANCE OF PLANNED SHUTDOWN. DO NOT PROCEED WITH SHUTDOWN WITHOUT WRITTEN AUTHORIZATION TO PROCEED.
17. COORDINATE REMOVAL OF EXISTING LIGHT FIXTURES WITH BUILDING OWNER. DO TO NATURE OF THIS PROJECT PRIOR TO BIDDING CONTRACTOR SHALL CONSULT WITH LANDLORD TO DETERMINE THE SCOPE OF DEMOLITION WORK.
18. DISCONNECT AND REMOVE ALL BALLASTS FROM LIGHT FIXTURES THAT DO NOT HAVE LABELS STATING "BALLAST DOES NOT CONTAIN PCBs" OR SIMILAR LABEL (BALLAST MAY CONTAIN PCBs). PLACE PCB BALLASTS IN D.O.T. APPROVED CONTAINERS. PROPERLY DISPOSE OF CONTAINERS WITH A FEDERALLY APPROVED DISPOSAL CONTRACTOR. DISPOSAL SHALL INVOLVE SEGREGATION OF COMPONENTS FOR RECYCLING AND INCINERATION OF PCB CONTENTS. ALL DISPOSAL DOCUMENTATION SHALL BE PROVIDED TO THE OWNER UPON COMPLETION OF PROJECT. CONTRACTOR SHALL MAINTAIN AN OWNER APPROVED LOG SHEET FOR EACH DRUM.
19. REMOVE ALL MERCURY-CONTAINING LAMPS, DO NOT BREAK OR CRUSH. RETAIN SERVICES OF A STATE APPROVED LAMP RECYCLING FACILITY ABLE TO ACCEPT WASTE D009. COORDINATE PACKAGING REQUIRED AND PACKAGE, SECURE, AND DELIVER LAMPS AS REQUIRED BY THE SELECTED RECYCLING FACILITY TO INSURE MINIMUM LAMP BREAKAGE. MINIMUM OF 95% OF LAMP MATERIAL MUST BE SHIPPED INTACT. CONTRACTOR MUST COMPLY WITH ALL REPORTING AND PAPERWORK REQUIREMENTS OF STATE LAWS REGARDING THE HANDLING, TRANSPORTATION, AND DISPOSITION OF HAZARDOUS WASTE. INCLUDING BUT NOT LIMITED TO FILING THE REQUIRED PAPERWORK AND MANIFEST WITH THE STATE AND OWNERS AS REQUIRED BY LAW. ALL DISPOSAL DOCUMENTATION SHALL BE PROVIDED TO THE OWNER UPON COMPLETION OF THE PROJECT.
20. EXTEND/REROUTE WIRING AND CONDUIT, AS REQUIRED, TO ALL LIGHTING DEVICES RELOCATED DURING DEMOLITION UNLESS SPECIFICALLY NOTED OTHERWISE.

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REVISIONS

NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJ/RZ
Project No.:	2201480
Date:	05/12/2023
Issued for:	PERMIT SET

Title: OVERALL FIRST FLOOR DEMO PLAN- ROOM 123 & 106

Sheet No.

ED1.01

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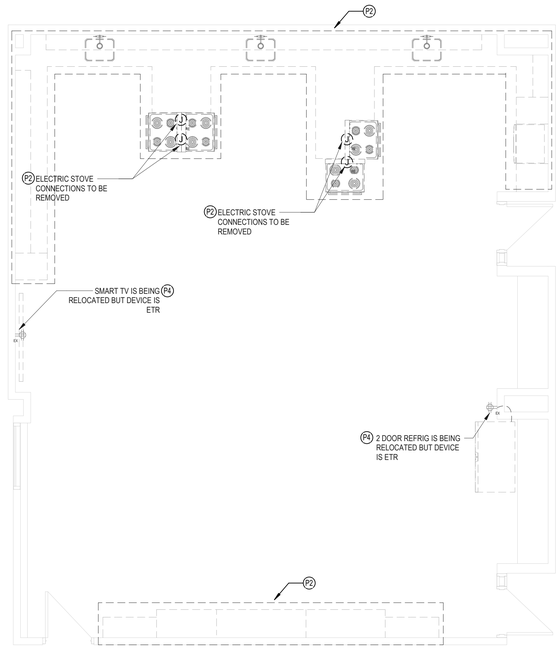

1 OVERALL ELECTRICAL POWER DEMO ROOM 107
1/4" = 1'-0"

DEMOLITION POWER KEY NOTES:

P1 RELOCATE EXISTING COOKING EQUIPMENT POWER CIRCUIT TO NEW LOCATION, ALTER/ EXTEND CONDUIT/ WIRING AS REQUIRED, NEW CONDUIT/ WIRING TO MATCH EXISTING. PROVIDE NEW DEVICE/ J-BOX AS REQUIRED FOR FINAL EQUIPMENT CONNECTION. COORDINATE EXACT POWER REQUIRMENTS IN FIELD WITH ELECTRICAL CHARATERISTICS ON NAMEPLATE OF COOKING EQUIPMENT WHICH WILL BE SUPPLIED BY CLIENT. IF NEW ELECTRICAL EQUIPMENT EXCEEDS EXISTING BRANCH CIRCUIT AMPACITY, CONTRACTOR SHALL FURNISH AND INSTALL NEW CONDUIT/ WIREING AND OVERCURRENT PROTECTION DEVICE PER EQUIPMENT MANUFACTURER RECOMMENDATIONS. PROPOSED NEW LOCATION IS SHOWN ON THE OVERALL POWER PLAN. COORDINATE EXACT LOCATION WITH CLIENT REPRESENTATIVE PRIOR TO ROUGH IN. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH WALLS, OPENINGS SHALL BE PATCHED, SEALED, AND PAINTED TO MATCH THE SURROUNDING WALL. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH FLOOR, OPENINGS SHALL BE PATCHED AND SEALED TO MATCH SURROUNDING FLOOR. CONSULT ARCHITECT ON LOCATIONS AND MATERIALS REQUIRED. PROVIDE ALL MATERIALS AND EQUIPMENT FOR A COMPLETE INSTALLATION PER GOVERNING CODE AND EQUIPMENT MANUFACTURE INSTALLATION RECOMMENDATIONS

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19. REMOVE ALL MERCURY-CONTAINING LAMPS, DO NOT BREAK OR CRUSH. RETAIN SERVICES OF A STATE APPROVED LAMP RECYCLING FACILITY ABLE TO ACCEPT WASTE D009. COORDINATE PACKAGING REQUIRED AND PACKAGE, SECURE, AND DELIVER LAMPS AS REQUIRED BY THE SELECTED RECYCLING FACILITY TO INSURE MINIMUM LAMP BREAKAGE. MINIMUM OF 95% OF LAMP MATERIAL MUST BE SHIPPED INTACT. CONTRACTOR MUST COMPLY WITH ALL REPORTING AND PAPERWORK REQUIREMENTS OF STATE LAWS REGARDING THE HANDLING, TRANSPORTATION, AND DISPOSITION OF HAZARDOUS WASTE. INCLUDING BUT NOT LIMITED TO FILING THE REQUIRED PAPERWORK AND MANIFEST WITH THE STATE AND OWNERS AS REQUIRED BY LAW. ALL DISPOSAL DOCUMENTATION SHALL BE PROVIDED TO THE OWNER UPON COMPLETION OF THE PROJECT.
20. EXTEND/REROUTE WIRING AND CONDUIT, AS REQUIRED, TO ALL LIGHTING DEVICES RELOCATED DURING DEMOLITION UNLESS SPECIFICALLY NOTED OTHERWISE.

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REVISIONS

NO	DATE	DESCRIPTION

Designed: JCP
Drawn: JCP
Reviewed: JJR/JP
Project No.: 2201480
Date: 05/12/2023
Issued for:
PERMIT SET

Title:
OVERALL FIRST FLOOR DEMO PLAN- ROOM 107

Sheet No.
ED1.02

5/24/2023 4:49:53 PM C:\Users\JPrete\Documents\2201480_MEP_R20_jpreteYR59B.rvt

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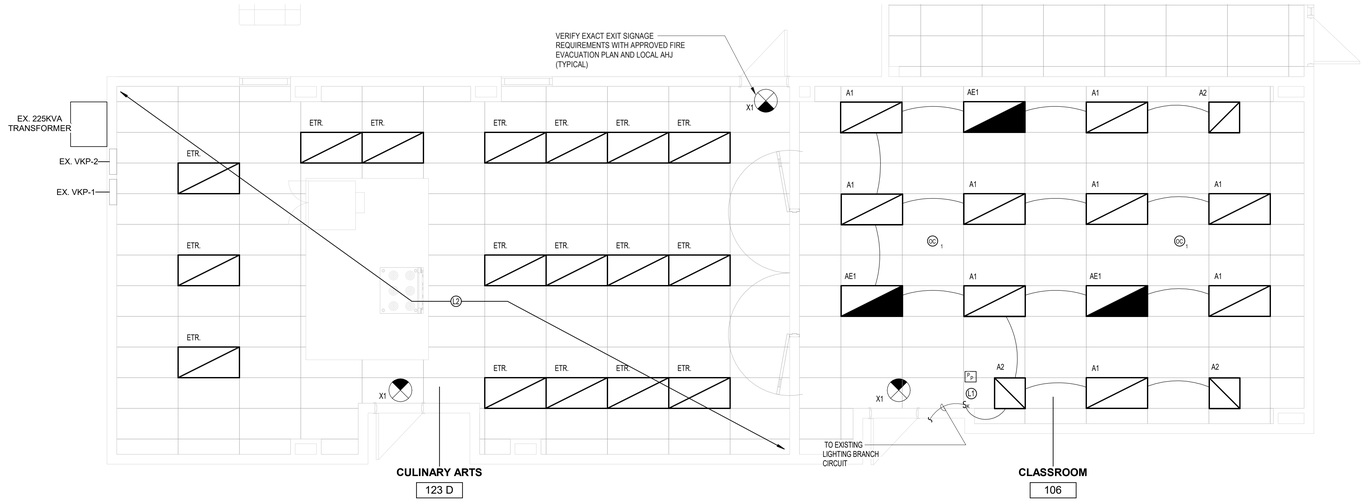


2 OVERALL LIGHTING PLAN
1/4" = 1'-0"

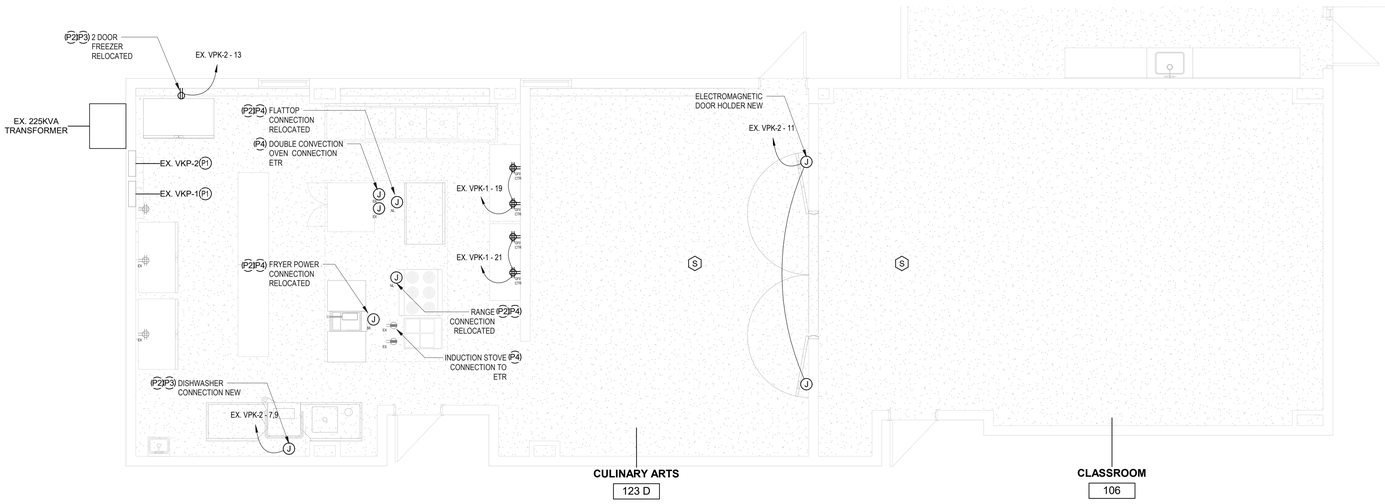
LIGHTING PLAN KEY NOTES:
(NOT ALL KEY NOTES ARE INDICATED ON FLOOR PLAN)

L1 SPACES WITH CEILING MOUNTED OCCUPANCY SENSOR CONTROL (CLASSROOMS - IECC 2021 CV405.2.1):
- PROVIDE CEILING MOUNTED OCCUPANCY SENSOR WITH DUAL TECHNOLOGY SENSING. SENSOR SHALL BE SET UP AUTOMATIC CONTROL FOR ON OPERATION AND AUTOMATIC CONTROL FOR OFF OPERATION. AFTER NO OCCUPANCY IS DETECTED FOR 20 MINUTES. QUANTITY AND PLACEMENT TO BE DETERMINED BY MANUFACTURER BASED ON ACTUAL DEVICES UTILIZED.
- PROVIDE KEY WALL SWITCH AT ENTRY DOOR. SWITCH SHALL PROVIDE CODE REQUIRED ON/OFF CONTROL (IECC 2021 C405.2.1.1(3)).
- EMERGENCY FIXTURES (DESIGNATED WITH AN EM SUBSCRIPT), CONTROLLED WITH NORMAL LIGHTING AND ARE NOT INTENDED TO BE ON 24/7
- FOR EMERGENCY FIXTURES INTENDED TO BE ON 24/7 (DESIGNATED WITH AN EMINL SUBSCRIPT), FIXTURES SHALL BYPASS ANY LOCAL LIGHTING CONTROLS.
- CONNECT LIGHT FIXTURE CONTROLS AND SWITCH TO LINE VOLTAGE.
- REFER TO DETAILS #3 & #6 ON E4.07 FOR ADDITIONAL REQUIREMENTS.

L2 EXISTING LIGHTING TO REMAIN. CONTRACTOR SHALL CLEAN LENSES/HOUSING, RE- BALLAST AND RE-LAMP WITH NEW BULB TO MATCH EXISTING COLOR TEMPERATURE. AFTER COMPLETION OF WORK CONTRACTOR SHALL TEST EXISTING LIGHTING TO MAKE SURE IT IS IN PROPER WORKING CONDITION.

LIGHTING PLAN GENERAL NOTES:
(NOT ALL NOTES ARE INDICATED ON FLOOR PLAN)

1. ALL INSTALLATIONS SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AS WELL AS ALL APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL EQUIPMENT AND DEVICES SHALL BE SUITABLE FOR ITS APPLICATION PER THE LISTING INSTRUCTION OF A NATIONALLY RECOGNIZED AND APPROVED TESTING LABORATORY.
3. CONTRACTOR SHALL PROVIDE HOMERUNS FOR ALL NORMAL & EMERGENCY LIGHTING BRANCH CIRCUITS. HOMERUNS FOR 120V OR 277V, 20A, 1P BRANCH CIRCUITS SHALL BE 2-#12 & 1-#12 GND IN 3/4"C MINIMUM, AND HOMERUNS FOR 208V OR 480V, 20A, 2P BRANCH CIRCUITS SHALL BE 2-#10 & 1-#10 GND IN 3/4"C MINIMUM.
4. ACCESS TO AND CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL CONFORM TO N.E.C. ARTICLES 110. CONSULT ENGINEER WHERE SPACE APPEARS INADEQUATE DUE TO ARCHITECTURAL CHANGES, EQUIPMENT LAYOUT CHANGES, OR FIELD CONDITIONS. DO NOT COVER, OBSCURE OR BLOCK ACCESS TO EQUIPMENT, DATA PLATES, ACCESS PANELS OR MAINTENANCE AREAS WITH THE ELECTRICAL WORK.
5. THIS DRAWING SHOWS EQUIPMENT LOCATIONS ONLY. WIRING SHOWN IS SCHEMATIC IN NATURE. REFER TO RISERS & DETAILS FOR ALL REQUIRED POWER & CONTROL WIRING. COORDINATE CONDUIT ROUTE IN FIELD WITH OTHER TRADES, EQUIPMENT & OWNER. VERIFY ALL MOUNTING HEIGHTS WITH OWNER & ARCHITECT PRIOR TO INSTALLATION.
6. MINIMUM CONTROL WIRING SHALL BE 3/4"C., 2#14. SEE GENERAL NOTE #16 ON DWG. E0.01
7. CONTRACTOR SHALL COORDINATE WITH MECHANICAL PLANS FOR FINAL LOCATION OF ALL DEVICES MOUNTED ON OR IN THE VICINITY OF THE MECHANICAL WORK.
8. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL DEVICES WITH OWNER PRIOR TO INSTALLATION.
9. CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENTS OF ALL OWNER PROVIDED EQUIPMENT WITH ACTUAL EQUIP. PRIOR TO INSTALLATION.
10. CONTRACTOR SHALL COORDINATE LUMINAIRE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
11. ALL OCCUPANCY SENSORS REQUIRE POWER PACKS. ONLY ONE POWER PACK IS USED WHEN SENSORS ARE LINKED.
12. LIGHT FIXTURES SHOWN FULL SHADED SHALL BE UNSWITCHED AND SHALL SERVE AS NIGHT LIGHT.
13. ALL LIGHTING CONTROLS SHALL BE PROVIDED BY A SINGLE MANUFACTURER AND ALL CONTROLS SHALL BE COMPATIBLE WITH THE LIGHTING FIXTURES PROVIDED.
14. CONTRACTOR SHALL COORDINATE WITH LIGHTING CONTROL MANUFACTURER TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM. ALL REQUIRED, POWER PACKS, INTERCONNECTION WIRING, AND RELATED COMPONENTS. SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
15. CONTRACTOR SHALL COORDINATE DIMMING PROTOCOL (BASIS OF DESIGN: 0-10V) OF LIGHTING FIXTURES PROVIDED TO ENSURE COMPATIBILITY.
16. MANUFACTURER WILL ENSURE THAT THEIR BEST SENSING PROTOCOL (ULTRASONIC, INFRARED, MICROWAVE, ETC.) AND EITHER SINGLE OR DUAL TECHNOLOGY DEVICES ARE PROVIDED FOR EACH SPACE TYPE.
17. CONTRACTOR SHALL HAVE THEIR MANUFACTURER PROVIDE SHOP DRAWINGS WITH DETAILED INFORMATION SHOWING ALL REQUIRED LIGHTING CONTROL COMPONENTS AND INTERCONNECTIONS NECESSARY FOR THEIR SYSTEM TO FUNCTION AS DESCRIBED IN THE DRAWINGS AND LIGHTING CONTROL MATRIX ON LIGHTING CONTROL DETAIL SHEET. THESE DRAWINGS WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AND ANY REQUIRED CHANGES WILL BE CORRECT AT NO ADDITIONAL COST TO THE OWNER.
18. WALL SWITCH QUANTITY AND LOCATIONS HAVE BEEN NOTED ON THE LIGHTING PLANS. REFER TO LIGHTING CONTROLS SYMBOLS LEGEND FOR EACH TYPE OF SWITCH REQUIRED (DIMMING, KEYED, THREE-WAY, FOUR-WAY, OCCUPANCY SENSING, ETC.).
19. CONTRACTOR SHALL CLEARLY LABEL ALL ELECTRICAL EQUIPMENT & DEVICES WITH ASSOCIATED PANEL NAME & CIRCUIT BREAKER.



1 OVERALL POWER PLAN
1/4" = 1'-0"

POWER PLAN KEY NOTES:
(NOT ALL KEY NOTES ARE INDICATED ON FLOOR PLAN)

P1 EXISTING ELECTRICAL PANEL. DURING EXISTING CONDITIONS FIELD VISIT IT WAS DISCOVERED THAT THE EXISTING PANEL IS MISSING LABELS AND EXACT PANEL CHARACTERISTICS COULD NOT BE VERIFIED, CONTRACTOR SHALL INSPECT AND PROVIDE NEW LABELS WITH CORRECT VOLTAGE, AMP RAITING AND SOURCE PANEL BASED ON EXISTING PANEL FEEDER SIZE AND ORIGINAL POWER SOURCE OVECURRENT PROTECTION DEVICE RATING. NOTIFY ENGINEER OF RECORD IF DISCREPANCIES BETWEEN THE DESIGN AND FIELD CONDITIONS PRESENT THEMSELF PRIOR TO COMMENCING WORK. EXISTING BRANCH CIRCUITS ON PANELS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED. EXISTING BRANCH CIRCUITS IN PANEL SHOULD BE TRACED OUT AND A NEW WRITTEN TYPE DIRECTORY SHOULD BE PROVIDED. CONTRACTOR TO PROVIDE PANEL CONNECTED LOAD SUMARRY BASED ON EXISTING CONDITIONS. IF PANEL IS DEEMED TOO SMALL FOR ADDITIONAL LOAD THAN NEW DISHWASHER/BOOSTER SHALL BE ROUTED TO NEAREST LOCAL PANEL WITH SPARE CAPACITY. ACCESS TO & CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL CONFORM TO N.E.C. ARTICLE 110.

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POWER PLAN GENERAL NOTES:
(NOT ALL NOTES ARE INDICATED ON FLOOR PLAN)

1. ALL INSTALLATIONS SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AS WELL AS ALL APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL EQUIPMENT AND DEVICES SHALL BE SUITABLE FOR ITS APPLICATION PER THE LISTING INSTRUCTION OF A NATIONALLY RECOGNIZED AND APPROVED TESTING LABORATORY.
3. ACCESS TO & CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL CONFORM TO N.E.C. ARTICLE 110. CONTRACTOR SHALL CONSULT ENGINEER WHERE SPACE APPEARS INADEQUATE DUE TO ARCHITECTURAL CHANGES, EQUIPMENT LAYOUT CHANGES, OR FIELD CONDITIONS. DO NOT COVER, OBSCURE OR BLOCK ACCESS TO EQUIPMENT, DATA PLATES, ACCESS PANELS OR MAINTENANCE AREAS WITH THE ELECTRICAL WORK.
4. THIS DRAWING SHOWS EQUIPMENT LOCATIONS ONLY. WIRING SHOWN IS SCHEMATIC IN NATURE. REFER TO RISERS, & DETAILS FOR ALL REQUIRED POWER & CONTROL WIRING. COORDINATE CONDUIT ROUTE IN FIELD WITH OTHER TRADES, EQUIPMENT & OWNER. VERIFY ALL MOUNTING HEIGHTS WITH OWNER & ARCHITECT PRIOR TO INSTALLATION.
5. UNLESS NOTED OTHERWISE, ALL HOMERUNS SHOWN ARE 2-#12 & 1-#12GND IN 3/4"C. TO 20A-1P C/B IN PANEL LISTED.
6. UNLESS NOTED OTHERWISE, ALL POWER WIRING OF CIRCUIT SHALL MATCH HOMERUN WIRING OF CIRCUIT. MINIMUM POWER WIRING SHALL BE 2-#12 & 1-#12GND IN 3/4"C.. MINIMUM CONTROL WIRING SHALL BE 3/4"C., 2#14.
7. CONTRACTOR SHALL COORDINATE WITH MECHANICAL PLANS FOR FINAL LOCATION OF ALL DEVICES MOUNTED ON OR IN THE VICINITY OF THE MECHANICAL WORK.
8. ALL OUTLETS LOCATED WITHIN SIX (6) FEET OF A SINK OR A WATER SOURCE SHALL BE GROUND FAULT PROTECTED.
9. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL DEVICES WITH OWNER PRIOR TO INSTALLATION.
10. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING, ALL FIRE RATED PARTITIONS, BUILDING EXPANSION JOINTS AND MOUNTING HEIGHTS OF EQUIPMENT.
11. CONTRACTOR SHALL REFER TO THE HVAC DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING, MECHANICAL EQUIPMENT, CONTROL PANELS, MOTORS, AUTOMATIC TEMPERATURE CONTROL SYSTEM PANELS AND DEVICES, DUCT MOUNTED SMOKE DETECTORS, MOTORIZED DAMPERS AND CONTROL VALVES.
12. CONTRACTOR SHALL REFER TO THE PLUMBING DRAWINGS FOR THE LOCATIONS OF ELECTRIC WATER HEATERS AND ELECTRIC FLUSH VALVES.
13. CONTRACTOR SHALL REFER TO THE FIRE PROTECTION/SPRINKLER DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING, WATER FLOW AND TAMPER SWITCHES, PRE-ACTION AND/OR DELUGE SYSTEM CONTROL PANELS. COORDINATE FINAL LOCATIONS OF ALL FIRE PROTECTION EQUIPMENT DEVICES WITH FIRE PROTECTION SHOP DRAWINGS AND FIRE PROTECTION SYSTEM INSTALLER.
14. CONTRACTOR SHALL REFER TO THE APPROPRIATE VENDORS APPROVED DIMENSIONED LAYOUT DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING, CONDUIT CONNECTIONS TO FURNITURE AND PREFABRICATED MILLWORK, ELEVATOR AND ESCALATOR RELATED POWER, LIGHTING AND EMPTY CONDUIT PROVISIONS, POWER AND CONTROL WIRING FOR ELECTRICALLY OPERATED DOORS.
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REVISIONS

NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJR2
Project No.:	2201480
Date:	05/12/2023
Issued for:	PERMIT SET

Title:
OVERALL FIRST FLOOR ELECTRICAL POWER & LIGHTING PLAN-ROOM 123 & 106

Sheet No.
E1.01

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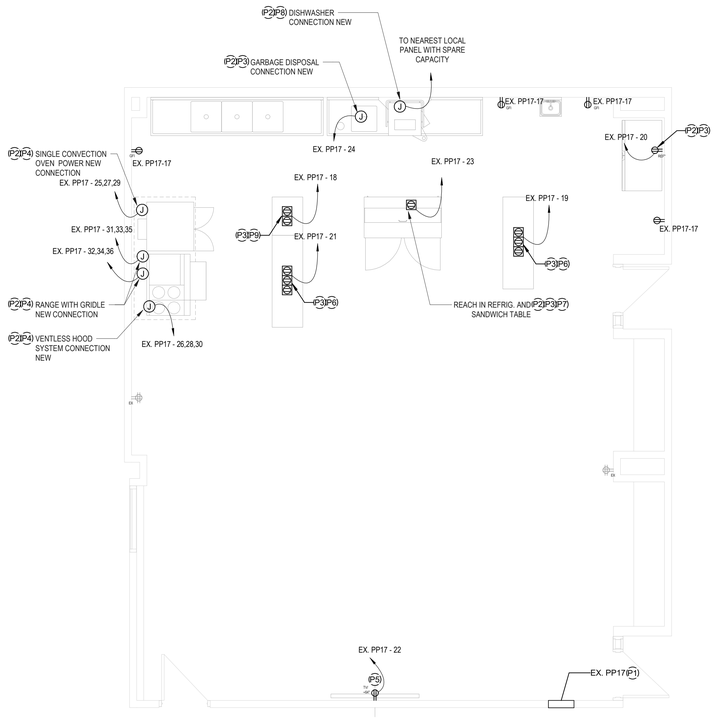

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300 Pierpont Road, Waterbury, CT 06705

REVISIONS

NO	DATE	DESCRIPTION

Designed: JCP
Drawn: JCP
Reviewed: JJ/RZ
Project No.: 2201480
Date: 05/12/2023
Issued for:
PERMIT SET

Title:
OVERALL FIRST FLOOR ELECTRIC POWER PLAN-ROOM 107

Sheet No.
E1.02

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PANELBOARD SCHEDULE GENERAL NOTES:

1. PROVIDE NEW TYPE WRITTEN DIRECTORIES IN PANELBOARD AND SWITCHBOARDS WITH CHANGES TO PANEL SCHEDULES.
2. MATCH NEW BREAKERS IN EXISTING PANELBOARD AND SWITCHBOARD WITH EXISTING BREAKER TYPE AND AIC RATING.

ELECTRICAL GENERAL NOTES:

A. CONTRACTOR SHALL VISIT THE SITE TO INSPECT THE NATURE AND EXTENT OF THE EXISTING CONDITIONS AND EQUIPMENT, AND DETERMINE HOW THEY WILL AFFECT THE INSTALLATION OF ELECTRICAL WORK. NO ADDITIONAL PAYMENT IN EXCESS OF THE CONTRACT PRICE WILL BE AUTHORIZED FOR "EXTRA" WORK PERFORMED DUE TO EXISTING CONDITIONS WHICH ARE OBVIOUS UPON INSPECTION.

B. CONTRACTOR SHALL FIELD VERIFY EXISTING LOAD ON PANELS BEFORE CONNECTING NEW EQUIPMENT LOAD TO PANELS. AS-BUILT DOCUMENTATION SHOULD BE USED TO VERIFY LOAD. EXISTING LOAD INFORMATION CANNOT BE VERIFIED BASED ON INFORMATION PROVIDED ON EXISTING DRAWINGS OR FROM SITE IMAGES. THE LOAD ON THE PANELBOARD IN THE DRAWINGS ARE ESTIMATED BY TAKING 80% OF THE BREAKER RATING AND APPLYING THE APPROPRIATE DEMAND. NOTIFY ENGINEER OF RECORD IF DISCREPANCIES BETWEEN THE DESIGN AND FIELD CONDITIONS PRESENT THEMSELVES.

Panel: EX. VPK-2

Location: CULINARY ARTS 123 D
Supply From: EXISTING 225KVA TRANS.
Mounting: Recessed
Enclosure: Type 1
Volts: 120/208V
Phases: 3
Wires: 4
A.I.C. Rating: EXISTING
Mains Type: EXISTING
Mains Rating: 600 A
MCB Rating: UNKNOWN

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	EXISTING CIRCUIT	20 A	3	2.40	4.80					3	40 A	EXISTING CIRCUIT	2
3						2.40	4.80						4
5								2.40	4.80				6
7	NEW DISHWASHER	45 A	2	3.54	4.80					3	40 A	EXISTING CIRCUIT	8
9						3.54	4.80						10
11	NEW ELEC. MAG DOOR HOLDERS	15 A	1					0.24	4.80				12
13	NEW REC - TWO DOOR FREEZER	20 A	1	0.94	4.80					3	40 A	EXISTING CIRCUIT	14
15	SPARE	20 A	1			0.00	4.80						16
17	SPARE	20 A	1					0.00	4.80				18
19	EXISTING CIRCUIT	60 A	2	6.24	10....					3	90 A	EXISTING CIRCUIT	20
21						6.24	10.80						22
23	SPACE	--	--					0.00	10....				24
25	SPACE	--	--	0.00	0.00					--	--	SPACE	26
27	SPACE	--	--			0.00	0.00			--	--	SPACE	28
29	SPACE	--	--					0.00	0.00	--	--	SPACE	30
31	SPACE	--	--	0.00	0.00					1	20 A	SPARE	32
33	SPACE	--	--			0.00	0.00			1	20 A	SPARE	34
35	SPARE	20 A	1					0.00	0.00	1	20 A	SPARE	36
37	FEED THRU LUGS	--	--	0.00	33....					3	0 A	PANEL VPK-1	38
39	FEED THRU LUGS	--	--			0.00	31.51						40
41	FEED THRU LUGS	--	--					0.00	28....				42
		Tot. Load:		71.90 kVA		68.88 kVA		56.30 kVA					
		Tot. Amps:		200 A		191 A		156 A					

Load Classification	Connected Load	Demand Factor	Estimated...	Panel Totals	
Power	47440 VA	100.00%	47440 VA		
Receptacle	4140 VA	100.00%	4140 VA	**Total Conn. Load:**	197072 VA
Appliance - Commercial	145492 VA	80.00%	116394 VA	**Total Est. Demand:**	167974 VA
				Total Conn.:	547 A
				Total Est. Demand:	466 A

Notes:

Panel: EX. PP17

EXISTING PANEL

Location: CULINARY ARTS 107
Supply From: PANEL '120/208 E' MAIN ELECT RM
Mounting: Recessed
Enclosure: Type 1
Volts: 120/208V
Phases: 3
Wires: 4
A.I.C. Rating: EXISTING
Mains Type: EXISTING
Mains Rating: 200 A
MCB Rating: MLO

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	SPARE	20 A	1	0.00	1.92					1	20 A	EXISTING CIRCUIT	2
3	SPARE	20 A	1			0.00	1.92			1	20 A	EXISTING CIRCUIT	4
5	EXISTING CIRCUIT	20 A	1					1.92	1.92	1	20 A	EXISTING CIRCUIT	6
7	EXISTING CIRCUIT	20 A	1	1.92	1.92					1	20 A	EXISTING CIRCUIT	8
9	EXISTING CIRCUIT	20 A	1			1.92	1.92			1	20 A	EXISTING CIRCUIT	10
11	EXISTING CIRCUIT	20 A	1					1.92	1.92	1	20 A	EXISTING CIRCUIT	12
13	EXISTING CIRCUIT	20 A	1	1.92	1.92					1	20 A	EXISTING CIRCUIT	14
15	EXISTING CIRCUIT	20 A	1			1.92	0.00			1	20 A	EXISTING SPARE	16
17	NEW REC - GENERAL CONV.	20 A	1					0.72	0.36	1	20 A	NEW REC - UNDERFLOOR #4	18
19	NEW REC - UNDERFLOOR #1	20 A	1	0.54	0.94					1	20 A	NEW REC - REFRIG	20
21	NEW REC - UNDERFLOOR #2	20 A	1			0.54	0.18			1	20 A	NEW REC - SMART TV	22
23	NEW REC - UNDERFLOOR #3	20 A	1					0.90	1.33	1	20 A	NEW FOODWASTE DISPOSER	24
25	NEW CONVECTION OVEN	40 A	3	3.84	0.72					3	15 A	NEW VENTLESS HOOD SYSTEM	26
27						3.84	0.72						28
29								3.84	0.72				30
31	NEW RANGE/ W GRIDDLE(LT)	15 A	3	1.33	5.27					3	60 A	NEW RANGE/ W GRIDDLE(RT)	32
33						1.33	5.27						34
35								1.33	5.27				36
		Tot. Load:		22.24 kVA		19.56 kVA		22.15 kVA					
		Tot. Amps:		62 A		54 A		61 A					

Load Classification	Connected Load	Demand Factor	Estimated...	Panel Totals	
Power	32646 VA	100.00%	32646 VA		
Receptacle	29140 VA	67.16%	19570 VA	**Total Conn. Load:**	63946 VA
Appliance - Commercial	2160 VA	80.00%	1728 VA	**Total Est. Demand:**	53944 VA
				Total Conn.:	177 A
				Total Est. Demand:	150 A

Notes:

Panel: EX. VPK-1

EXISTING PANEL

Location: CULINARY ARTS 123 D
Supply From: EX. VPK-2
Mounting: Recessed
Enclosure: Type 1
Volts: 120/208V
Phases: 3
Wires: 4
A.I.C. Rating: 42 KAIC
Mains Type: EXISTING
Mains Rating: 600 A
MCB Rating: MLO

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	EXISTING CIRCUIT	30 A	3	3.60	3.60					3	30 A	EXISTING CIRCUIT	2
3						3.60	3.60						4
5								3.60	3.60				6
7	EXISTING CIRCUIT	50 A	2	5.20	3.12					2	30 A	EXISTING CIRCUIT	8
9						5.20	3.12						10
11	SPACE	--	--					0.00	2.40	1	20 A	EXISTING CIRCUIT	12
13	SPACE	--	--	0.00	2.40					1	20 A	EXISTING CIRCUIT	14
15	SPACE	--	--			0.00	7.20			3	60 A	EXISTING CIRCUIT	16
17	SPACE	--	--					0.00	7.20				18
19	REC- GEN. COUNTERTOP CONV. #1	20 A	1	1.60	7.20								20
21	REC- GEN. COUNTERTOP CONV. #2	20 A	1			1.60	2.40			1	20 A	EXISTING CIRCUIT	22
23	EXISTING CIRCUIT	40 A	1					4.80	2.40	1	20 A	EXISTING CIRCUIT	24
25	EXISTING CIRCUIT	20 A	1	2.40	2.40					1	20 A	EXISTING CIRCUIT	26
27	EXISTING CIRCUIT	20 A	1			2.40	2.40			1	20 A	EXISTING CIRCUIT	28
29	EXISTING CIRCUIT	20 A	1					2.40	2.08	2	20 A	EXISTING CIRCUIT	30
31	SPACE	--	--	0.00	2.08								32
33	SPACE	--	--			0.00	0.00			1	20 A	SPARE	34
35	SPACE	--	--					0.00	0.00	1	20 A	SPARE	36
37	SPACE	--	--	0.00	0.00					1	20 A	SPARE	38
39	SPACE	--	--			0.00	0.00			1	20 A	SPARE	40
41	SPACE	--	--					0.00	0.00	1	20 A	SPARE	42
43	SPACE	--	--	0.00	0.00					--	--	SPACE	44
45	SPACE	--	--			0.00	0.00			--	--	SPACE	46
47	SPACE	--	--					0.00	0.00	--	--	SPACE	48
49	SPACE	--	--	0.00	0.00					--	--	SPACE	50
51	SPACE	--	--			0.00	0.00			--	--	SPACE	52
53	SPACE	--	--					0.00	0.00	--	--	SPACE	54
		Tot. Load:		33.59 kVA		31.51 kVA		28.47 kVA					
		Tot. Amps:		93 A		87 A		79 A					

Load Classification	Connected Load	Demand Factor	Estimated...	Panel Totals	
Power	47200 VA	100.00%	47200 VA		
Receptacle	3200 VA	100.00%	3200 VA	**Total Conn. Load:**	93580 VA
Appliance - Commercial	43180 VA	80.00%	34544 VA	**Total Est. Demand:**	84944 VA
				Total Conn.:	260 A
				Total Est. Demand:	236 A

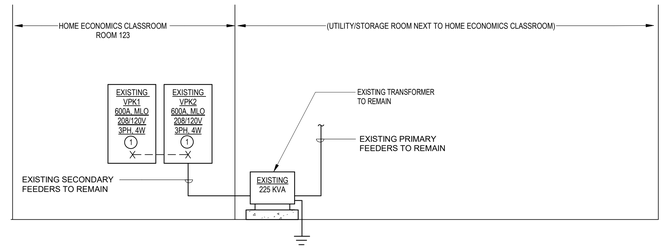
Notes:

ELECTRICAL RISER DIAGRAM GENERAL NOTES:

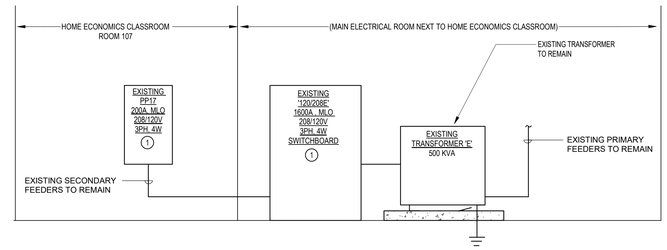
1. ALUMINUM CONDUCTORS MAY BE SUBSTITUTED FOR COPPER CONDUCTORS FOR FEEDERS 150 AMPS & LARGER. ALUMINUM CONDUCTORS SHALL NOT BE USED WHERE EXPRESSLY FORBIDDEN BY LOCAL ELECTRICAL INSPECTIONS DEPARTMENT. UTILITY COMPANY OR THE PLAN REVIEW BOARD OF JURISDICTION. ELECTRICAL CONTRACTOR TO COORDINATE ALL CHANGES IN SIZE & QUANTITY OF PARALLEL CONDUITS FOR ANY/ALL ALUMINUM FEEDER CHANGES.
2. REFER TO DETAILS FOR SERVICE GROUNDING & BONDING.
3. ALL FLOOR-MOUNTED EQUIPMENT SHALL BE INSTALLED ON A 3" CONCRETE HOUSEKEEPING PAD, UNLESS OTHERWISE NOTED.
4. MAXIMUM DISTANCE THE SECONDARY CONDUCTORS CAN BE RUN PRIOR TO OVERCURRENT PROTECTION IS 10 FEET.
5. ALL CIRCUIT BREAKERS GREATER THAN 250A SHALL BE PROVIDED WITH LSI ADJUSTABLE TRIP SETTINGS.
6. PROVIDE A SHORT CIRCUIT-STUDY, SELECTIVE COORDINATION STUDY AND ARC FLASH ANALYSIS FOR ELECTRICAL SERVICE AND INFRASTRUCTURE BY A LICENSED ENGINEER. ADJUST TRIP SETTINGS ON CIRCUIT BREAKERS & MODIFY SHORT CIRCUIT RATINGS OF ELECTRICAL EQUIPMENT PER THE RESULTS. OVERCURRENT PROTECTIVE DEVICES SHALL BE SELECTIVELY COORDINATED FOR DISTRIBUTION SYSTEMS SERVING EMERGENCY AND STANDBY LOADS. FOR FAULTS WITH DURATIONS AT 0.01 SECONDS. ALL OTHER LOADS SHALL BE COORDINATED TO 0.1 SECONDS.
7. COORDINATE REQUIREMENTS OF NEC ARTICLE 240.87 WITH OVER CURRENT DEVICES INSTALLED IN CIRCUIT BREAKERS RATED OR ADJUSTABLE AT 1200A & HIGHER. PROVIDE ARC ENERGY REDUCTION MAINTENANCE SWITCH WITH INDICATOR LIGHTS.
8. COORDINATE REQUIREMENTS OF NEC ARTICLE 230.95. GROUND FAULT PROTECTION OF EQUIPMENT SHALL BE PROVIDED FOR SOLIDLY GROUNDED WYE ELECTRIC SERVICES OF MORE THAN 150 VOLTS TO GROUND BUT NOT EXCEEDING 1000 VOLTS PHASE-TO-PHASE FOR EACH SERVICE DISCONNECT RATED 1000 AMPERES OR MORE.
9. FEEDER CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2 PERCENT AT DESIGN LOAD. BRANCH CIRCUIT CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3 PERCENT AT DESIGN LOAD.
10. REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION.

ELECTRICAL RISER DIAGRAM KEY NOTES:

1. EXISTING ELECTRICAL PANELS SHALL REMAIN. ALTER EXTEND BRANCH FEEDERS/ CONDUIT AS REQUIRED. CONTRACTOR SHALL FIELD VERIFY EXISTING LOAD ON PANELS BEFORE CONNECTING NEW EQUIPMENT TO PANELS. EXISTING LOAD INFORMATION CANNOT BE VERIFIED BASED ON INFORMATION PROVIDED ON EXISTING DRAWINGS OR FROM SITE IMAGES. NOTIFY ENGINEER OF RECORD IF DISCREPANCIES BETWEEN THE DESIGN AND FIELD CONDITIONS PRESENT THEMSELVES.



1 CULINARY ARTS RM. 123 ELECTRICAL RISER DIAGRAM
NOT TO SCALE



2 CULINARY ARTS RM. 107 ELECTRICAL RISER DIAGRAM
NOT TO SCALE

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BL Companies
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Meriden, CT 06450
(203) 630-1406
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Crosby High School - Kitchen Renovation
300 Pierpont Road, Waterbury, CT 06705

REVISIONS

NO	DATE	DESCRIPTION

Designed: JCP
Drawn: JCP
Reviewed: JJ/RZ
Project No.: 2201480
Date: 05/12/2023
Issued for:
PERMIT SET

Title:
DETAILS, ONE LINE RISER DIAGRAM AND PANELBOARD SCHEDULE

Sheet No.
E4.01

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COM*check* Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Crosby High School-Kitchen Renovation
Project Type: Alteration

Construction Site:
300 Pierpont Road
Waterbury, Connecticut 06705

Owner/Agent:
Waterbury High School
300 Pierpont Rd
Waterbury, Connecticut 06705
203-574-8061

Designer/Contractor:
Shawn Poulin
BL Companies
355 Research Parkway
Meriden, Connecticut 06450
203-608-2559
spoulin@blcompanies.com

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Classroom 106 (Common Space Types:Classroom/Lecture/Training)	720	0.71	511
2-Room 123D (Common Space Types:Classroom/Lecture/Training): Exempt			
		Total Allowed Watts =	511

Area Category Exemption Qualifications

Activity Area	# Fixtures Pre-Alt.	# Fixtures Repl./Added	Total # Watts Pre-Alt.	Total # Watts Post-Alt.
Room 123D (Common Space Types: Classroom/Lecture/Training, 1020 sq.ft.) Exemption: Replacement of bulbs and ballasts only.			17.000	17.000

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Classroom 106 (Common Space Types: Classroom/Lecture/Training, 720 sq.ft.)				
LED 1: A1: 2 x 4 LED Troffer: Other:	1	12	29	350
LED 2: A2: 2 x 4 LED Troffer: Other:	1	3	30	88
Room 123D (Common Space Types: Classroom/Lecture/Training, 1020 sq.ft.): Exempt				
			Total Proposed Watts =	439

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

John Prete — Name - Title
John Prete — Signature
04-28-2023 — Date

Project Title: Crosby High School-Kitchen Renovation
Data filename:
Report date: 04/28/23
Page 1 of 5

LIGHTING FIXTURE SCHEDULE

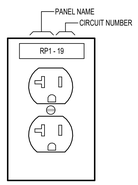
TYPE	SYMBOL	MANUFACTURER	CATALOG NO.	LAMP	VOLTS	MOUNTING	DESCRIPTION	WATTS	REMARKS
A1		LITHONIA LIGHTING	2BLTBA4-40LHE- ADSM-MVOLT-EZ1-LP840	LED	120/277	RECESSED CEILING	2X4 LED VOLUMETRIC ILLUMINATION, 4000K CCT, 82 CRI	29.5	'dh' INDICATES FIXTURE CONTROLLED BY DAY LIGHT HARVEST SENSOR, 0-10V DIMMING.
AE1		LITHONIA LIGHTING	2BLTBA4-40LHE- ADSM-MVOLT-EZ1-LP840-E10WLCP	LED	120/277	RECESSED CEILING	2X4 LED VOLUMETRIC ILLUMINATION, 4000K CCT, 82 CRI WITH INTERGRAL BATTERY	29.5	'dh' INDICATES FIXTURE CONTROLLED BY DAY LIGHT HARVEST SENSOR, 0-10V DIMMING. PROVIDE WITH INTEGRAL EMERGENCY BATTERY.
A2		LITHONIA LIGHTING	2BLTBA2-40LHE –MVOLT-EZ1--ADSM-LP840	LED	120/277	RECESSED CEILING	2X2 LED VOLUMETRIC ILLUMINATION, 4000K CCT, 82 CRI	29.2	'dh' INDICATES FIXTURE CONTROLLED BY DAY LIGHT HARVEST SENSOR, 0-10V DIMMING.
X1		COOPER LIGHTING	CX61	LED	120/277	SURFACE WALL/CEILING	UNIVERSAL MOUNTING EXIT SIGN, DIE CAST ALUMINUM CONSTRUCTION, BRUSHED ALUMINUM FACEPLATE WITH MATTE BLACK ELECTROSTATIC POLYMERIC TRIM AND RED BACKLIT FACEPLATE.	2	FURNISH AND INSTALL SINGLE, DOUBLE FACE AND DIRECTIONAL CHEVRONS AS SPECIFIED ON DRAWINGS. PROVIDE WITH INTEGRAL 90 MINUTE EMERGENCY BATTERY.

LIGHTING FIXTURE SCHEDULE NOTES:

1. BIDS SHALL BE BASED ON THE LIGHTING FIXTURE SCHEDULE AND SPECIFICATIONS. REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. ALL FIXTURES SHALL BE UL LISTED.
3. ALL NECESSARY MOUNTING HARDWARE, HANGERS, BRACKETS, RAILS, YOKES, STEMS, CHAINS, ETC., SHALL BE FURNISHED AND INSTALLED.
4. REFER TO ARCHITECTURAL DRAWINGS FOR SPECIFIC DETAILS, ARRANGEMENT, MOUNTING HEIGHTS, CEILING CONSTRUCTION, ETC. ALL COLORS AND FINISHES SHALL BE VERIFIED BY THE ARCHITECT.
5. FIXTURES SHALL BE SEISMICALLY SUPPORTED AS REQUIRED BY BUILDING CODE.
6. WIRE ALL BATTERY PACK UNITS (I.E. EXIT SIGNS AND EMERGENCY UNITS) TO LINE SIDE OF LOCAL LIGHTING BRANCH CIRCUIT.

LIGHTING CONTROL MATRIX: SPACE BY SPACE

CLASSROOM	Line voltage key switch, Dual technology occupancy sensor	Automatic on / Automatic off after 20 minutes of unoccupied.



1 RECEPTACLE LABEL DETAIL
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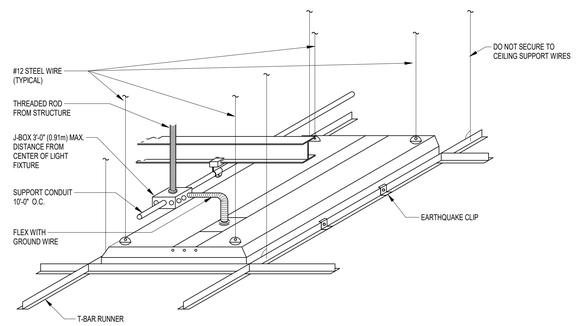
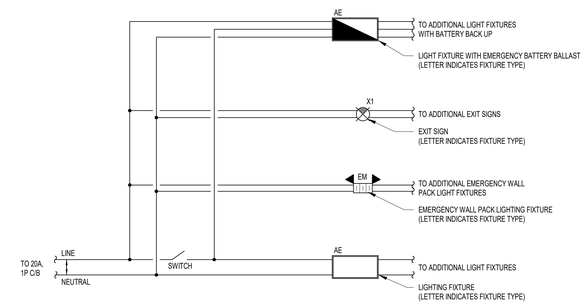


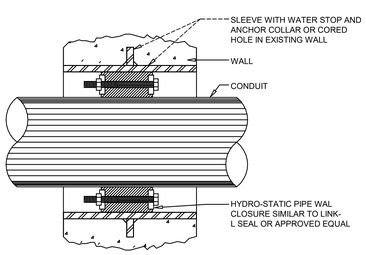
2 RECESSED LAY-IN FIXTURE MOUNTING DETAIL.
NOT TO SCALE



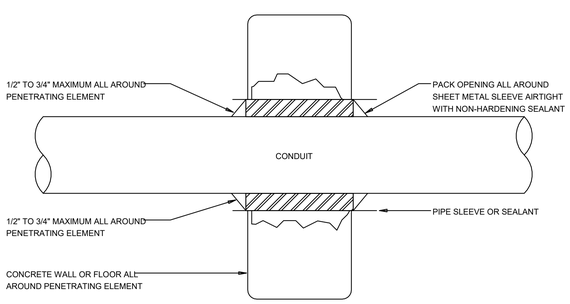
NOTES:

1. CONNECT THE EMERGENCY LIGHTING FIXTURE TO THE RESPECTIVE LOCAL BRANCH CIRCUIT THAT SUPPLIES NORMAL LIGHTING TO THE AREA IN WHICH IT IS LOCATED. CONNECTION TO THIS LOCAL BRANCH CIRCUIT MUST BE MADE AHEAD OF OR ON THE LINE SIDE OF SWITCH CONTROLLING THE NORMAL LIGHT AS SHOWN ON THE DETAIL ABOVE.
2. FIXTURE SHALL MONITOR MAJOR LIGHTING CIRCUIT IN AREA.

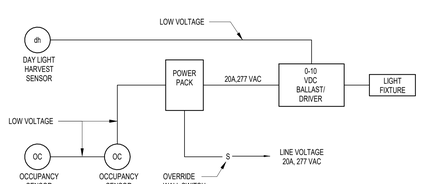
3 TYPICAL EMERGENCY LIGHTING WIRING DIAGRAM
NOT TO SCALE



4 CONDUIT THRU FOUNDATION WALL PENETRATION DETAIL.
NOT TO SCALE



5 NON-RATED CONDUIT PENETRATION DETAIL
NOT TO SCALE



NOTES:

1. ALL FIXTURES WITHIN 15' OF AN EXTERIOR WINDOW SHALL BE CONTROLLED BY DAY LIGHT HARVEST SENSOR 'dh'.
2. REFER TO LIGHTING PLAN FOR DEVICE LOCATIONS.

6 TYPICAL LIGHTING CONTROL DETAIL
NOT TO SCALE

Architecture Engineering Environmental Land Surveying
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Meriden, CT 06450
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Crosby High School - Kitchen Renovation
300 Pierpont Road, Waterbury, CT 06705

REVISIONS

NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJ/RZ
Project No.:	2201480
Date:	05/12/2023

Issued for:
PERMIT SET

Title:
ELECTRICAL DETAILS & FIXTURE SCHEDULE

Sheet No.
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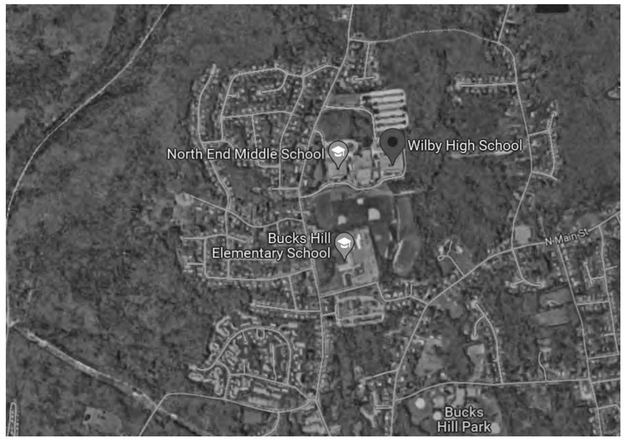
Wilby High School - Kitchen Renovation

568 Bucks Hl Rd, Waterbury, CT 06704

PERMIT SET

05/25/2023

BL PROJECT No.: 2201481



REV	SHEET NUMBER	SHEET NAME
GENERAL		
	G0.00	COVER SHEET
ARCHITECTURAL		
	A1.01	OVERALL KITCHEN PLANS
PLUMBING		
	P0.01	PLUMBING SPECIFICATIONS, NOTES, SYMBOL LEGEND, & ABBREVIATIONS
	P1.01	CULINARY CLASSROOM PLUMBING PLANS
ELECTRICAL		
	E0.00	ELECTRICAL NOTES, SYMBOL LEGEND, ABBREVIATIONS & SCHEDULES
	E0.01	ELECTRICAL SPECIFICATIONS
	E0.02	ELECTRICAL SPECIFICATIONS
	ED1.01	OVERALL FIRST FLOOR DEMO PLAN
	E1.01	OVERALL FIRST FLOOR ELECTRICAL POWER PLAN & OVERALL FIRST FLOOR DEMO PLAN
	E4.01	ONE LINE RISER AND PANELBOARD SCHEDULE
	E4.07	ELECTRICAL DETAILS & FIXTURE SCHEDULE

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PREPARED FOR:

CONSULTANTS:

Issues / Revisions

No.	Date	Description

Seals:

ISSUED FOR PERMIT

Title:

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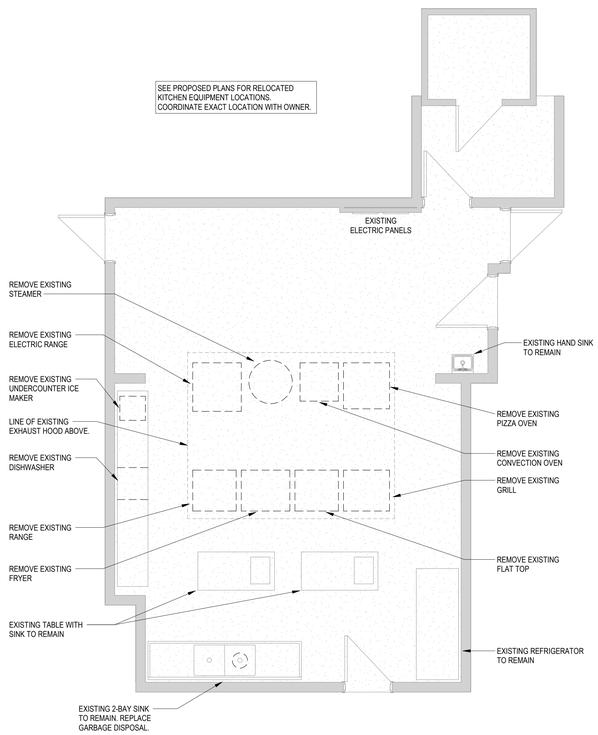
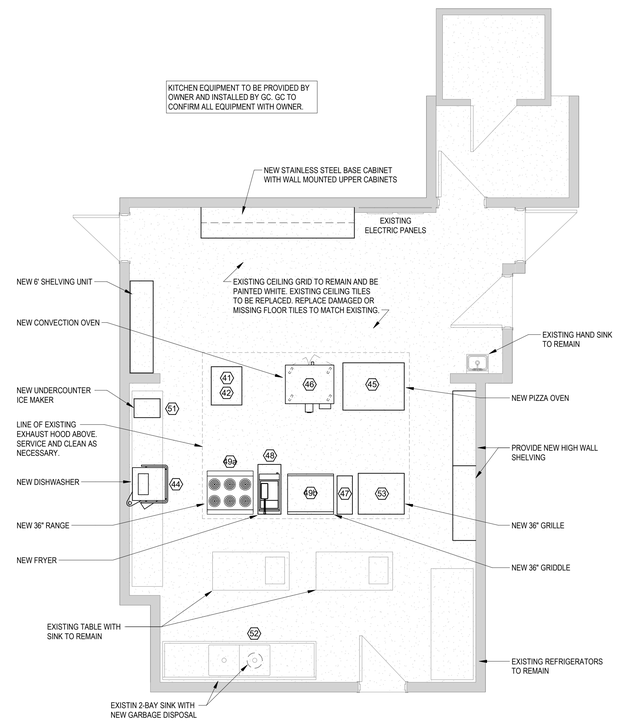
KITCHEN EQUIPMENT SCHEDULE

ITEM	DESCRIPTION
41	PLANETARY MIXER
42	EQUIPMENT STAND
44	DISHWASHER WITH BOOSTER
45	PIZZA BAKE OVEN
46	CONVECTION OVEN, GAS (DOUBLE)
48	GAS FLOOR FRYER
49a	RANGE, 36"
49b	RANGE, 36", GRIDDLE
51	UNDER COUNTER ICE MAKER
52	GARBAGE DISPOSAL
53	GRILLE, 36"

NOTE: EQUIPMENT TO BE PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.



1 DEMOLITION KITCHEN LAYOUT
1/4" = 1'-0"



2 NEW KITCHEN PLAN
1/4" = 1'-0"

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REVISIONS

NO	DATE	DESCRIPTION

Designed:	NV
Drawn:	NV
Reviewed:	SP
Project No.:	2201481
Date:	05/25/2023

Issued for:
PERMIT SET

Title:
OVERALL KITCHEN PLANS

Sheet No.
A1.01

5/26/2023 8:58:35 AM C:\Users\nvieira\Documents\2201481_ArchR20_nvieiraXGS64.rvt

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LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	RECESSED 2X4 LED LIGHT FIXTURE	R	RELAY.
	RECESSED 2X4 LED EMERGENCY LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	P.C	PHOTOCELL (MOUNTED ON ROOF).
	RECESSED 2X2 LED LIGHT FIXTURE	P.U	UNIVERSAL VOLTAGE POWER PACK. SENSOR SWITCH PP20 SERIES.
	RECESSED 2X2 LED EMERGENCY LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	D.H	DAYLIGHT HARVESTING PHOTOCELL.
	RECESSED LINEAR LED LIGHT FIXTURE	S	SINGLE POLE TOGGLE SWITCH. (48" A.F.F. UNLESS NOTED OTHERWISE)
	RECESSED LINEAR LED EMERGENCY LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	S_3	THREE WAY TOGGLE SWITCH. (48" A.F.F. UNLESS NOTED OTHERWISE).
	RECESSED LED DOWN LIGHT FIXTURE	S_{OC}	OCCUPANCY SWITCH, SENSOR SWITCH WSD SERIES. (48" A.F.F. UNLESS NOTED OTHERWISE).
	RECESSED LED EMERGENCY DOWN LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	S_D	DIMMING SWITCH, SENSOR SWITCH SPODMRD SERIES. (48" A.F.F. UNLESS NOTED OTHERWISE).
	SUSPENDED HIGH BAY LED LIGHT FIXTURE	S_P	SINGLE POLE TOGGLE SWITCH WITH PILOT LIGHT. (48" A.F.F. UNLESS NOTED OTHERWISE).
	SUSPENDED HIGH BAY LED EMERGENCY LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	S_K	SINGLE POLE KEY SWITCH. (48" A.F.F. UNLESS NOTED OTHERWISE).
	SUSPENDED LINEAR LED LIGHT FIXTURE	S_{MT}	SINGLE POLE MOMENTARY SWITCH. (48" A.F.F. UNLESS NOTED OTHERWISE).
	SUSPENDED LINEAR LED LIGHT FIXTURE (FULL SHADED LUMINAIRE INDICATED NIGHT LIGHT)	OS 1	CEILING MOUNT STANDARD RANGE 360° DUAL TECHNOLOGY OCCUPANCY SWITCH. SENSOR SWITCH CMR PDT 9 SERIES.
	DECORATIVE LED WALL SCONCE	OS 2	CEILING MOUNT EXTENDED RANGE 360° DUAL TECHNOLOGY OCCUPANCY SWITCH. SENSOR SWITCH CMR PDT 10 SERIES.
	WALL MOUNTED EXTERIOR LED LIGHT FIXTURE	OS 3	CEILING MOUNT 360° DUAL TECHNOLOGY OCCUPANCY STEP DIMMING SWITCH. DIM LIGHT FIXTURES TO 50% AFTER NO OCCUPANCY FOR 15 MINUTES.
	WALL MOUNTED EXTERIOR EMERGENCY LED LIGHT FIXTURE	OS 3P 4	CEILING MOUNT EXTREME TEMPERATURE, DAMP LOCATION RATED 360° PASSIVE INFRARED SENSOR WITH AMBIENT LIGHT CONTROL. EATON OXC-P-2MHO-R. 2# INDICATES LIGHTING ZONE.
	WALL/ CEILING MOUNTED SELF CONTAINED DOUBLE HEAD EMERGENCY LIGHT UNIT	GTS	GENERATOR TRANSFER DEVICE
	WALL MOUNTED EXIT SIGN (NUMBER OF ILLUMINATED FACES AND DIRECTIONAL CHEVRONS INDICATED ON FLOOR PLAN)	EMR	EMERGENCY LIGHTING RELAY
	WALL MOUNTED EXIT SIGN (NUMBER OF ILLUMINATED FACES AND DIRECTIONAL CHEVRONS INDICATED ON FLOOR PLAN)	LCP	LIGHTING CONTROL PANEL
TC	TIME CLOCK.	KP	LIGHTING CONTROLS KEY PAD.

NOTE:

NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS.

LIGHTING CONTROL GENERAL NOTES

(NOT ALL NOTES ARE USED IN THIS PHASE OF DESIGN)

1. COORDINATE ELECTRICAL REQUIREMENTS OF ALL OWNER PROVIDED EQUIPMENT WITH ACTUAL EQUIPMENT PRIOR TO INSTALLATION.
2. ALL LIGHTING CONTROLS SHALL BE PROVIDED BY A SINGLE MANUFACTURER AND ALL CONTROLS SHALL BE COMPATIBLE WITH THE LIGHTING FIXTURES PROVIDED.
3. CONTRACTOR SHALL COORDINATE WITH LIGHTING CONTROL MANUFACTURER TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM. ALL REQUIRED, POWER PACKS, INTERCONNECTION WIRING, ETC. SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
4. CONTRACTOR SHALL COORDINATE DIMMING PROTOCOL (0-10V, DALI, PHASE DIMMING, ETC.) OF LIGHTING FIXTURES PROVIDED WITH LIGHTING CONTROLS VENDOR TO ENSURE COMPATIBILITY.
5. CONTRACTOR'S MANUFACTURER WILL ENSURE THAT THEIR BEST SENSING PROTOCOL (ULTRASONIC, INFRARED, MICROWAVE, ETC.) AND EITHER SINGLE OR DUAL TECHNOLOGY DEVICES ARE PROVIDED FOR EACH SPACE TYPE.
6. CONTRACTOR SHALL HAVE THEIR MANUFACTURER PROVIDE SHOP DRAWINGS WITH DETAILED INFORMATION SHOWING ALL REQUIRED LIGHTING CONTROL COMPONENTS AND INTERCONNECTIONS NECESSARY FOR THEIR SYSTEM TO FUNCTION AS DESCRIBED IN DRAWING PLANS AND SPECIFICATIONS. THESE DRAWING WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AND ANY REQUIRED CHANGES WILL BE CORRECT AT NO ADDITIONAL COST TO THE OWNER.
7. WALL SWITCH QUANTITY AND LOCATIONS HAVE BEEN NOTED ON THE LIGHTING PLANS. REFER TO LIGHTING CONTROLS SYMBOLS LEGEND FOR EACH TYPE OF SWITCH REQUIRED (DIMMING, KEYED, THREE-WAY, FOUR-WAY, OCCUPANCY SENSING, ETC.).
8. LIGHTING CONTROLS SHALL BE PROVIDE AND INSTALLED PER IECC (2021) C406.4
9. MAINTENANCE, COMMISSIONING AND TESTING FOR BUILDING SYSTEM SHALL BE PER IECC (2021) C408

POWER SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE. (18" A.F.F. UNLESS NOTED OTHERWISE).		HEAVY DUTY DISCONNECT SWITCH (NON-FUSED)
	QUAD RECEPTACLE. (18" A.F.F. UNLESS NOTED OTHERWISE).		WEATHER PROOF HEAVY DUTY FUSED DISCONNECT SWITCH
GFI	DUPLEX RECEPTACLE EQUIPPED WITH INTEGRAL GROUND FAULT INTERRUPTER. (18" A.F.F. UNLESS NOTED OTHERWISE).		MAGNETIC MOTOR STARTER
WP	WEATHER PROOF DUPLEX RECEPTACLE. (18" A.F.F. UNLESS NOTED OTHERWISE).		MOTOR
CTR	DUPLEX RECEPTACLE. (10" ABOVE COUNTER UNLESS NOTED OTHERWISE).	MD	MOTORIZED DAMPER, PROVIDED BY DIV. 23, WIRED BY DIV. 26
SW	DUPLEX RECEPTACLE. (CENTERED BEHIND MICROWAVE, REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT DEVICE MOUNTING LOCATIONS).	S_T	THERMAL OVERLOAD SWITCH.
REF	DUPLEX RECEPTACLE. (REFRIGERATOR MOUNT AT 42" UNLESS NOTED OTHERWISE).	S_M	MOTOR RATED SWITCH.
TC	DUPLEX RECEPTACLE. (TIME CLOCK COORDINATE MOUNTING REQUIREMENTS WITH TELECOMMUNICATIONS PLANS).	TS	SPRING WOUND TIMER SWITCH
SHE	TWIST LOCK RECEPTACLE FOR MATERIAL HANDLING EQUIPMENT. (SO CORD TWIST LOCK 30A, L5-30 COORDINATE ADDITIONAL REQUIREMENTS WITH MATERIAL HANDLING PLANS).	FCP FC	FAN CONTROL PANEL/ FAN CONTROLLER (COORDINATE EXACT REQUIREMENTS WITH MECHANICAL DRAWINGS).
FC	DUPLEX RECEPTACLE MOUNTED TO UNISTRUT FOR STOW-BY-LIGHT SYSTEM LED CONTROLLER		
CR	DUPLEX RECEPTACLE MOUNTED TO UNISTRUT FOR STOW-BY-LIGHT SYSTEM LED RECEIVER	SBLP	STOW-BY-LIGHT PANELBOARD
RM	DUPLEX RECEPTACLE. (VENDING MACHINE RECEPTACLE, MOUNT AT 42" UNLESS NOTED OTHERWISE. COORDINATE EXACT RECEPTACLE CONFIGURATION WITH SUPPLIED VENDING EQUIPMENT).	VRCP	VEHICLE RESTRAINT CONTROL PANEL.
WC	DUPLEX RECEPTACLE. (WATER COOLER RECEPTACLE).		DRIVE IN DOOR STATUS SIGNAL (TRI-LITE INCORPORATED MODEL SG30-115RG-LED OR APPROVED EQUAL
ICE	DUPLEX RECEPTACLE. (ICE MACHINE RECEPTACLE, MOUNT AT 42" UNLESS NOTED OTHERWISE. COORDINATE EXACT RECEPTACLE CONFIGURATION WITH SUPPLIED VENDING EQUIPMENT).	DSCP	DOCK SYSTEM CONTROL PANEL (KELLEY COMPANY MASTER CONTROL PANEL) PANEL SHALL CONTROL DOCK LEVELER, VEHICLE RESTRAIN, DOOR STATUS SIGNALS AND COMBINATION FAN/ LIGHT.
SD SD	DUPLEX / QUAD RECEPTACLE. (WAREHOUSE SPACE RECEPTACLE SO CORD/ BUS DROP CABLE COORDINATE EXACT MOUNTING REQUIREMENTS WITH PROJECT CONSTRUCTION MANAGER. SEE DETAIL FOR RECEPTACLE MOUNTING.)		EDGE OF DOCK CONTROL STATION.
	208 VOLT, 2 POLE, RECEPTACLE AMP RATING AS SHOWN ON PLAN. (18" A.F.F. UNLESS NOTED OTHERWISE)	T	TRANSFORMER.
	208 VOLT, 3 POLE, RECEPTACLE AMP RATING AS SHOWN ON PLAN. (18" A.F.F. UNLESS NOTED OTHERWISE)		SURFACE MOUNTED PANEL BOARD
	DUPLEX RECEPTACLE. (FLOOR MOUNTED).		RECESSED MOUNTED PANEL BOARD
	QUAD RECEPTACLE. (FLOOR MOUNTED).		CONTROLLED BRANCH CIRCUIT WIRING.
	208 VOLT, 2 POLE, RECEPTACLE AMP RATING AS SHOWN ON PLAN. (FLOOR MOUNTED)		BRANCH CIRCUIT WIRING.
	208 VOLT, 3 POLE, RECEPTACLE AMP RATING AS SHOWN ON PLAN. (FLOOR MOUNTED)		EMERGENCY BRANCH CIRCUIT, WIRING INSTALLED PER NEC 700.
	QUAD RECEPTACLE AND DATA FLOOR BOX. (COORDINATE DATA REQUIREMENTS WITH TELECOMMUNICATION DRAWINGS).		HOME RUN.
	SURFACE RACEWAY.		EMERGENCY BRANCH CIRCUIT HOME RUN, WIRING INSTALLED PER NEC 700.
J	JUNCTION BOX		ELECTRICAL CONNECTION POINT
J	JUNCTION BOX WITH FLEXIBLE CONNECTION TO EQUIPMENT		

NOTE:

NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS.

ELECTRICAL GENERAL NOTES (NOT ALL NOTES ARE USED IN THIS PHASE OF DESIGN)

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH AND SHALL CONFORM IN ALL ASPECTS TO THE NATIONAL ELECTRICAL CODE (NFPA CODES & LOCAL BUILDING CODES).
2. ALL PERMITS, LICENSES AND CERTIFICATES COVERING THE COMPLETE INSTALLATION OF THE ELECTRICAL WORK SHALL BE OBTAINED AND PAID FOR BY THE ELECTRICAL CONTRACTOR
3. ALL CORE-BORING, BACKFILLING AND RESURFACING REQUIRED FOR THE ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
4. ALL CUTTING PATCHING AND REFINISHING OF WALLS, FLOORS & CEILINGS REQUIRED FOR THE ELECTRICAL WORK SHALL BE PROVIDED FOR BY THE ELECTRICAL CONTRACTOR.
5. THESE DRAWINGS ARE DIAGRAMMATIC ONLY; EXACT LOCATIONS OF ALL CONDUIT, ETC. MUST BE FIELD DETERMINED AND RUN TO AVOID OBSTRUCTIONS AND MECHANICAL EQUIPMENT.
6. UNLESS OTHERWISE NOTED, MINIMUM WIRE SIZE SHALL BE #12 AWG, THWN OR THHN COPPER; MINIMUM CONDUIT SIZE SHALL BE 3/4"C. UNLESS OTHERWISE SPECIFIED 20A, 120/208V AND 277/480V BRANCH CIRCUIT WIRING SHALL BE 2#12, #12G.
7. ALL WIRING SHALL BE CONCEALED AND RUN IN WALLS OR ABOVE CEILINGS. WIRE MOLDING AND EXPOSED CONDUIT IS NOT PERMITTED WHERE IT CAN BE CONCEALED.
8. WORK NOT INCLUDED IN CONTRACT ('N.I.C.'); ANY WIRING OR EQUIPMENT NOT TO BE FURNISHED BY CONTRACTOR SHALL BE INDICATED ON PLANS AS N.I.C.
9. SITE VISITATION - PRIOR TO SUBMITTING A BID FOR HIS WORK, THE CONTRACTOR SHALL VISIT THE SITE TO INSPECT THE NATURE AND EXTENT OF THE EXISTING CONDITIONS AND EQUIPMENT, AND DETERMINE HOW THEY WILL AFFECT THE INSTALLATION OF ELECTRICAL WORK. NO ADDITIONAL PAYMENT IN EXCESS OF THE CONTRACT PRICE WILL BE AUTHORIZED FOR "EXTRA" WORK PERFORMED DUE TO EXISTING CONDITIONS WHICH ARE OBVIOUS UPON INSPECTION.
10. STEEL JACKETED METAL CLAD CABLE, "MC CABLE" IS ACCEPTABLE ON THIS PROJECT AND MAY BE USED AS APPROVED BY NEC, WHERE RUN CONCEALED IN WALLS, ABOVE CEILINGS, OR IN BASEMENTS.
11. ALL UNUSED CONDUIT AND WIRING SHALL BE DROPPED TO THE FLOOR BY THE ELECTRICIAN FOR REMOVAL FROM THE BUILDING BY THE CONTRACTOR.
12. ALL EQUIPMENT AND DEVICES SHALL BE NEW & BEAR U.L. LABEL. ALL DEVICES SHALL BE "SPECIFICATION" GRADE.
13. WORKMANSHIP. ONLY THE BEST IN WORKMANSHIP IN ACCORDANCE WITH PRESENT STANDARDS WILL BE ACCEPTABLE. ANY WORK INSTALLED AND ADJUDGED BY THE ENGINEER TO BE BELOW STANDARDS SHALL BE TAKEN OUT AND REPLACED WITH PROPERLY DONE WORK AT CONTRACTOR'S EXPENSE.
14. GUARANTEE: CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT AND WIRING TO BE FREE FROM INHERENT MECHANICAL AND ELECTRICAL DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION OF PROJECT. ALL DEFECTS SHALL BE REPAIRED, DURING THIS PERIOD, AT NO CHARGE TO OWNER (MISUSE OR ABUSE CAUSED PROBLEMS EXCEPTED).
15. SUBSTITUTIONS OF EQUIPMENT: SPECIFIED PRODUCTS SHALL BE USED AS THE BASIS OF BID AND SHALL BE PROVIDED; WHERE 2 OR MORE MANUFACTURERS ARE LISTED, THE CHOICE IS AT THE CONTRACTOR'S OPTION. AN APPROVED EQUAL SHALL BE DETERMINED BY ENGINEER.
16. ALL 15A/20A, 120V HOMERUNS GREATER THAN 75' SHALL BE #10AWG MINIMUM; GREATER THEN 120' SHALL BE #8AWG MINIMUM. ALL 15A/20A 277V HOMERUNS GREATER THAN 175' SHALL BE #10AWG MINIMUM; GREATER THAN 280' SHALL BE #6AWG MINIMUM. ALL 15/20A, 480V, SINGLE PHASE HOMERUNS GREATER THAN 300' SHALL BE #10AWG MINIMUM. GREATER THAN 450' SHALL BE #8AWG MINIMUM. EC SHALL PERFORM VOLTAGE DROP CALCULATIONS FOR BRANCH CIRCUITS LONGER THAN SPECIFIED ABOVE AS PER NEC.
17. CONTRACTOR SHALL FIELD VERIFY NAMEPLATE LOADS OF ALL EQUIPMENT (MECHANICAL AND OWNER SUPPLIED) TO INSURE PROPER WIRE SIZING AND OVERCURRENT PROTECTION AND SHALL NOTIFY ENGINEER OF DISCREPANCIES.
18. CONTRACTOR SHALL SEAL ALL ELECTRICAL PENETRATIONS THRU FIRE RATED PARTITIONS WITH FIRE RATED MATERIAL EQUAL TO DOW CORNING SILICONE RTV FOAM AS A MINIMUM. MATERIAL SELECTION SHALL BE BASED ON RATING OF PARTITION PENETRATED.
19. ALL SUPPLEMENTARY STEEL REQUIRED FOR ELECTRICAL WORK SHALL BE PROVIDED BY THE CONTRACTOR.
20. PROVIDE INSULATED GROUNDING CONDUCTOR IN ALL CONDUITS AND CABLE ASSEMBLIES.
21. ALL EMPTY CONDUITS FOR FUTURE WORK SHALL BE PROVIDED WITH A PULL WIRE.
22. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND DETAILS FOR THE EXACT LOCATION OF ALL LIGHTING FIXTURES AND ANY OTHER EQUIPMENT INSTALLED TO THE CEILING SYSTEM. VERIFY EXACT MOUNTING HEIGHTS AND FINISHES WITH ARCHITECT PRIOR TO ROUGH-IN.
23. CONTRACTOR SHALL COORDINATE INSTALLATION OF ELECTRICAL WORK ABOVE THE CEILING TO PROVIDE THE GREATEST POSSIBLE CLEARANCE FOR INSTALLATION OF PLUMBING AND MECHANICAL INSTALLATION. CONDUIT RUNS TO BE THROUGH OR ABOVE TRUSSES WHERE POSSIBLE.
24. ELECTRICAL CONTRACTOR TO COORDINATE EXACT PLACEMENT OF ALL DEVICES SHOWN ON THE ELECTRICAL CONSTRUCTION DOCUMENTS WITH ARCHITECTURAL, MECHANICAL AND PLUMBING DRAWINGS PRIOR TO FINAL PLACEMENT.
25. ALL LOW VOLTAGE WIRE IN CEILING MUST BE PLENUM RATED.
26. NO TELEPHONE WIRE SHALL BE RUN EXPOSED ON BASEBOARDS OR WALLS.
27. WIRING FOR LOW VOLTAGE SYSTEMS SHALL BE RUN CONCEALED WITHIN WALLS AND ABOVE CEILINGS.
28. PANEL DIRECTORIES SHALL BE COMPLETELY FILLED IN AT COMPLETION OF JOB PER NEC 408.4. (TYPED).
29. CONTRACTOR MUST PRODUCE A LETTER ATTESTING THAT WORK HAS BEEN COMPLETED TO THE SATISFACTION OF THE BUILDING MANAGER WHO WILL CONFIRM HIS ACCEPTANCE BY AFFIXING HIS SIGNATURE TO THE LETTER IN A SPACE PROVIDED FOR THIS PURPOSE. WORK WILL NOT BE CONSIDERED AS BEING COMPLETE WITHOUT THIS LETTER.
30. HANGING OF LIGHT FIXTURES IS TO BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL BUILDING CODES AND SEISMIC REQUIREMENTS.
31. AT THE COMPLETION OF THE JOB, IT WILL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO TURN OVER TO THE BUILDING MANAGER AN AS-BUILT DRAWING IN REPRODUCIBLE FORM. THIS DRAWING DOES NOT HAVE TO BE MADE FROM SCRATCH; THE CONTRACT REFLECTED CEILING AND POWER PLANS MAY BE USED AS BACKGROUNDS WITH THE ACTUAL CIRCUITING CHANGES ADDED.
32. PRIOR TO THE CONTRACTOR BEING RELEASED FROM ALL OBLIGATIONS, HE WILL OBTAIN AND TURN OVER TO THE BUILDING MANAGER THE ORIGINAL COPY OF THE "CERTIFICATE OF ELECTRICAL INSPECTION".
33. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS OF EQUIPMENT AND DEVICES WITH ARCHITECT.
34. WIRING SHALL BE WITH COPPER CONDUCTORS UNLESS OTHERWISE NOTED.
35. LOCATIONS AND QUANTITIES OF EQUIPMENT HAVE BEEN BASED ON THE LATEST COMPOSITE PROVIDED BY THE CLIENT.
36. WHERE CONFLICT EXISTS BETWEEN DRAWINGS OR BETWEEN DRAWINGS AND SPECIFICATIONS, THE MOST RESTRICTIVE, THE MOST EXPENSIVE REQUIREMENT SHALL APPLY.
37. THE ELECTRICAL CONTRACTOR CAN USE THE NEWLY INSTALLED PANELS AND CONDUITS WHEREVER SUITABLE. INFORM THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
38. COORDINATE LUMINAIRE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
39. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. ALL FIRE RATED PARTITIONS AND BUILDING EXPANSION JOINTS.
    b. MOUNTING HEIGHTS OF EQUIPMENT.
40. REFER TO THE HVAC DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. MECHANICAL EQUIPMENT, CONTROL PANELS AND MOTORS.
    b. AUTOMATIC TEMPERATURE CONTROL SYSTEM PANELS AND DEVICES.
    c. DUCT MOUNTED SMOKE DETECTORS.
    d. MOTORIZED DAMPERS AND CONTROL VALVES.
41. REFER TO THE PLUMBING DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. ELECTRIC WATER HEATERS.
    b. ELECTRIC FLUSH VALVES.
42. REFER TO THE FIRE PROTECTION/SPRINKLER DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. WATER FLOW AND TAMPER SWITCHES.
    b. PRE-ACTION AND/OR DELUGE SYSTEM CONTROL PANELS.
43. REFER TO THE APPROPRIATE VENDORS APPROVED DIMENSIONED LAYOUT DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING:
    a. CONDUIT CONNECTIONS TO FURNITURE AND PREFABRICATED MILLWORK.
    b. POWER AND CONTROL WIRING FOR ELECTRICALLY OPERATED DOORS.
44. EQUIPMENT, DEVICES, RACEWAY AND OTHER MATERIALS SHALL BE PROVIDED AND INSTALLED AS REQUIRED FOR THE APPLICABLE SEISMIC DESIGN CATEGORY .
45. PROVIDE SURFACE MOUNTED DEVICE BOXES AND CONDUIT ON MASONRY WALLS AND METAL STRUCTURES.
46. PLANS ARE DESIGNED IN ACCORDANCE WITH THE 2020 NATIONAL ELECTRIC CODE WITH AMENDMENTS.
47. PLANS ARE DESIGNED IN ACCORDANCE WITH 2021 IECC WITH AMENDMENTS.

A. VOLTAGE DROP: THE CONTRACTOR SHALL BE RESPONSIBLE TO ADJUST SPECIFIED FEEDER AND BRANCH CIRCUIT REQUIREMENTS BASED ON THE FOLLOWING:

1. FEEDERS SHALL BE SIZED FOR 2% VOLTAGE DROP, AND BRANCH CIRCUITS SHALL BE SIZED FOR 3% VOLTAGE DROP.
2. THE CONTRACTOR SHALL UTILIZE THE AS-BUILT LENGTHS FOR THE FEEDERS AND BRANCH CIRCUITS WHEN CALCULATING ASSOCIATED VOLTAGE DROP.
3. THE FEEDER AMPERES SHALL BE BASED ON THE FULL LOAD AMPERES OF THE UTILIZATION EQUIPMENT SERVED.
4. THE FEEDER AMPERES FOR PANELBOARDS SHALL BE BASED ON 80% OF THE TRIP SETTING FOR THAT PANELBOARD.
5. WIRING FOR LIGHTING AND RECEPTACLE BRANCH CIRCUITS SHALL BE SIZED IN ACCORDANCE WITH ELECTRICAL GENERAL NOTE 16 ON E0.01.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INCREASING THE SIZE OF THE FEEDER AND/OR BRANCH CIRCUIT WIRING, AND ASSOCIATED CONDUIT AS REQUIRED TO MEET THE ABOVE VOLTAGE DROP REQUIREMENTS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO INCREASE THE SIZE OF THE EQUIPMENT GROUND CONDUCTOR, FOR FEEDERS AND/OR BRANCH CIRCUITS INCREASED IN SIZE DUE TO VOLTAGE DROP (AND/OR OTHER ADJUSTMENT REASONS), IN ACCORDANCE WITH NEC 250.122(B).
8. THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING FOR THE FEEDERS INCREASED IN SIZE DUE TO VOLTAGE DROP FOR REVIEW AND APPROVAL. THE SHOP DRAWING SHALL INDICATE THE FEEDER AMPERES, THE FEEDER SIZE, THE CONDUIT SIZE, AND THE CALCULATED PERCENT VOLTAGE DROP.

ELECTRICAL SHEET LIST

SHEET NUMBER	SHEET NAME	ISSUED FOR PERMIT
E0.00	ELECTRICAL NOTES, SYMBOL LEGEND, ABBREVIATIONS & SCHEDULES	X
E0.01	ELECTRICAL SPECIFICATIONS	X
E0.02	ELECTRICAL SPECIFICATIONS	X
E1.01	OVERALL FIRST FLOOR ELECTRICAL POWER PLAN & OVERALL FIRST FLOOR DEMO PLAN	
E4.01	ONE LINE RISER AND PANELBOARD SCHEDULE	
E4.07	ELECTRICAL DETAILS & FIXTURE SCHEDULE	X
ED1.01	OVERALL FIRST FLOOR DEMO PLAN	X

ELECTRICAL ABBREVIATIONS

A OR AMP	AMPERES	IG	ISOLATED GROUND	REF	REFRIGERATOR
AAC	ABOVE ACCESSIBLE CEILING	IMC	INTERMEDIATE METALLIC CONDUIT	RGS	RIGID GALVANIZED STEEL
AC	ALTERNATING CURRENT			RMC	RIGID METALLIC CONDUIT
ACT	ABOVE COUNTER TOP	JB	JUNCTION BOX	RTU	ROOFTOP UNIT
AFF	ABOVE FINISHED FLOOR				
AFG	ABOVE FINISHED GRADE	KCMIL	1000 CIRCULAR MILS	SW	SWITCH
AHJ	AUTHORITY HAVING JURISDICTION	KV	KILOVOLTS (1000 VOLTS)	SWBD	SWITCHBOARD
AHU	AIR HANDLING UNIT	KVA	KILOVOLT AMPERES (1000 VOLT-AMPERES)		
AIC	INTERRUPTING CAPACITY(RMS SYMMETRICAL AMPERES)	KW	KILOWATTS (1000 WATTS)	TC	TIME CLOCK
AIP	AIPHONE			TEL	TELEPHONE
ATS	AUTOMATIC TRANSFER SWITCH	LCP	LIGHTING CONTROL PANEL	TL	TWIST LOCK
BFG	BELOW FINISHED GRADE	LRA	LOCKED ROTOR AMPS	TYP	TYPICAL
BKBD	BACKBOARD			TV	TELEVISION
		MCA	MINIMUM CIRCUIT AMPS	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
C OR COND	CONDUIT	MCB	MAIN CIRCUIT BREAKER		
CT	CURRENT TRANSFORMER	MCC	MOTOR CONTROL CENTER	UF	UNDERFLOOR
CTR	COUNTER	MCM	THOUSAND CIRCULAR MILS	UG	UNDERGROUND
CB, C/B	CIRCUIT BREAKER	MD	MOTORIZED DAMPER	UL	UNDERWRITERS LABORATORIES
CFA	CALL FOR ASSISTANCE	MDP	MAIN DISTRIBUTION PANEL	UP	UP
CLG	CEILING	MFR, MFTR	MANUFACTURER	UTP	UNSHIELDED TWISTED PAIR
CPT	CURRENT POTENTIAL TRANS.	MH	MECHANICALLY HELD		
CU	CONDENSING UNIT	MIC	MICROPHONE	V	VOLTS
DC	DIRECT CURRENT	MLO	MAIN LUGS ONLY	VP	VAPORPROOF
DE	DUAL ELEMENT	MO	MOTOR OPERATED	VSD	VARIABLE SPEED DRIVE
DISC. SW	DISCONNECT SWITCH	MTD	MOUNTED	VFD	VARIABLE FREQUENCY DRIVE
DN	DOWN	MUA, MAU	MAKE-UP AIR UNIT	VM	VENDING MACHINE
EO	ELECTRICALLY OPERATED	MW	MICROWAVE		
EDH	ELECTRIC DUCT HEATER			W/	WITH
EF	EXHAUST FAN	NC	NORMALLY CLOSED	WC	WATER COOLER
EM	EMERGENCY	NEC	NATIONAL ELECTRIC CODE	WP	WEATHERPROOF
EMT	ELECTRICAL METALLIC TUBING	NF	NOT FUSED	XFMR, TXFMR	TRANSFORMER
EP	ELECTRIC PNEUMATIC SWITCH	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION		
ETR, E	EXISTING TO REMAIN	NIC	NOT IN CONTRACT		
EUH	ELECTRIC UNIT HEATER	NL	NIGHT LIGHT		
EWC	ELECTRIC WATER COOLER				
EWH	ELECTRIC WALL HEATER	NO	NORMALLY OPEN		
		NTS	NOT TO SCALE		
FA	FIRE ALARM				
FACP	FIRE ALARM CONTROL PANEL	OC	OCCUPANCY SENSOR		
FCU	FAN COIL UNIT.				
FLA	FULL LOAD AMPS	P	POLE		
FT	FEET	PB	PULL BOX	**EXISTING ELECTRICAL EQUIPMENT ABBREVIATIONS**	
		PC	PULL CHAIN		
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER	PE	PNEUMATIC ELECTRIC SWITCH	EX, ETR	EXISTING TO REMAIN.
G, GND	GROUND	PM	PROJECT MANAGER	RE	REMOVE EXISTING.
		PH	PHASE	RL	RELOCATE EXISTING.
HOA	HANDS-OFF AUTOMATIC SWITCH	P/T	POTENTIAL TRANSFORMER	NL	NEW LOCATION OF EXISTING RELOCATED.
HP	HORSEPOWER	PVC	POLYVINYL CHLORIDE	NR	NEW TO REPLACE EXISTING.
HVAC	HEATING, VENTILATING AND AIR CONDITIONING	PWU	PURCHASED WITH UNIT	RR	REMOVE AND REPLACE ON NEW SURFACE.

NOTE:
NOT ALL ABBREVIATIONS MAY APPEAR ON THE DRAWINGS.

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NO	DATE	REVISIONS DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJ/RZ
Project No.:	2201481
Date:	05/25/2023
Issued for:	PERMIT SET

Title: ELECTRICAL NOTES, SYMBOL LEGEND, ABBREVIATIONS & SCHEDULES

Sheet No. E0.00

5/25/2023 1:55:34 PM C:\Users\JPrete\Documents\2201481_MEP_R20_jpreteYR59B.rvt

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ELECTRICAL SPECIFICATIONS

(NOT ALL SPECIFICATIONS ARE USED IN THIS PHASE OF DESIGN)

26-0500 (16050) - ELECTRICAL GENERAL PROVISIONS

A. CODES, REGULATIONS, AND STANDARDS

REGULATORY REQUIREMENTS: ALL WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES. WHERE APPROVAL STANDARDS HAVE BEEN ESTABLISHED BY OSHA, UL, ASME, AGA, AMCA, ANSI, ARI, NFPA, THE STATE FIRE INSURANCE REGULATORY BODY, AND FM, FOLLOW THESE STANDARDS WHETHER INDICATED ON THE DRAWINGS AND SPECIFICATIONS. INCLUDE COST OF WORK REQUIRED TO COMPLY WITH REQUIREMENTS OF THESE AUTHORITIES IN THE ORIGINAL PROPOSAL. COMPLY WITH IEEE C2 WHERE APPLICABLE.

ALL ELECTRICAL SYSTEMS WILL BE DESIGNED TO COMPLY WITH THE REQUIREMENTS OF THE STATE BUILDING CODE INCLUDING ANY SUPPLEMENT(S) AND/OR AMENDMENT(S).

FURTHER, ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING APPROVED CODES AND STANDARDS:

1. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70 - NATIONAL ELECTRICAL CODE (NEC).
2. INTERNATIONAL BUILDING CODE (IBC).
3. INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
4. NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE.
5. NFPA 101 - LIFE SAFETY CODE.
6. UNDERWRITER'S LABORATORY (UL) 924 - STANDARD FOR SAFETY OF EMERGENCY LIGHTING AND POWER EQUIPMENT.
7. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
8. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
9. ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA)
10. AMERICANS WITH DISABILITIES ACT (ADA)
11. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
12. INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS (IEEE)
13. ELECTRICAL TESTING LABORATORIES (ETL)
14. AMERICAN SOCIETY OF HEATING & AIR-CONDITIONING ENGINEERS (ASHREA) 90.1 - ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BDGS.

B. DEFINITIONS

1. "FURNISH": SUPPLY AND DELIVER TO PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS.
2. "INSTALL": UNLOAD, TEMPORARILY STORE, UNPACK, ASSEMBLE, ERECT, PLACE, ANCHOR, APPLY, WORK TO DIMENSION, FINISH, CURE, PROTECT, CLEAN, AND SIMILAR OPERATIONS AT PROJECT SITE.
3. "PROVIDE": FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.
4. "PROJECT SITE": SPACE AVAILABLE FOR PERFORMING CONSTRUCTION ACTIVITIES. THE EXTENT OF PROJECT SITE IS SHOWN ON DRAWINGS AND MAY OR MAY NOT BE IDENTICAL WITH THE DESCRIPTION OF THE LAND ON WHICH PROJECT IS TO BE BUILT.
5. "NEW": MANUFACTURED WITHIN THE LAST TWO-YEARS AND NEVER USED.
6. "EQUAL", "ACCEPTABLE", "EQUIVALENT": ACCEPTABLE FOR USE ON THE PROJECT, AS DETERMINED BY THE ENGINEER, BASED UPON DOCUMENTS PRESENTED FOR SUCH DETERMINATION.
7. "INDICATED": REQUIREMENTS EXPRESSED BY GRAPHIC REPRESENTATIONS OR IN WRITTEN FORM ON DRAWINGS, IN SPECIFICATIONS, AND IN OTHER CONTRACT DOCUMENTS. OTHER TERMS INCLUDING "SHOWN," "NOTED," "SCHEDULED," AND "SPECIFIED" HAVE THE SAME MEANING AS "INDICATED."

C. SCOPE

WORK UNDER THE ELECTRICAL CONTRACT SHALL INCLUDE LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

D. WORK NOT INCLUDED

TELEPHONE EQUIPMENT AND CONDUCTORS (BY OTHERS).
DATA PROCESSING EQUIPMENT AND CONDUCTORS (BY OTHERS).
SECURITY EQUIPMENT AND CONDUCTORS (BY OTHERS).

E. GENERAL REQUIREMENTS

AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, EACH BIDDER SHALL VISIT THE SITE TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED; NO EXTRA COMPENSATION WILL BE AWARDED IF THE CONTRACTOR FAILS TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT HE MAY HAVE NOTICED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.

THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS OF HIS OWN, OR OTHERS, AT THE SITE, & SHALL BE RESPONSIBLE FOR CORRECTNESS OF SAME AS RELATED TO HIS WORK.

ALL CONTROL WIRING ASSOCIATED WITH MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS. SEALANT SHALL BE RATED FOR 3-HOURS.

SLEEVE-SEAL SYSTEMS SHALL BE MODULAR SEALING DEVICE TYPE, DESIGNED FOR FIELD ASSEMBLY TO FILL ANNULAR SPACE BETWEEN SLEEVE AND RACEWAY OR CABLE. SEALING ELEMENTS SHALL BE EPDM RUBBER INTERLOCKING LINKS SHAPED TO FIT THE SURFACE AND PIPE. INCLUDE TYPE AND NUMBER REQUIRED FOR PIPE MATERIAL AND SIZE OF PIPE. PRESSURE PLATES SHALL BE STAINLESS STEEL WITH CONNECTING BOLTS/NUTS OF STAINLESS STEEL, LENGTH AS REQUIRED TO SECURE PRESSURE PLATES TO SEALING ELEMENTS.

PROVIDE DANGER LABELING AT ALL EQUIPMENT AND JUNCTION/PULL BOXES PER CODE.

ALL PANELBOARD COVERS SHALL BE REPLACED AT THE COMPLETION OF EACH DAY'S WORK. MAINTAIN GROUND CONTINUITY THROUGHOUT ALL SYSTEMS.

PRIOR TO ANY CHIPPING, CHASING, OR CHOPPING BEING PERFORMED, THE CONTRACTOR SHALL FIELD INVESTIGATE CONDITIONS AND COORDINATE WITH ALL APPROPRIATE TRADES TO ENSURE THAT WORK WILL BE IN HARMONY WITH OTHER WORK AND NOT AFFECT ANY EXISTING BUILDING SYSTEMS.

AT THE COMPLETION OF LIFE-SAFETY SYSTEM INSTALLATION(S), THE CONTRACTOR SHALL TEST ALL FIRE ALARM AND EMERGENCY LIGHTING DEVICES AND SUBMIT A REPORT TO THE ENGINEER VERIFYING THAT THE SYSTEMS ARE FULLY OPERATIONAL.

WHERE PANELBOARDS, SWITCHES, CIRCUIT BREAKERS, TRANSFORMERS, ETC. ARE EXISTING TO BE REUSED, THE CONTRACTOR SHALL CLEAN AND REFURBISH THE EQUIPMENT. THIS SHALL INCLUDE TIGHTENING ALL CONNECTIONS, REPLACING DEFECTIVE MECHANISMS, AND PROVIDING ANY MISCELLANEOUS COMPONENTS SO THE EQUIPMENT IS IN FIRST CLASS WORKING ORDER.

NOISE AND VIBRATION: PROVIDE OPERATING SYSTEM COMPONENTS FREE OF OBJECTIONABLE VIBRATION OR NOISES. STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT, AND MOUNT OR FASTEN SO THAT NO EQUIPMENT VIBRATION WILL BE TRANSMITTED TO THE BUILDING. RECTIFY OBJECTIONABLE CONDITIONS WITH NO ADDITIONAL COMPENSATION.

F. CLEANING

REMOVE CONSTRUCTION DEBRIS RESULTING FROM THIS WORK. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE DETAILED PROCEDURES SPECIFIED HEREIN, OR AS DICTATED BY OWNER AT SITE.

EXCESS ELECTRICAL MATERIALS AND WASTE SHALL BE REMOVED FROM THE BUILDING AFTER REGULAR BUSINESS HOURS AND SHALL BE TAKEN OFF-SITE NO LATER THAN THE START OF THE NEXT BUSINESS DAY. NO DEBRIS SHALL BE ALLOWED TO ACCUMULATE ON THE SITE. THE CONSTRUCTION SITE SHALL BE SWEPT CLEAN EACH DAY AND NO DUST OR DEBRIS SHALL BE PERMITTED TO ENTER THE AREA DRAINS SERVING THE BUILDING.

ALL EXCESS ELECTRICAL MATERIALS AND WASTE SHALL BE TAKEN FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS. EQUIPMENT REQUIRED TO BE TURNED OVER TO THE OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION (COORDINATE LOCATION AND EQUIPMENT WITH OWNER).

G. PERMITS, FEES AND INSPECTIONS

THE ELECTRICAL CONTRACTOR SHALL:

1. GIVE ALL NECESSARY NOTICES.
2. ARRANGE WITH LOCAL & STATE AUTHORITIES & UTILITY COMPANIES FOR PERMITS & SERVICE CONNECTIONS, VERIFYING LOCATIONS & ARRANGEMENT.
3. SHALL INCLUDE IN HIS BID THE COST OF REQUIRED GOVERNMENT AND STATE SALES TAXES AND ALL APPLICABLE FEES INCLUDING INSPECTIONS.
4. THE CONTR. SHALL FILE ALL DWGS, COMPLETE ALL DOCS & OBTAIN ALL NECESSARY APPROVALS FROM THE PROPER AUTHORITY OR AGENCY HAVING JURISDICTION.
5. SEE THAT ALL REQUIRED INSPECTIONS AND TESTS ARE MADE, AND OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION COVERING HIS WORK.

H. TEMPORARY LIGHT AND POWER

FURNISH AND INSTALL TEMPORARY ELECTRICAL SERVICE OF SUFFICIENT SIZE FOR POWER AND LIGHTING USE BY ALL TRADE CONTRACTORS DURING CONSTRUCTION. ALL TEMPORARY WORK SHALL BE DONE IN COMPLIANCE WITH ALL APPLICABLE ARTICLES IN THE NATIONAL ELECTRICAL CODE, O.S.H.A. AND WITH ALL REQUIREMENTS OF ANY AUTHORITY HAVING JURISDICTION OVER THE WORK.

PROVIDE TEMPORARY POWER CONNECTION TO A CONSTRUCTION TRAILER (AS REQUIRED). THE LOCATION OF THE TRAILER IS TO BE DETERMINED ON SITE. PROVIDE FEEDER TO TRAILER OF SUFFICIENT SIZE TO POWER HEATING, AIR CONDITIONING, GENERAL POWER AND LIGHTING.

I. SUBMITTALS

SHOP DRAWINGS SUBMITTALS SHALL CONSIST OF (1) PDF, OR AS SPECIFIED ELSEWHERE WITH IN THESE DOCUMENTS. SUBMIT SHOP DRAWINGS OF, BUT NOT LIMITED TO, THE FOLLOWING:

1. CONDUIT, CONDUCTORS, AND SURFACE-MOUNTED RACEWAY
2. SAFETY SWITCHES, DISCONNECTS, AND FUSES
3. SWITCHBOARDS, PANELBOARDS, CIRCUIT BREAKERS, AND ENCLOSURES
4. SWITCHES, RECEPTACLES, OCCUPANCY SENSORS, AND DEVICE COVER-PLATES
5. LIGHTING FIXTURES AND LAMPS
6. FIRE ALARM CONTROL PANEL, NOTIFICATION APPLIANCES, INITIATING DEVICES, AND ALL OTHER SYSTEM COMPONENTS
7. RELAY PANEL
8. INVERTER
9. TRANSFORMERS
10. ENCLOSED CONTROLLERS
11. METERING EQUIPMENT
12. SHORT-CIRCUIT AND COORDINATION STUDY
13. ARC-FLASH ANALYSIS

J. MAINTENANCE OF EXISTING FACILITIES AND CONDUCT OF WORK

THIS FACILITY WILL BE OCCUPIED AND IN OPERATION DURING THE PROGRESS OF THE WORK; WHEN NECESSARY TO TEMPORARILY HALT BUILDING EGRESS OR FLOW OF PERSONNEL TRAFFIC, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON; IT IS REQUIRED THAT THE WORK INDICATED AND/OR SPECIFIED SHALL BE CARRIED OUT WITH A MINIMUM OF INTERFERENCE TO THE ESTABLISHED ROUTINE OF THE OCCUPANTS.

THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR ALL COORDINATION OF HIS WORK WITH OTHER TRADES IN ORDER THAT ALL WORK MAY PROCEED WITH A MINIMUM OF DELAY AND INTERFERENCE. THE WORK SHALL BE CAREFULLY LAID OUT IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS, OR OTHER SURFACES; WHERE SUCH WORK IS NECESSARY, THE WORK SHALL BE PATCHED AND/OR REPAIRED IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER.

NO WORK SHALL BE LEFT INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS; AT NO TIME SHALL THE WORK INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.

PROVIDE, ERECT, MAINTAIN AND BE RESPONSIBLE FOR THE SAFE AND LEGAL USE OF SCAFFOLDING OR ADDITIONAL BRACING AND SERVICES THAT MAY BE REQUIRED FOR THE DELIVERY OR ERECTION OF THE EQUIPMENT AND CONSTRUCTION MATERIALS PROVIDED OR INSTALLED UNDER THIS CONTRACT; DETERMINE THE SPECIFIC ARRANGEMENTS FOR FURNISHING AND USE OF SUCH SCAFFOLDING EQUIPMENT, AND REMOVE SUCH EQUIPMENT WHEN IT IS NO LONGER REQUIRED.

WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUIT SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A MUTUALLY AGREED UPON TIME.

MAINTAIN EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATIONS DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED.

K. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY

PROVIDE LABOR, MATERIALS, APPARATUS, AND APPLIANCES ESSENTIAL TO THE COMPLETE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHETHER MENTIONED IN THE CONTRACT DOCUMENTS OR NOT. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND LISTED FOR THE DESCRIBED APPLICATION. WORK SHALL BE FIRST-CLASS IN EVERY RESPECT AND SHALL BE NEATLY PERFORMED IN A PRACTICAL AND WORKMANLIKE MANNER BY PROFICIENT ELECTRICIANS SKILLED IN THE WORK THEY ARE TO DO, USING THE BEST PRACTICES OF THEIR TRADE, AND UNDER CONTINUOUS AND COMPETENT SUPERVISION.

THE WORK SHALL BE WELL ORGANIZED IN OPERATION, AND CARRIED OUT EFFICIENTLY WITHOUT DELAYS WHICH MAY IMPEDE PROGRESS OR THE QUALITY OF THE WORK OF OTHER TRADES AND THE JOB AS A WHOLE.

MATERIAL AND EQUIPMENT PROVIDED SHALL BE NEW AND APPROVED FOR THE APPLICATION AND SHALL CONFORM WITH THE SPECIFIED CODES AND STANDARDS; DEFECTIVE OR DAMAGED MATERIALS SHALL BE REPLACED OR REPAIRED IN A MANNER SATISFACTORY TO THE OWNER.

WHERE AN ITEM IS INDICATED OR REQUIRED BUT NOT SPECIFIED, PROVIDE A STANDARD, FIRST-CLASS QUALITY ARTICLE AS APPROVED BY THE ARCHITECT AND OWNER.

ELECTRICAL MATERIAL AND METHODS SHALL BE UL OR ETL LISTED AND FM APPROVED FOR THEIR INTENDED USE.

L. TESTS, INSPECTION AND APPROVAL

INSPECT EQUIPMENT, COMPONENTS AND MATERIALS INSTALLED OR CONNECTED UNDER THIS CONTRACT TO ENSURE:

1. PROPER CONDITIONS
2. COMPONENTS ARE IN PLACE ALIGNED AND SECURE
3. PROPER INTERNAL CONNECTIONS

BEFORE ENERGIZING ANY FACTORY FABRICATED EQUIPMENT, INSPECT EACH UNIT IN DETAIL; BOLTS AND CONNECTIONS SHALL BE TIGHT (TORQUE/TIGHTEN WHERE REQUIRED), COMPONENTS SHALL BE ALIGNED, AND THE EQUIPMENT SHALL BE IN SAFE, OPERATIONAL CONDITION.

THE COMPLETE ELECTRICAL SYSTEM SHALL BE FREE OF GROUNDS AND SHORT CIRCUITS AND SHALL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

N. SERVICE MANUALS

UPON COMPLETION OF THE WORK, FULLY INSTRUCT THE OWNER AS TO THE OPERATION AND MAINTENANCE OF MATERIAL, EQUIPMENT, AND SYSTEMS. PROVIDE (3) COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING SYSTEMS AND EQUIPMENT.

O. RECORD DRAWINGS

MAINTAIN, AT THE JOB SITE, A SET OF ELECTRICAL DRAWINGS INDICATING ALL CHANGES IN LOCATION OF EQUIPMENT, PANELS, DEVICES, FROM THE ORIGINAL LAYOUT. PLAINLY MARK IN RED, ALL CHANGES ON THE DRAWINGS. AT THE COMPLETION OF THE PROJECT, PROVIDE A COMPLETE SET OF AS-BUILT REPRODUCIBLE DRAWINGS SHOWING ALL CHANGES AND TURN OVER TO THE OWNER.

P. GUARANTEE

FURNISH, IN WRITING, A COMPLETE GUARANTEE AGAINST DEFECTIVE MATERIALS AND IMPROPER WORKMANSHIP, SATISFACTORY TO OWNER, FOR PARTS, COMPONENTS, AND OPERATION FOR A PERIOD OF (1) YEAR FROM THE DATE OF ACCEPTANCE, BY THE OWNER, OF THE COMPLETE INSTALLATION.

GUARANTEE SHALL INCLUDE COMPLETE MAINTENANCE OF SYSTEMS, INCLUDING REPLACEMENT PARTS, LABOR AND MATERIALS TO MAINTAIN THE SYSTEMS IN PROPER OPERATING CONDITION FOR THE GUARANTEE PERIOD.

Q. CUTTING AND PATCHING

ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED FOR THE WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

CUTTING OF BEAMS, FLOORS OR WALLS FOR PIPING OR CONDUIT, SHALL BE DONE ONLY AS APPROVED BY THE OWNER.

PROVIDE DRILLING AND PATCHING FOR EXPANSION BOLTS, HANGERS, AND OTHER SUPPORTS FOR PROPER AND SAFE INSTALLATION OF THE WORK.

PROVIDE UL LISTED ASSEMBLIES FOR FIRE STOPPING AND SEALING AROUND PENETRATIONS THROUGH RATED ASSEMBLIES; REFER TO ARCHITECTURAL SPECIFICATIONS.

PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.

R. PHASE ROTATION TESTS

PROPERLY TEST THE PHASE ROTATION OF NEW FEEDER AND BRANCH CIRCUITS, AND MAKE SUCH CHANGES AND ALTERATIONS NECESSARY TO ENSURE THE CORRECT ROTATION OF MOTOR DISTRIBUTION EQUIPMENT THROUGHOUT THE NEW INSTALLATION.

26-0519 (16120) - LOW-VOLTAGE POWER CONDUCTORS AND CABLES

A. BUILDING WIRE

HOMERUNS, FEEDERS AND BRANCH CIRCUITS NO. 8 AWG AND LARGER: COPPER, STRANDED CONDUCTOR, 600 VOLT INSULATION, THHN/THWN-2 OR XHHW-2, IN ACCORDANCE WITH NEMA WC5 AND NEMA WC3.

HOMERUNS, FEEDERS AND BRANCH CIRCUITS NO. 10 AWG AND SMALLER: COPPER CONDUCTOR, 600 VOLT INSULATION, THHN/THWN-2 OR XHHW-2; SOLID CONDUCTOR IN ACCORDANCE WITH NEMA WC5.

CONTROL WIRING SHALL BE COPPER, STRANDED CONDUCTOR 600 VOLT INSULATION, THHN/THWN, IN SINGLE CONDUCTORS OR PREFERABLY MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES SHALL BE PROVIDED WITH AN OVERALL FLAME-RETARDANT EXTRUDED JACKET, RATED FOR PLENUM USE.

B. WIRING CONNECTIONS AND SPLICES

CONDUCTORS NO. 8 AWG AND SMALLER SHALL BE TWISTED AND MADE MECHANICALLY TIGHT, THEN SECURED WITH PIGTAIL CONNECTORS - SELF-INSULATING, WIRE NUT CONNECTORS. CRIMP TYPE CONNECTORS SHALL NOT BE USED. UTILIZE UL LISTED "SILICON FILLED" PIGTAIL CONNECTORS WHERE LOCATED IN WET ENVIRONMENTS, OUTDOORS, OR IN DATA PROCESSING/COMMUNICATION ROOM RAISED FLOOR CAVITIES.

SPLICE OR TAP STRANDED COPPER CONDUCTORS (NO. 6 AWG AND LARGER) WITH PRESSURE INDENT, HIGH CONDUCTIVITY, WROUGHT COPPER, COLOR-KEYED COMPRESSION TYPE CONNECTORS - BURNDY, NEPCO, T&B, OR O.Z. GEDNEY WITH COMPOSITION INSULATING COVERS. SET SCREW TYPE CONNECTORS ARE ONLY ACCEPTABLE ON THE LOAD SIDE LUGS OF CLASS I AND II SWITCHBOARDS, PANELBOARDS, CIRCUIT BREAKERS, FUSIBLE SWITCHES AND ON INDIVIDUAL MOTOR CONTROLLERS.

WHERE THREE OR MORE CONDUCTORS LARGER THAN NO. 8 AWG ARE SPLICED TOGETHER, UTILIZE A SCREW-TYPE POWER DISTRIBUTION BLOCK SECURELY MOUNTED IN JUNCTION BOX.

C. GENERAL WIRING METHODS

USE NO WIRE SMALLER THAN NO. 12 AWG FOR POWER AND LIGHTING CIRCUITS, AND NO SMALLER THAN NO. 14 AWG FOR CONTROL WIRING. PROVIDE MINIMUM OF NO. 12 AWG FOR ALL SWITCH-LEGS.

PROVIDE NEUTRAL CONDUCTOR OF THE SAME SIZE AS THE PHASE CONDUCTORS IT IS ASSOCIATED WITH. COMMON NEUTRALS SHALL NOT BE USED FOR BRANCH CIRCUITS, UNLESS SPECIFICALLY NOTED OTHERWISE.

HOMERUNS AND BRANCH CIRCUIT CONDUCTOR SIZE FOR 120 VOLT, 20 AMP CIRCUITS SHALL BE AS FOLLOWS:

LENGTH (FT)	BRANCH CIRCUIT WIRE SIZE	HOMERUN WIRE SIZE
UP TO 75'	NO. 12	NO. 12
76' TO 119'	NO. 12	NO. 10
LONGER THAN 120'	NO. 10	NO. 8

HOMERUNS AND BRANCH CIRCUIT CONDUCTOR SIZE FOR 277 VOLT, 20 AMP CIRCUITS SHALL BE AS FOLLOWS:

LENGTH (FT)	BRANCH CIRCUIT WIRE SIZE	HOMERUN WIRE SIZE
UP TO 175'	NO. 12	NO. 12
176' TO 279'	NO. 12	NO. 10
280' AND LONGER	NO. 10	NO. 8

PROVIDE APPROPRIATELY SIZED LUGS AND TERMINATIONS AT ALL EQUIPMENT. DO NOT REDUCE WIRE SIZE AT EQUIPMENT LUGS.

DRAWINGS INDICATE PROPOSED CIRCUITING ONLY, AND DO NOT INDICATE EVERY CONDUCTOR UNLESS INTENT IS UNCLEAR AND FURTHER CLARIFICATION IS REQUIRED. PROVIDE THE NECESSARY TRAVELERS FOR ALL THREE-WAY AND FOUR-WAY SWITCHES.

CONNECTIONS TO MOTORS, TRANSFORMERS, SUSPENDED LIGHT FIXTURES, AND OTHER VIBRATING EQUIPMENT SHALL BE STRANDED.

D. WIRING INSTALLATIONS IN RACEWAY

PULL ALL CONDUCTORS INTO A RACEWAY AT THE SAME TIME. USE UL LISTED WIRE PULLING LUBRICANT. DO NOT EXCEED MANUFACTURER'S RECOMMENDED TENSION.

INSTALL WIRE IN RACEWAY AFTER INTERIOR OF BUILDING HAS BEEN PHYSICALLY PROTECTED FROM THE WEATHER AND ALL MECHANICAL WORK LIKELY TO INJURE CONDUCTORS HAS BEEN COMPLETED.

COMPLETELY AND THOROUGHLY SWAB RACEWAY SYSTEM BEFORE INSTALLING CONDUCTORS.

REMOVE AND DISCARD CONDUCTORS CUT TOO SHORT OR INSTALLED IN WRONG RACEWAY. DO NOT INSTALL CONDUCTORS WHICH HAVE BEEN REMOVED FROM A RACEWAY. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND SHALL NOT BE RE-PULLED.

INSTALL XHHW-2 CONDUCTORS IN RACEWAY FOR SERVICE ENTRANCE CONDUCTORS, AND UNDERGROUND FEEDERS AND BRANCH CIRCUITS.

INSTALL THHN/THWN-2 CONDUCTORS IN RACEWAYS FOR ABOVE-GRADE FEEDERS AND BRANCH CIRCUITS.

SUPPORT CONDUCTORS IN VERTICAL RACEWAYS AT THE TOP OF ANY RACEWAY LONGER THAN 20-FEET. INCLUDE ADDITIONAL SUPPORTS SPACED AT INTERVALS WHICH ARE NOT GREATER THAN 40-FEET. SUPPORT SHALL BE O.Z. GEDNEY TYPE R.

PROVIDE HOMERUN AND FEEDER CONDUCTORS OF CONTINUOUS LENGTH WITHOUT JOINT OR SPLICE FROM OVERCURRENT DEVICE TO FIRST OUTLET.

MAXIMUM CONDUIT FILL SHALL BE THREE PHASE CONDUCTORS (ON DIFFERENT PHASES), THREE INDIVIDUAL NEUTRAL CONDUCTORS (FOR EACH 120V OR 277V BRANCH CIRCUIT) AND GROUND CONDUCTOR.

E. WIRE AND INSULATION APPLICATIONS

- BRANCH CIRCUITS EXPOSED: THHN CONDUCTORS IN CONDUIT, #12 AWG MINIMUM.
- BRANCH CIRCUITS CONCEALED: MC CABLE WITH STEEL JACKET, #12 AWG CONDUCTORS MINIMUM.
- HOME RUNS: THHN CONDUCTORS IN CONDUIT.
- FEEDERS: THHN CONDUCTORS IN CONDUIT.
- FIRE ALARM CIRCUITS: FIRE-RATED MC CABLE WITH STEEL JACKET.
- SHIELDED CABLES: PROVIDE SHIELDED CABLES WHERE REQUIRED BY THE MANUFACTURER(S). INSTALL ON 'J' HOOKS.
- CONTROL CIRCUITS: PLENUM-RATED CABLE. INSTALL ON 'J' HOOKS.
- ALL WIRING WILL BE RUN CONCEALED WITHIN FURRED WALLS AND ABOVE HUNG CEILINGS, EXCEPT AS OTHERWISE NOTED.

26-0526 (16060) - GROUNDING AND BONDING

PROVIDE GROUNDING SYSTEMS, INCLUDING POWER SYSTEM GROUNDING, ELECTRICAL EQUIPMENT AND RACEWAY GROUNDING AND BONDING, STRUCTURAL STEEL GROUNDING, AND MISCELLANEOUS SYSTEM GROUNDING.

BUILDING EQUIPMENT GROUND:

1. PROVIDE A SEPARATE, INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL FEEDERS AND BRANCH CIRCUITS. TERMINATE EACH END ON A GROUNDING LUG, BUS, OR BUSHING. DO NOT USE CONDUIT AS GROUNDING CONDUCTOR.
2. PROVIDE OZ GEDNEY TYPE 'BJ' BONDING JUMPER AT ALL EXPANSION JOINTS, POINTS OF ELECTRICAL DISCONTINUITY OR CONNECTIONS IN CONDUIT WHERE FIRM MECHANICAL BOND IS NOT POSSIBLE, SUCH AS FLEXIBLE CONNECTIONS, INSULATION COUPLINGS, ETC.
3. BOND EVERY ITEM OF EQUIPMENT SERVED BY THE ELECTRICAL SYSTEM TO THE BUILDING EQUIPMENT GROUND SYSTEM. THIS INCLUDES NEW SWITCHBOARDS, PANELBOARDS, DISCONNECT SWITCHES, RECEPTACLES, CONTROLS, FANS, AIR HANDLING UNITS, PUMPS AND FLEXIBLE DUCT CONNECTIONS.

PROVIDE SUPPLEMENTARY GROUND BONDING WHERE METALLIC CONDUITS TERMINATE AT METAL CLAD EQUIPMENT (OR AT THE METAL PULL BOX OF EQUIPMENT) FOR WHICH A GROUND BUS IS SPECIFIED. ACCOMPLISH THIS BY EQUIPPING THE CONDUITS W/ A BUSHING OF THE GROUNDING TYPE CONNECTED INDIVIDUALLY TO GROUND BUS.

ALL GROUND WIRES SHALL BE SUITABLY PROTECTED FROM MECHANICAL INJURY.

BARE COPPER CONDUCTORS:

1. SOLID CONDUCTOR: ASTM B 3.
2. STRANDED CONDUCTORS: ASTM B 8.
3. TINNED CONDUCTORS: ASTM B 33.
4. BONDING CABLE: 28 KCMIL, 14 STRANDS OF NO. 17 AWG CONDUCTOR, 1/4 INCH (6 MM) IN DIAMETER.
5. BONDING CONDUCTOR: NO. 4 OR NO. 6 AWG, STRANDED CONDUCTOR.
6. BONDING JUMPER AND TINNED BONDING JUMPER: COPPER TAPE AND TINNED-COPPER TAPE, BRAIDED CONDUCTORS TERMINATED WITH COPPER FERRULES; 1-5/8 INCHES (41 MM) WIDE AND 1/16 INCH (1.6 MM) THICK.

GROUNDING BUS SHALL BE PRE-DRILLED RECTANGULAR BARS ON ANNEALED COPPER, 1/4 BY 8 INCHES (6.3 BY 200 MM) IN CROSS SECTION MINIMUM, WITH 9/32 INCH (7.14 MM) HOLES SPACED 1-1/8 INCHES (28 MM) APART. STAND-OFF INSULATORS FOR MOUNTING SHALL COMPLY WITH UL 891 FOR USE IN SWITCHBOARDS, 600 V AND SHALL BE LEXAN OR PVC. INSTALL IN ELECTRICAL EQUIPMENT ROOMS, ROOMS HOUSING SERVICE ENTRANCE EQUIPMENT, AND ELSEWHERE AS INDICATED.

CONNECTORS SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR APPLICATIONS IN WHICH USED AND FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS CONNECTED.

WELDED CONNECTORS: EXOTHERMIC-WELDING KITS OF TYPES RECOMMENDED BY KIT MANUFACTURER FOR MATERIALS BEING JOINED AND INSTALLATION CONDITIONS.

GROUND RODS: COPPER-CLAD STEEL; 3/4 INCH BY 10 FEET (19 MM BY 3 M).

26-0529 (16070) - HANGERS AND SUPPORTS

PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF THIS CONTRACT. SECURE EQUIPMENT AND CONDUIT WITH HANGER RODS, CONDUIT CLAMPS, EXPANSION ANCHORS, BEAM CLAMPS OR BOLTS AS REQUIRED.

SUPPORT CHANNEL SHALL BE ROLL-FORMED 12- OR 14-GAUGE STEEL, SOLID BASE OR BOLT HOLE BASE, HOT DIP GALVANIZED FINISH. COMPLETE WITH ANGLE FITTINGS, SPRING NUTS, CONDUIT SUPPORTS, 3/8 INCH THREADED RODS, ETC., MANUFACTURED BY UNISTRUT, KINDORF OR B-LINE SYSTEMS.

FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR STEEL CHANNEL, RIGIDLY WELDED OR BOLTED TO PRESENT A NEAT APPEARANCE. USE HEXAGON HEAD BOLTS WITH SPRING LOCK WASHERS UNDER ALL NUTS.

WHERE MULTIPLE RUNS OF CONDUIT CAN BE RUN GROUPED TOGETHER, RUN CONDUIT IN RACKS SUPPORTED FROM THE BUILDING STRUCTURE. PROVIDE FOR FUTURE USE OF RACK BY PROPERLY PLANNING ROUTING OF CONDUITS IN AND THROUGH RESTRICTED AREAS SUCH AS THROUGH WALLS AND AROUND MECHANICAL AND ELECTRICAL EQUIPMENT.

INTERIOR SUPPORTING DEVICES AND HARDWARE INSTALLED ON INTERIOR SPACES SHALL BE GALVANIZED STEEL (TYPICAL), UNLESS OTHERWISE NOTED.

SUPPORTING DEVICES AND HARDWARE INSTALLED ON EXPOSED EXTERIOR LOCATIONS AND INTERIOR SPACES EXPOSED TO MOISTURE SHALL BE STAINLESS STEEL (TYPICAL), UNLESS OTHERWISE SPECIFIED.

26-0533 (16130/16132) - RACEWAY AND BOXES

A. OUTLET BOXES

PROVIDE GALVANIZED OR CADMIUM-PLATED PRESSED STEEL OUTLET BOXES SUITABLE FOR THE CONDITIONS OF EACH OUTLET. PROVIDE MULTI-GANG OUTLETS OF SINGLE BOX DESIGN OF SUFFICIENT LENGTH TO SUIT CONDITIONS; SECTIONAL BOXES WILL NOT BE ACCEPTABLE.

SWITCH, RECEPTACLE, AND OUTLET BOXES SHALL BE A NOMINAL 4-INCH SQUARE - DEPTH AS REQUIRED BY CODE - WITH A RAISED COVER, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. PROVIDE 3/8-INCH FIXTURE STUD AS REQUIRED.

PROVIDE OUTLET BOXES OF SUFFICIENT VOLUME TO ACCOMMODATE THE NUMBER OF CONDUCTORS ENTERING THE BOX IN ACCORDANCE WITH REQUIREMENTS OF NFPA 70, AND NOT LESS THAN 1-1/2 INCH DEEP UNLESS SHALLOWER BOXES ARE REQUIRED BY STRUCTURAL CONDITIONS AND ARE ESPECIALLY APPROVED BY ENGINEER.

LIGHTING FIXTURE BOXES SHALL BE 4-INCH OCTAGON WITH 3/8-INCH FIXTURE STUD. FOR SUSPENDED CEILING WORK, PROVIDE A 4-INCH OCTAGON BOX WITH REMOVABLE BACK PLATE WHERE REQUIRED.

PROVIDE NON-METALLIC OR STAINLESS STEEL NEMA 4X TYPE OUTLET BOXES AND ENCLOSURES IN CORROSIVE ENVIRONMENTS.

PROVIDE DEEP, CAST METAL OUTLET BOXES LOCATED IN DAMP LOCATIONS, EXPOSED TO WEATHER, INSTALLED IN FLOORS, OR EXPOSED AREAS SUBJECT TO DAMAGE - COMPLETE WITH GASKETED COVER AND THREADED HUBS.

B. PULL AND JUNCTION BOXES

PROVIDE GALVANIZED SHEET METAL BOXES CONFORMING TO NEMA OS 1. PROVIDE HINGED ENCLOSURES FOR ANY BOX LARGER THAN 12 INCHES IN ANY DIMENSION, UNLESS OTHERWISE NOTED.

PROVIDE SEPARATE PULL BOXES AND JUNCTION BOXES FOR ELECTRIC POWER, CONTROL, AND COMMUNICATION SYSTEMS.

PULL BOXES AND JUNCTION BOXES SHALL BE SIZED SO THAT THE MINIMUM BENDING RADIUS CRITERIA SPECIFIED FOR THE WIRES AND CABLE ARE MAINTAINED.

INCLUDE ALL REQUIRED JUNCTION/PULL BOXES AND OUTLET BOXES REGARDLESS OF INDICATIONS ON THE DRAWINGS (WHICH DUE TO SYMBOLIC METHODS OF NOTATION, MAY NOT SHOW ALL THAT ARE REQUIRED.)

WHERE BOXES HAVE ANY SINGLE HORIZONTAL DIMENSION LARGER THAN 36-INCHES THEY SHALL BE FITTED WITH CABLE SUPPORT RACKS CONSISTING OF 1/4 INCH DIAMETER PIPES WITH FLANGED ENDS BOLTED TO THE SIDES OR FRAME OF THE PULL BOXES. EACH PIPE SUPPORT SHALL BE FITTED WITH A CONTINUOUS FIBER INSULATING SLEEVE. THE PIPE SUPPORTS SHALL BE ARRANGED IN TIERS CORRESPONDING TO THE CABLES ENTERING AND LEAVING THE BOX. SUFFICIENT PIPE SUPPORT RACKS WILL BE INCLUDED WITH THE PULL BOX SO THAT NO CABLE SHALL REMAIN UNSUPPORTED FOR A HORIZONTAL DISTANCE GREATER THAN 36-INHES. IN NO CASE SHALL CABLE SUPPORT PIPE RACKS BE MOUNTED SO THAT THEY INTERFERE WITH THE REMOVAL OF SCREW COVERS.

C. OUTLET, PULL, AND JUNCTION BOX INSTALLATION

PROVIDE PULL OR JUNCTION BOXES IN ACCESSIBLE LOCATIONS WHERE SHOWN, AT LEAST EVERY 150-FEET IN STRAIGHT RUNS, AS REQUIRED BY CODE, OR AS NEEDED FOR PROPER INSTALLATION OF WIRING AND JUNCTIONS.

PROVIDE RECESSED OUTLET BOXES IN FINISHED AREAS; SECURE BOXES TO INTERIOR WALL AND PARTITION STUDS, ACCURATELY POSITIONING TO ALLOW FOR SURFACE FINISH THICKNESS.

SET BOXES INSTALLED IN CONCEALED LOCATIONS FLUSH WITH THE FINISH SURFACES, AND PROVIDE WITH THE PROPER TYPE EXTENSION RINGS AND/OR COVERS WHERE REQUIRED.

ALIGN WALL-MOUNTED OUTLET BOXES FOR SWITCHES, THERMOSTATS, AND SIMILAR DEVICES. INSTALL ALL GROUPED DEVICE LOCATIONS NEAT AND SYMMETRICAL COORDINATE WITH A/E BEFORE ROUGH-IN.

LOCATE PULL BOXES AND JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS AND/OR IN UNFINISHED AREAS, UNLESS OTHERWISE NOTED.

ALL EQUIPMENT, DEVICE BOXES, JUNCTION BOXES, PULL BOXES AND OUTLET BOXES SHALL BE INSTALLED TO ALLOW ACCESS TO THE BOX. IF NECESSARY AND APPROVED BY ARCHITECT, PROVIDE ACCESS DOOR OR COVERLETS IN AREAS WHERE UNOBSTRUCTED ACCESS IS NOT POSSIBLE.

IDENTIFY ALL JUNCTION BOXES BY CIRCUIT NUMBER ON COVER WITH LEGIBLE PERMANENT INK MARKER.

BOXES AND ENCLOSURES INSTALLED ON CONCRETE SURFACES SHALL BE PROVIDED WITH 1/4 INCH AIR GAP MINIMUM.

D. CONDUIT MATERIALS

PROVIDE RIGID GALVANIZED STEEL CONDUIT (RGS) AND FITTINGS IN ACCORDANCE WITH ANSI C80.1; HOT DIP GALVANIZED UNLESS OTHERWISE SPECIFIED.

PROVIDE ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS IN ACCORDANCE WITH ANSI C80. 3; HOT-DIPPED GALVANIZED TUBING UNLESS OTHERWISE SPECIFIED.

RIGID NON-METALLIC CONDUIT (RNC) SHALL BE POLYVINYL CHLORIDE (PVC) SCHEDULE 40, UNLESS OTHERWISE NOTED.

THREADED FITTINGS SHALL BE USED WITH RGS CONDUIT. STEEL SET SCREW OR STEEL COMPRESSION FITTINGS SHALL BE USED WITH EMT.

E. CONDUIT SIZING, ARRANGEMENT AND SUPPORT

MINIMUM SIZE OF CONDUIT SHALL BE 3/4-INCH.

CONDUIT SIZES INDICATED ON THE DRAWINGS ARE MINIMUM BASED ON THHN/THWN-2, COPPER WIRE AND LARGER SIZES MAY BE USED FOR CONVENIENCE OF WIRE PULLING.

CONCEAL CONDUIT IN CEILING AND WALLS IN ALL FINISHED AREAS OF THE BUILDING. IN UNFINISHED AREAS WITHOUT CEILINGS, CONDUIT MAY BE RUN EXPOSED OVERHEAD.

INSTALL ALL CONDUIT, INCLUDING CONDUIT ABOVE ACCESSIBLE CEILING, PARALLEL OR PERPENDICULAR TO WALLS AND ADJACENT PIPING. NEATLY ROUTE CONDUIT IN A COMMON RACK WHERE POSSIBLE.

MAINTAIN MINIMUM 6-INCH CLEARANCE BETWEEN CONDUIT AND PIPING. MAINTAIN 12-INCH CLEARANCE BETWEEN CONDUIT AND HEAT SOURCES SUCH AS FLUES, STEAM PIPES, HOT WATER PIPES, AND HEATING APPLIANCES. WHERE CROSSINGS ARE UNAVOIDABLE, CONDUIT SHALL BE KEPT AT LEAST 1-INCH FROM THE INSULATED COVERING OF THE PIPE AND CROSS PERPENDICULAR.

ROUTE CONDUIT TO ALLOW FOR EQUIPMENT ACCESS AND MAINTENANCE.

ARRANGE CONDUIT SUPPORTS TO PREVENT DISTORTION OF ALIGNMENT BY WIRE PULLING OPERATIONS. FASTEN CONDUIT SECURELY TO BUILDING STRUCTURE USING CLAMPS, HANGERS AND THREADED ROD.

EXPOSED CONDUIT WITHIN FINISHED SPACES WILL NOT BE ALLOWED, UNLESS OTHERWISE NOTED (MUST BE CONFIRMED BY THE ARCHITECT PRIOR TO INSTALLATION). IF ALLOWED, FOR INTERIOR SPACES PROVIDE WIREMOLD SERIES 700, STEEL SURFACE-MOUNTED RACEWAY.

THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC; BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCE.

WALL AND/OR FLOOR MOUNTED TELEPHONE/DATA OUTLETS AND SECURITY DEVICES SHALL CONSIST OF 1 INCH EMT EXTENDED SIX INCHES INTO THE ACCESSIBLE HUNG CEILING AND TERMINATED IN A STANDARD 4 INCH BY 4 INCH GALVANIZED STEEL OUTLET BOX WITH SINGLE-GANG MUD RING. PROVIDE NYLON DRAG LINE FOR PULLING OF TELEPHONE AND DATA CABLES (BY OTHERS).

HOMERUNS AND FEEDERS SHALL BE INSTALLED IN CONDUIT: RGS, RNC, AND/OR EMT. MC CABLE SHALL NOT BE ACCEPTABLE FOR HOMERUNS AND FEEDERS. HOMERUNS ARE CONSIDERED THE CIRCUITRY FROM THE PANEL OF ORIGIN TO THE GENERAL AREA OF CONSTRUCTION (A DESIGNATED ROOM AND/OR AREA), WHERE IT WILL THEN BE DISTRIBUTED. FEEDERS ARE CONSIDERED THE CIRCUITRY FROM THE PANEL OF ORIGIN TO EACH PIECE OF EQUIPMENT.

FOR ALL SIZES OF CONDUIT LARGER THEN 1-1/2 INCHES, USE STANDARD MANUFACTURED ELBOWS. IN SMALLER SIZES, FIELD BENDS WILL BE PERMITTED INSTEAD OF USING MANUFACTURED ELBOWS BUT CARE MUST BE TAKEN NOT TO DAMAGE THE CONDUIT. THE RADIUS OF THE INNER CURVE OF ANY BEND SHALL NOT BE ANY LESS THAN THAT PERMITTED BY CODE.

CONDUIT SHALL BE SECURELY FASTENED IN PLACE. HANGERS, SUPPORTS, OR FASTENINGS SHALL BE PROVIDED AT EACH ELBOW AND AT EACH END OF STRAIGHT CONDUIT RUN TERMINATED AT A BOX OR CABINET. WHERE RISER CONDUITS PIERCE FLOOR SLABS, THEY SHALL REST ON EACH FLOOR WITH APPROVED BEAM CLAMPS, PIPE STRAPS OR HEAVY IRON TIES WIRED TO THE STRUCTURAL MEMBERS SUPPORTING EQUIPMENT. SIZE AND TYPE OF ANCHOR SHALL BE BASED ON THE COMBINED WEIGHTS OF CONDUIT, HANGER AND CABLES. ALL HANGERS AND RODS SHALL BE PAINTED WITH ONE COAT OF ENAMEL.

INSTALL CONDUIT EXPANSION FITTINGS IN EACH CONDUIT RUN WHEREVER IT CROSSES AN EXPANSION JOINT AND WHEREVER THE CONDUIT LENGTH EXCEEDS 200-FEET.

CONDUIT USED FOR FIRE ALARM CIRCUITS SHALL HAVE A 2 INCH PAINTED "RED" BAND EVERY 10 FEET.

PROVIDE PULL LINE IN ALL EMPTY CONDUIT.

F. CONDUIT/BOX APPLICATION INDOORS

- EXPOSED AREAS NOT SUBJECT TO PHYSICAL DAMAGE: EMT.
- EXPOSED AREAS SUBJECT TO PHYSICAL DAMAGE: RGS BELOW 48 INCHES AND EMT 48 INCHES ABOVE FINISHED FLOOR. AREAS SUBJECT TO PHYSICAL DAMAGE INCLUDE, BUT ARE NOT LIMITED TO MECHANICAL AND ELECTRICAL ROOMS, RECEIVING AREA, MAINTENANCE SHOP, BOILER ROOM, SPRINKLER ROOM, AND LIKE UTILITY ROOMS, ETC.
- AREAS SUBJECT TO MOISTURE, CORROSIVE AGENTS, PHYSICAL ABUSE, IN UNCONDITIONED SPACES, OR CONDUIT SIZES GREATER THAN 4 INCH: RGS.
- DO NOT USE ELECTRICAL METALLIC TUBING IN AREAS SUBJECT TO MOISTURE, CORROSIVE AGENTS, OR PHYSICAL ABUSE.
- CONCEALED IN CEILINGS AND WALLS: EMT OR MC CABLE WITH STEEL JACKET.
- CAST IN CONCRETE OR BELOW CONCRETE SLABS: RNC - SCHEDULE 40 PVC. EXCEPTION, EXPOSED CONDUIT ENTERING/EXITING THE CONCRETE SHALL BE RGS.
- CONNECTION TO VIBRATING EQUIPMENT: FLEXIBLE METAL STEEL CONDUIT (FMC). VIBRATING EQUIPMENT SHALL BE AS LISTED BUT NOT LIMITED TO - TRANSFORMERS, HYDRAULIC/PNEUMATIC/ELECTRIC SOLENOIDS, MOTOR-DRIVEN EQUIPMENT, ETC.
- CONNECTION TO VIBRATING EQUIPMENT: IN AREAS SUBJECT TO MOISTURE, HIGH HUMIDITY, OR CORROSIVE AGENTS, USE LIQUID-TIGHT FLEXIBLE METAL STEEL CONDUIT (LFMC).
- PLENUM SPACES: WIRING METHODS IN PLENUM SPACES SHALL CONFORM TO THE REQUIREMENTS OF NEC SECTION 300-22. ALL CONDUITS SHALL BE METAL. EXPOSED CABLES, WHERE USED, SHALL BE LISTED AND APPROVED FOR USE IN PLENUM.

G. CONDUIT/BOX APPLICATION OUTDOORS

- EXPOSED OR CONCEALED: RGS.
- CONNECTION TO VIBRATING EQUIPMENT: LFMC.
- BOXES AND ENCLOSURES: NEMA 250, TYPE 3R.
- CAST IN CONCRETE OR BELOW CONCRETE SLABS: RNC - SCHEDULE 40 PVC. EXCEPTION, EXPOSED CONDUIT ENTERING/EXITING THE CONCRETE SHALL BE RGS.
- SERVICE POLE RISERS: RGS.
- BURIED UNDER GRADE FOR SERVICE ENTRANCE PRIMARY AND SECONDARY CONDUCTORS: RNC - SCHEDULE 40 PVC.
- LIGHTING AND POWER BRANCH CIRCUIT CONDUIT BURIED UNDER GRADE: RNC - SCHEDULE 40 PVC.

26-0548 - SEISMIC CONTROLS

PROVIDE SEISMIC RESTRAINTS FOR ALL EQUIPMENT, INCLUDING ALL STRUCTURAL STEEL MEMBERS, INSERTS, ANCHORS, WIRES AND THE REQUIRED ASSEMBLY THEREOF. ALL SEISMIC RESTRAINTS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES HAVING JURISDICTION. SYSTEMS SHALL MAINTAIN EQUIPMENT AND RELATED SYSTEMS IN A CAPTIVE POSITION.

FURNISH SERVICES OF MANUFACTURER FOR FIELD SUPERVISION OF INSTALLATION OF SEISMIC RESTRAINT UNITS, ASSOCIATED HANGERS AND BASES. OBTAIN COPY OF MANUFACTURER'S INSTALLATION INSTRUCTIONS AND DRAWINGS, FOR CONTRACTORS' USE DURING INSTALLATION. INSTALL DEVICES IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. SEISMIC RESTRAINT EQUIPMENT SHALL NOT CAUSE ANY CHANGE OF POSITION OF EQUIPMENT OR WIRING RESULTING IN WIRING STRESSES OR MISALIGNMENT.

SUBMIT FOR REVIEW, SHOP DRAWINGS ON EVERY PRODUCT AND MATERIAL FURNISHED UNDER THIS SECTION. SHOP DRAWINGS SHALL INCLUDE:

1. ITEMIZED LIST DETAILING ELECTRICAL SYSTEMS AND COMPONENTS TO BE SEISMICALLY RESTRAINED, ASSOCIATED SEISMIC RESTRAINT SYSTEM TO BE USED, DEVICE LOADING AND REFERENCE TO SPECIFIC DRAWINGS SHOWING BASE AND CONSTRUCTION WHERE APPLICABLE. LIST SHALL INCLUDE NUMBER AND LOCATION OF SEISMIC RESTRAINTS AND ANCHORS FOR EACH PIECE OF EQUIPMENT.
2. SEISMIC RESTRAINT CALCULATIONS.
3. STRUCTURAL ENGINEER'S SEAL VERIFYING DESIGN AND CALCULATIONS FOR SEISMIC RESTRAINING SYSTEMS. CERTIFICATION SHALL BE BY A PROFESSIONAL STRUCTURAL ENGINEER WITH P.E. REGISTRATION IN THE PROJECT STATE.
4. DETAIL DRAWINGS ON EQUIPMENT BASES INCLUDING DIMENSIONS, STRUCTURAL MEMBER SIZES, SUPPORT POINT LOCATIONS, MAXIMUM LOADING AT EACH LOCATION, AND CONCRETE AND STEEL DETAILS SUCH AS ANCHOR BOLT LOCATIONS.
5. ALL SEISMIC RESTRAINING DEVICES SHALL HAVE A PRE-APPROVED NUMBER FROM THE PROJECT STATE OSHPD OR OTHER RECOGNIZED GOVERNMENT AGENCY SHOWING MAXIMUM RESTRAINT RATINGS.
6. DETAIL DRAWINGS ON SEISMIC RESTRAINT SYSTEMS FOR CONDUIT, LIGHTING, TRANSFORMERS, BUSWAY, CABLE TRAY AND OTHER WIRING SYSTEMS, INCLUDING METHODS OF SUSPENSION, SUPPORT GUIDES, AND MAXIMUM LOADING AT EACH LOCATION.

26-0553 (16075) - IDENTIFICATION

PROVIDE ENGRAVED, THREE-LAYER LAMINATED, SELF-ADHESIVE PLASTIC NAMEPLATES WITH BLACK LETTERS ON A WHITE BACKGROUND FOR ALL NEW EQUIPMENT INCLUDING BUT NOT LIMITED TO: ENCLOSURES, SWITCHBOARDS, PANELBOARDS, VARIABLE FREQUENCY DRIVES, DISCONNECT SWITCHES, MOTOR STARTERS, CIRCUIT BREAKERS, ETC.

PROVIDE ENGRAVED, THREE-LAYER LAMINATED, SELF-ADHESIVE PLASTIC NAMEPLATES WITH BLACK LETTERS ON A WHITE BACKGROUND TO IDENTIFY GROUNDED AND UNGROUNDED CONDUCTOR COLOR CODE INFORMATION IN ACCORDANCE WITH NEC 210.5 (C). INSTALL AT EACH PANELBOARD AND SIMILAR BRANCH CIRCUIT DISTRIBUTION EQUIPMENT LOCATION.

PERMANENTLY LABEL ALL RECEPTACLES, MOTORS, POWER DISCONNECTS, WALL SWITCHES, AND REMOTE LOADS WITH THE PANEL AND CIRCUIT NUMBER SERVING THE DEVICE.

PROVIDE WIRE AND CABLE MARKERS (SPLIT SLEEVE OR TUBING TYPE) ON ALL CONDUCTORS. PROVIDE WIRE MARKERS ON EACH CONDUCTOR IN SPLICE BOXES, PULL BOXES, AND AT FIRST LOAD CONNECTION ON HOMERUN. IDENTIFY WITH BRANCH CIRCUIT OR FEEDER NUMBER FOR POWER AND LIGHTING CIRCUITS, AND WITH CONTROL WIRE NUMBER AS INDICATED ON EQUIPMENT MANUFACTURERS SHOP DRAWING FOR CONTROL WIRING.

FOR RACEWAYS, ENCLOSURES, PANELBOARDS, SWITCHBOARDS, DISCONNECTS, ETC. CARRYING CIRCUITS AT 600 V OR LESS, PROVIDE A LABEL INDICATING VOLTAGE AND SERVICE TYPE, BLACK LETTERS ON AN ORANGE FIELD. MINIMUM NOMINAL SIZE TO BE: 1-1/2 BY 6 INCHES (37 BY 150 MM) FOR RACEWAY AND CONDUCTORS; 3-1/2 BY 5 INCHES (76 BY 127 MM) FOR EQUIPMENT; AS REQIRED BY AUTHORITIES HAVING JURISDICTION.

FLOOR MARKING TAPE: 2 INCH (50 MM) WIDE, 5 MIL (0.125 MM) PRESSURE-SENSITIVE VINYL TAPE, WITH BLACK AND WHITE STRIPES AND CLEAR VINYL OVERLAY.

UNDERGROUND-LINE WARNING TAPE: DETECTABLE THREE-LAYER LAMINATE, CONSISTING OF A PRINTED PIGMENTED POLYOLEFIN FILM, A SOLID ALUMINUM-FOIL CORE, AND A CLEAR PROTECTIVE FILM THAT ALLOWS INSPECTION OF THE CONTINUITY OF THE CONDUCTIVE CORE, BRIGHT COLORED, CONTINUOUS PRINTED ON ONE SIDE WITH THE INSCRIPTION OF THE UTILITY, COMPOUNDED FOR DIRECT BURIAL SERVICE. WIDTH SHALL BE 3 INCHES (75 MM), OVERALL THICKNESS SHALL BE 5 MILS (0.125 MM), FOIL CORE THICKNESS SHALL BE 0.35 MILS (0.00889 MM), WEIGHT SHALL BE 28 LB/1000 SQ. FT. (13.7 KG/100 SQ. M), AND TENSILE SHALL BE ACCORDING TO ASTM D 882: 70 LBF (311.3 N) AND 4600 PSI (31.7 MPA). PRINTING ON TAPE SHALL BE PERMANENT AND SHALL NOT BE DAMAGED BY BURIL OPERATIONS. TAPE MATERIAL AND INK SHALL BE CHEMICALLY INERT AND NOT SUBJECT TO DEGRADATION WHEN EXPOSED TO ACIDS, ALKALIS, AND OTHER DESTRUCTIVE SUBSTANCES COMMONLY FOUND IN SOILS. PROVIDE RED-COLORED TAPE FOR ELECTRIC LINES AND ORANGE-COLORED TAPE FOR TELECOMMUNICATION LINES.

COLOR CODING SHALL BE BUILDING STANDARD. WHERE NO BUILDING STANDARD EXIST IS, FACTORY COLOR CODING SHALL BE AS FOLLOWS:

208Y/120V, 3 PH	PHASE 'A':	BLACK
	PHASE 'B':	RED
	PHASE 'C':	BLUE
240/120V, 1 PH	PHASE 'A':	BLACK
	PHASE 'B':	RED
480Y/277V, 3 PH	PHASE 'A':	BROWN
	PHASE 'B':	ORANGE
	PHASE 'C':	YELLOW
ALL SYSTEMS	NEUTRAL:	GRAY
	EQUIPMENT GROUND:	GREEN
	ISOLATED GROUND:	GREEN/YELLOW STRIPE

26-2726 (16140) - WIRING DEVICES

DUPLEX AND TAMPER-RESISTANT CONVENIENCE RECEPTACLES: 125 V, 20 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, UL 498, AND FS W-C-596.

TAMPER-RESISTANT, USB CHARGER RECEPTACLES: 125 V, 20 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, UL 498, UL 1310, AND FS W-C-596.

GFCI RECEPTACLES: 125 V, 20 A, STRAIGHT BLADE, NON-FEED THROUGH TYPE. COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, UL 498, UL 943 CLASS 'A', AND FS W-C-596. INCLUDE INDICATOR LIGHT THAT SHOWS WHEN THE GFCI HAS MALFUNCTIONED AND NO LONGER PROVIDES PROPER GFCI PROTECTION.

TWIST-LOCK, SINGLE CONVENIENCE RECEPTACLES: 125 V, 20 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION L5-20R, AND UL 498.

PENDANT CORD-CONNECTOR DEVICES: MATCHING, LOCKING-TYPE PLUG AND RECEPTACLE BODY CONNECTOR. NEMA WD 6 CONFIGURATIONS L5-20P AND L5-20R, HEAVY-DUTY GRADE, AND FS W-C-596. NYLON BODY WITH SCREW-OPEN, CABLE GRIPPING JAWS AND PROVISION FOR ATTACHING EXTERNAL CABLE GRIP. CABLE GRIP SHALL BE WOVEN WIRE-MESH TYPE MADE OF HIGH-STRENGTH, GALVANIZED-STEEL WIRE STRAND, MATCHED TO CABLE DIAMETER AND WITH ATTACHMENT PROVISION DESIGNED FOR CORRESPONDING CONNECTOR.

DEVICES SHALL BE SPECIFICATION GRADE, TOTALLY ENCLOSED IN A MOLDED COMPOSITION BASE (U.O.N.) AND SHALL MATCH BUILDING STANDARDS OR EXISTING DEVICES WITHIN THE AREA OF CONSTRUCTION (IF APPLICABLE). DEVICES SHALL BE WHITE UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ARCHITECT AND/OR OWNER.

COVER PLATES: PROVIDE 302/304 SATIN SMOOTH, STAINLESS STEEL FOR INTERIOR AND GASKETED CAST METAL WITH HINGED GASKETED "IN USE" DEVICE COVERS FOR EXTERIOR. A COMMON PLATE SHALL COVER ALL DEVICES WHICH ARE INDICATED AT THE SAME LOCATION.

INSTALL GROUND PIN OF VERTICALLY MOUNTED RECEPTACLES 'UP' AND ON HORIZONTALLY MOUNTED RECEPTACLES TO THE 'RIGHT'. RECEPTACLES TO BE MOUNTED VERTICALLY, U.O.N.

26-2816 (16411) - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PROVIDE HEAVY DUTY; QUICK-MAKE, QUICK-BREAK, LOAD INTERRUPTER ENCLOSED DISCONNECT SWITCHES WITH EXTERNALLY OPERABLE HANDLE INTERLOCKED TO PREVENT OPENING FRONT COVER WITH SWITCH IN 'ON' POSITION. HANDLE LOCKABLE IN 'OFF' POSITION. FUSE CLIPS: DESIGNED TO ACCOMMODATE CLASS 'R' FUSES (AS REQUIRED). PROVIDE A NEUTRAL KIT (AS REQUIRED) AND EQUIPMENT GROUND KIT. RATED FOR ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.

FUSES 600 AMPERES AND LESS: UL 198E, CLASS RK-5; AS INDICATED ON DRAWINGS; TIME DELAY, DUAL ELEMENT, CURRENT LIMITING, 600 VOLT.

FUSES OVER 600 AMPERES: CLASS L, BOLT-ON TYPE WITH TIME DELAY AND CAPABILITY TO HOLD 500 PERCENT RATED FUSE CURRENT FOR A MINIMUM OF FOUR SECONDS AND CLEAR 20 TIMES RATED FUSE CURRENT IN 0.01-SECOND OR LESS. PROVIDE FUSES WITH 'O' RING SEALS BETWEEN END BELLS AND GLASS MELAMINE BARREL SIMILAR TO BUSSMAN TIME DELAY KRP-C.

PROVIDE DISCONNECT SWITCHES, WHERE REQUIRED BY NFPA 70, WHERE INDICATED ON DRAWINGS, AND WHERE REQUIRED BY EQUIPMENT MANUFACTURER, IN A LOCATION CONVENIENT FOR MAINTENANCE ON EACH SWITCH AND ADJACENT EQUIPMENT.

PROVIDE SPARE FUSE CABINET IN MAIN ELECTRICAL ROOM COMPLETE WITH THREE SPARE FUSES FOR EACH RATING INSTALLED FOR FUSE SIZES OVER 600 AMPERES, AND TEN PERCENT SPARE FUSES (MINIMUM OF THREE) OF EACH TYPE AND RATING INSTALLED FOR 600 AMPERES OR LESS.

GENERALLY, MOTORS OF 1/3 HP AND LESS WILL BE RATED 115 V, SINGLE-PHASE. MOTORS OF 1/2 HP AND LARGER WILL BE RATED 480V OR 208V, THREE-PHASE. SOME EQUIPMENT AS MANUFACTURED MAY DICTATE EXCEPTIONS TO THESE RULES.

26-2913 (16420) - ENCLOSED CONTROLLERS

FURNISH AND INSTALL FRACTIONAL HORSEPOWER MANUAL MOTOR STARTERS WITH ON-OFF CONTROL, THERMAL OVERLOAD RELAY AND PILOT LIGHTS.

	GENERAL ELECTRIC	SQUARE 'D'	ALLEN BRADLEY	SIEMENS
1-POLE:	CR101Y11	2510FG1P	600-TAX4	SMFFG1P
2-POLE:	CR101H11	2510FG2P	600-TAX5	SMFFG2P

MAGNETIC CONTROLLERS:

1. FULL VOLTAGE, ACROSS THE LINE, ELECTRICALLY HELD, NON-REVERSING.
2. FIELD COORDINATE CONTROL CIRCUIT WITH MECHANICAL CONTRACTOR; PROVIDE CONTROLLER WITH INTEGRAL CPT, PRIMARY AND SECONDARY FUSES; WITH 50 VA SPARE CAPACITY.
3. MELTING ALLOY OVERLOAD RELAYS WITH INVERSE-TIME-CURRENT CHARACTERISTICS AND CLASS 10 TRIPPING CHARACTERISTICS. HEATERS IN EACH PHASE MATCHED TO NAMEPLATE FULL-LOAD CURRENT OF ACTUAL PROTECTED MOTOR AND WITH APPROPRIATE ADJUSTMENT FOR DUTY CYCLE.
4. N.O., ISOLATED OVERLOAD ALARM CONTACT.
5. EXTERNAL OVERLOAD RESET PUSH BUTTON.

COMBINATION MAGNETIC CONTROLLER:

1. FACTORY-ASSEMBLED COMBINATION OF MAGNETIC CONTROLLER, OCPD, AND DISCONNECTING MEANS.
2. MCCB DISCONNECTING MEANS:
   a. UL 489, NEMA AB 1, AND NEMA AB 3, WITH INTERRUPTING CAPACITY TO COMPLY WITH AVAILABLE FAULT CURRENTS; THERMAL-MAGNETIC MCCB, WITH INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS.
   b. FRONT-MOUNTED, ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT-BREAKER FRAME SIZES 250 A AND LARGER.
   c. LOCKABLE HANDLE: ACCEPTS THREE PADLOCKS AND INTERLOCKS WITH COVER IN CLOSED POSITION.
3. ALL OTHER COMPONENTS, ETC. SAME AS MAGNETIC CONTROLLERS.

ACCESSORIES:

1. PUSH BUTTONS: RECESSED SHROUDED TYPES; MOMENTARY AS INDICATED.
2. PILOT LIGHTS: LED TYPES; COLORS AS INDICATED; PUSH TO TEST.
3. SELECTOR SWITCHES: ROTARY HAND/OFF/AUTO TYPE.

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NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJ/RZ
Project No.:	2201481
Date:	05/25/2023

Issued for:
PERMIT SET

Title:
ELECTRICAL SPECIFICATIONS

Sheet No.
E0.01

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ELECTRICAL SPECIFICATIONS

(NOT ALL SPECIFICATIONS ARE USED IN THIS PHASE OF DESIGN)

26-5119 (16510) - LED INTERIOR LIGHTING

PROVIDE LIGHT FIXTURES OF THE SIZE, TYPE AND RATING INDICATED IN THE LIGHT FIXTURE SCHEDULE – COMPLETE WITH LAMPS, LAMP HOLDERS, REFLECTORS, BALLAST, STARTERS, WIRING AND ACCESSORIES.

INCLUDE THE COST OF PURCHASING FIXTURES, INCLUDING PLASTER FRAMES, MOUNTING BRACKETS AND THE LIKE, AS WELL AS THE COST INVOLVED IN RECEIVING, CHECKING, CLEANING, SAFEGUARDING, WIRING, DISPOSAL OF CRATES FROM THE SITE, ETC., AND ASSEMBLING AND INSTALLATION OF SPECIFIED FIXTURES.

SUPPORT LIGHTING FIXTURES IN ACCORDANCE WITH THE APPLICABLE BUILDING CODES AND THE NATIONAL ELECTRIC CODE. WHERE FIXTURES ARE RECESSED MOUNTED IN CEILING SYSTEM, PROVIDE TRIM AND ACCESSORIES REQUIRED FOR INSTALLATION IN THE SPECIFIED CEILING SYSTEM.

IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS TO INDICATE THE TYPE OF FIXTURE FOR EACH INTENDED USE. IT IS GENERALLY INTENDED THAT ROOMS OF SIMILAR USAGE AND CONFIGURATION WILL HAVE SIMILAR FIXTURE TYPES. WHERE FIXTURE TYPE IS NOT INDICATED, IT IS THE DUTY OF THE CONTRACTOR TO REQUEST CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK.

INSTALL FIXTURES AND LUMINAIRES WITH PROPER FRAMES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

ALL LIGHT FIXTURES SHALL COMPLY WITH CURRENT FEDERAL, STATE AND UTILITY ENERGY EFFICIENCY STANDARD REQUIREMENTS.

BALLASTS FOR FLUORESCENT LIGHT FIXTURES SHALL BE INSTANT START, ELECTRONIC, LESS THAN 20% HARMONIC DISTORTION, CLASS P BALLASTS, EQUIPPED WITH THERMAL, AUTOMATIC RESET PROTECTOR, SOUND RATED "A", HIGH POWER FACTOR TYPE, RATED FOR MINIMUM 95% FULL RATED LUMEN OUTPUT, RATED FOR VOLTAGE OPERATION IN SCHEDULE, AND SHALL CARRY UL LABELS; BALLASTS AND LAMPS SHALL COMPLY WITH LOCAL UTILITY REBATE PROGRAMS.

INSPECT, CLEAN AND SERVICE EXISTING TO REMAIN LIGHT FIXTURES: REPLACE INCANDESCENT LAMPS WITH LED TYPE LAMPS; REPLACE FLUORESCENT OR HID LAMPS IF UTILIZED FOR CONSTRUCTION LIGHTING IMMEDIATELY PRIOR TO FINAL ACCEPTANCE OF PROJECT.

CLEAN AND POLISH EXISTING TO REMAIN LIGHT FIXTURES, EQUIPMENT AND MATERIALS THOROUGHLY, AND RETURN TO "AS NEW" CONDITION.

EXISTING LIGHT FIXTURES THAT ARE TO BE RELOCATED/RENOAVTED SHALL BE CLEANED AND RE-LAMPED SUCH THAT THE ENTIRE CONTRACT AREA IS LAMPED WITH LIKE COLOR AND TYPE BULBS. PROVIDE FLUORESCENT LAMPS WITH 3500K COLOR TEMPERATURE AND 85CRI. INSTALL 2X2 AND 2X4 FLUORESCENT LIGHTING FIXTURES SO THAT LAMPS LINE UP PARALLEL.

LAMPING REQUIREMENTS SHALL MATCH BUILDING STANDARDS, AS REQUIRED.

OCCUPANCY SENSORS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS. SENSORS SHALL BE ADJUSTED TO THE SPACE FOR BEST OPERATION. "OFF" DELAY FOR FLUORESCENT FIXTURES SHALL BE 30-MINUTES MINIMUM AND FOR LED FIXTURES THE "OFF" DELAY SHALL BE 15-MINUTES MINIMUM.

WIRE EMERGENCY LIGHT FIXTURES AND EXIT SIGNS TO LOCAL LIGHTING CIRCUITS, AHEAD OF ANY LOCAL CONTROL OR SWITCHING.

WHERE APPLICABLE, DAY LIGHT HARVESTING WILL BE INCORPORATED IN SPECIFIC SPACES TO TURN ON/OFF/DIM SELECT LIGHT FIXTURES WHEN SUFFICIENT LIGHT LEVELS ARE ATTAINED FROM SUNLIGHT.

ALL EMERGENCY/NIGHT LIGHT FIXTURES & EXIT SIGNS WITHOUT EMERGENCY BATTERY BACKUP SHALL BE WIRED TO A LIVE EMERGENCY 'LIFE SAFETY' PANEL BACKED UP BY AN EMERGENCY GENERATOR. IF EMERGENCY 'LIFE SAFETY' PANEL IS NOT LIVE, THEN EACH EMERGENCY/NIGHT LIGHT SHALL BE WIRED THROUGH A RELAY FROM A NORMAL LIGHTING PANEL SERVING THE AREA & AN EMERGENCY 'LIFE SAFETY' PANEL. RELAYS SHALL BE MOUNTED IN ENCLOSURES ADJACENT TO PANEL & COVERS SHALL BE LABELED WITH NORMAL & EMERGENCY PANELS & CIRCUITS FED FROM.

CONTROLLED EMERGENCY LIGHT FIXTURES SHALL BE WIRED THROUGH AN EMERGENCY BYPASS/SHUNT RELAY WITH 120V OR 277V COIL (VERIFY COIL VOLTAGE WITH EACH APPLICATION) FROM A NORMAL LOCALLY CONTROLLED LIGHTING CIRCUIT & AN EMERGENCY 'LIFE SAFETY' CIRCUIT. RELAY SHALL BE MOUNTED ADJACENT TO EMERGENCY LIGHT FIXTURE. EMERGENCY BYPASS/SHUNT RELAY SHALL BE (FUNCTIONAL DEVICES INC. - RIB #ESR01P FOR 120V OR #ESR02P FOR 277V) OR EQUAL.

EXISTING LIGHT FIXTURES THAT ARE BEING RELOCATED/RENOVATED SHALL BE CLEANED & RE-LAMPED SUCH THAT ENTIRE CONTRACT AREA IS LAMPED WITH LIKE COLOR & TYPE BULBS. PROVIDE FLOURESCENT LOAMPS TO MATCH BUILDING STANDARD FOR WATTAGE, COLOR TEMPERATURE & CRI RATINGS, UNLESS OTHERWISE INDICATED. INSTALL LIGHT FIXTURES SO THAT LAMPS & LENSES LINE UP PARALLEL.

LIGHT LEVELS IN ALL SPACES SHALL MEET IESNA STANDARDS AND CONSIDER THE FOLLOWING FOOT-CANDLE (FC) VALUES (AT WORK SURFACES) IN THE DESIGN:

- SPECIALTY ROOM – 50 FC
- LUNCH/BREAK ROOM AREAS – 30 FC
- MECHANICAL/ELECTRICAL ROOMS – 30 FC
- RESTROOMS AND STORAGE ROOMS – 15 FC
- ENTRY VESTIBULE AND CORRIDORS – 15 FC
- OPEN SPACE AND CONFERENCE ROOMS – 30 FC
- OFFICES – 50 FC
- TELECOMMUNICATION ROOM – 50 FC
- CLASSROOMS – 50 FC

26-0923 (16140) - LIGHTING CONTROL DEVICES

A. SWITCHES, TIME CLOCKS, AND PHOTOCELLS

MANUAL SWITCHES SHALL BE TOGGLE TYPE. 120-277 VOLT AC, RATED 20 AMPERES. SPECIFICATION GRADE, QUIET TYPE WITH SILENT OPERATING MECHANISM, TOTALLY ENCLOSED IN A MOLDED COMPOSITION BASE.

1. MANUFACTURER/SERIES SHALL BE HUBBELL "1221" OR APPROVED EQUAL.
2. PROVIDE WITH INTERNAL OCCUPANCY SENSOR WHERE INDICATED.
3. SWITCHES SHALL BE WHITE TO MATCH EXISTING BUILDING DEVICES OR AS DIRECTED BY OWNER/ARCHITECT.

ELECTRONIC TIME SWITCHES: SOLID-STATE, PROGRAMMABLE, WITH ALPHANUMERIC DISPLAY COMPLYING WITH UL 917. EIGHT ON/OFF SET POINTS ON A 24-HOUR SCHEDULE.

OUTDOOR PHOTOELECTRIC SWITCHES: SOLID-STATE, WITH SPST DRY CONTACTS TO OPERATE CONNECTED RELAY, CONTACTOR COILS, OR MICROPOCESSOR INPUT COMPLYING WITH UL 773A AND COMPATIBLE WITH BALLASTS AND LED LAMPS. LIGHT-LEVEL MONITORING RANGE: 1.5 TO 10 FC (16.14 TO 108 LUX), WITH AN ADJUSTMENT FOR TURN-ON AND TURN-OFF LEVELS WITHIN THAT RANGE, AND A DIRECTIONAL LENS IN FRONT OF THE PHOTOCELL TO PREVENT FIXED LIGHT SOURCES FROM CAUSING TURN-OFF. TIME DELAY: FIFTEEN-SECOND MINIMUM, TO PREVENT FALSE OPERATION. PROVIDE MOUNTING ACCESSORIES AS REQUIRED TO DIRECT SENSOR TO THE NORTH SKY EXPOSURE. FAILURE MODE: LUMINAIRE STAY ON.

B. OCCUPANCY SENSORS AND VACANCY SENSORS

COORDINATE WITH THE OWNER WHICH TYPE OF AUTOMATIC CONTROL IS DESIRED WITHIN EACH TYPE OF SPACE: OCCUPANCY OR VACANCY SENSOR. OCCUPANCY SENSOR WILL TURN LIGHTS ON WHEN COVERAGE AREA IS OCCUPIED AND TURN THEM OFF WHEN UNOCCUPIED, WITH A TIME DELAY FOR TURNING LIGHTS OFF; AND WITH A VACANCY SENSOR THE LIGHTS ARE MANUALLY TURNED ON AND SENSOR TURNS THEM OFF WHEN THE ROOM IS UNOCCUPIED, WITH A TIME DELAY FOR TURNING THEM OFF.

PROVIDE WATTSTOPPER, SENSOR SWITCH, HUBBELL, LEVITON, OR APPROVED EQUAL SENSORS. SENSORS SHALL BE COMBINATION INFRARED AND ULTRASONIC TYPE; PROVIDE CEILING MOUNTED UNITS AND INTEGRATE WITH WALL SWITCH AS INDICATED. REFER TO WIRING DIAGRAMS.

CONTRACTOR'S WORK SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, APPLIANCES CONTROL HARDWARE, SENSORS, WIRE, JUNCTION BOXES AND EQUIPMENT NECESSARY FOR A COMPLETELY OPERATIONAL SENSOR CONTROL SYSTEM, AS DIRECTED HEREIN.

ALL SENSORS SHALL BE EITHER SELF-CONTAINED OR INSTALLED AS PART OF OTHER SPECIFIED SYSTEMS OF THE ULTRASONIC/INFRARED TYPE PROVIDING VOLUMETRIC COVERAGE WITH THE DETECTION AREA. SENSORS SHALL BE SOLID STATE DESIGN AND DESIGN FOR ENERGY CONSERVATION.

ALL REQUIRED POWER PACKS ARE TO BE PROVIDED WITH TRANSFORMERS AND RELAYS.

SENSORS LOCATED IN ADJACENT ROOMS OR SPACES OR CONTROLLING DIFFERENT LIGHT FIXTURES (NOT INTENDED TO BE PART OF THE SAME ZONE) SHALL OPERATE AT DIFFERENT FREQUENCIES TO PREVENT "CROSS-TALK" BETWEEN SENSORS.

SENSORS SHALL BE ABLE TO BE WIRED IN PARALLEL TO ALLOW COVERAGE OF LARGE AREAS.

ALL SENSORS SHALL BE SET AT FULL SENSITIVITY AND MAXIMUM FOOT CANDLES. COVERAGE SHALL REMAIN CONSTANT AFTER SENSITIVITY CONTROL HAS BEEN SET. SENSORS SHALL BE ADJUSTED TO THE SPACE FOR BEST OPERATION. "OFF" DELAY FOR FIXTURES SHALL BE 15-MINUTES MINIMUM OR AS DIRECTED BY THE OWNER.

BEFORE THE TENANT MOVE-IN DATE AND TURNOVER OF THE PROJECT, THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE SENSOR TECHNICAL REPRESENTATIVE TO FIELD ADJUST SENSOR SENSITIVITY AND LOCATION TO ENCOMPASS ENTIRE ROOM OR AREA WITHOUT NUISANCE TRIPPING FROM ADJACENT AREAS.

SENSORS SHALL BE LOCATED AT LEAST 4'-0" FROM HVAC DIFFUSERS. NO REDUCTION IN COVERAGE SHALL OCCUR WHEN AIR-CONDITIONING IS IN OPERATION.

C. DAYLIGHT-HARVESTING DIMMING CONTROLS

SENSING DAYLIGHT AND ELECTRICAL LIGHTING LEVELS, THE SYSTEM ADJUSTS THE INDOOR ELECTRICAL LIGHTING LEVELS. AS DAYLIGHT INCREASES, THE LIGHTS ARE DIMMED. LIGHT CONTROL SET POINT IS BASED UPON TWO LIGHTING CONDITIONS: WHEN NO DAYLIGHT IS PRESENT (TARGET LEVEL); AND WHEN SIGNIFICANT DAYLIGHT IS PRESENT. SYSTEM PROGRAMMING SHALL BE DONE WITH TWO HAND-HELD REMOTE CONTROL TOOLS: INITIAL SETUP TOOL, AND A TOOL FOR OCCUPANTS TO ADJUST THE TARGET LEVELS BY INCREASING THE SET POINT UP TO 25 PERCENT, OR MINIMIZING THE ELECTRIC LIGHTING LEVELS. CEILING-MONTED DIMMING CONTROLS: SOLID-STATE, LIGHT-LEVEL SENSOR UNIT, WITH INTEGRATED AND/OR SEPARATE POWER PACKS(S) TO DETECT CHANGES IN INDOOR LIGHTING LEVELS THAT ARE PRECEIVED BY THE EYE.

D. COVER PLATES

PROVIDE 302/304 SATIN SMOOTH, STAINLESS STEEL FOR INTERIOR AND GASKETED CAST METAL WITH HINGED GASKETED "IN USE" DEVICE COVERS FOR EXTERIOR. A COMMON PLATE SHALL COVER ALL DEVICES WHICH ARE INDICATED AT THE SAME LOCATION.

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PERMIT SET

Title:
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Sheet No.
E0.02

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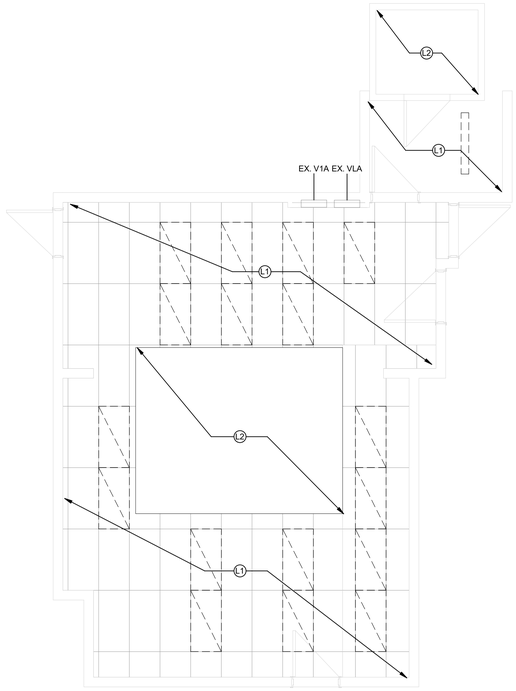


2 OVERALL LIGHTING DEMO PLAN
1/4" = 1'-0"

DEMOLITION LIGHTING PLAN KEY NOTES:

(NOT ALL KEY NOTES ARE INDICATED ON FLOOR PLAN)

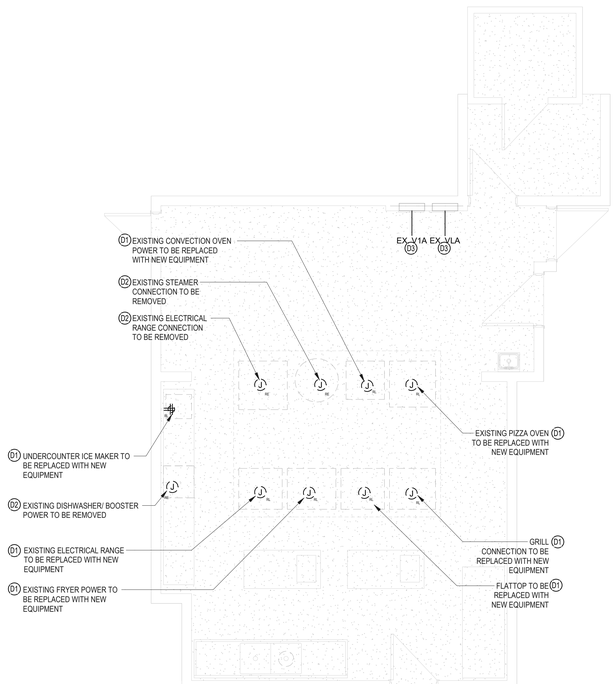
L1 UNLESS OTHERWISE NOTED, DISCONNECT AND REMOVE ALL EXISTING LIGHTING FIXTURES, EXIT SIGNS, LIGHTING CONTROL DEVICES, CONDUIT, AND WIRING SHOWN WITHIN AREA.

L2 EXISTING LIGHTING, CONTROLS AND WIRING TO REMAIN. CONTRACTOR SHALL CLEAN LENSES/HOUSING AND RE-LAMP WITH NEW BULB TO MATCH EXISTING COLOR TEMPERATURE.

ELECTRICAL DEMOLITION GENERAL NOTES:

(NOT ALL NOTES MAY APPLY TO THIS DRAWING)

1. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENT OF BUILDING DEMOLITION WORK. REFER TO REFLECTED CEILING PLAN FOR EXTENT OF CEILING REMOVALS AND REPLACEMENTS. REFER TO ARCHITECTURAL ELEVATIONS AND SECTIONS FOR EXTENT OF WALL RENOVATIONS, PATCHING AND FINISHES.
2. ELECTRICAL CONTRACTOR SHALL REMOVE ALL EXISTING ELECTRICAL DEVICES LOCATED WITH IN THE NEW TENANT SPACE. REMOVAL OF ALL DEVICES SHALL INCLUDE BUT NOT BE LIMITED TO ALL ELECTRICAL EQUIPMENT, CONDUIT, WIRING, ELECTRICAL PANELBOARDS, TRANSFORMERS, DISCONNECT SWITCHES, JUNCTION BOXES, RECEPTACLES, FIRE ALARM DEVICES, LIGHT FIXTURES, EXIT SIGNS, LIGHT SWITCHES, LIGHTING CONTROLS, ETC. CONDUIT WIRING SHALL BE REMOVED BACK TO SOURCE OF SUPPLY.
3. PRIOR TO BIDDING, ELECTRICAL CONTRACTOR SHALL FIELD VERIFY SCOPE OF DEMOLITION WORK WITH BUILDING OWNER. PROVIDE LABOR AND EQUIPMENT TO COMPLETE WORK AS REQUIRED AND INSPECT PROJECT SITE TO DETERMINE CONDITIONS UNDER WHICH DEMOLITION IS TO BE ACCOMPLISHED ALONG WITH KIND AND AMOUNT OF MATERIALS BEING REMOVED. INCLUDE COST OF WORK REQUIRED TO ACCOMMODATE ALL EXISTING CONDITIONS IN THE BID PROPOSAL.
4. THE OWNER IS RESPONSIBLE FOR REMOVAL OR ABATEMENT OF ANY/ALL ASBESTOS-LADEN OR HAZARDOUS MATERIALS PRIOR TO THE CONTRACTOR COMMENCING WITH WORK. HOWEVER, IF THE CONTRACTOR SHOULD NOTICE OR ENCOUNTER ANY MATERIALS WHICH ARE SUSPECT TO BE LADEN WITH ASBESTOS OR HAZARDOUS, WORK SHALL CEASE AT ONCE. FINDINGS SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY AND WAIT FOR FURTHER INSTRUCTIONS BEFORE STARTING/RESTARTING ANY WORK IN PROJECT AREA.
5. REMOVE ALL JUNCTION BOXES, BACK BOXES, COVER PLATES, WIRING, AND CONDUIT IN ITS ENTIRETY BACK TO SOURCE (NO ABANDONED MATERIAL SHALL REMAIN) OR NEXT EXISTING TO REMAIN DEVICE, ASSOCIATED WITH ALL ELECTRICAL, COMMUNICATION, FIRE ALARM DEVICES, AND LIGHTING REMOVED DURING DEMOLITION, UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
6. REMOVE ALL ELECTRICAL CONTROLS, DISCONNECT SWITCHES, JUNCTION/BACK BOXES, WIRING, AND CONDUIT ASSOCIATED WITH MECHANICAL/PLUMBING EQUIPMENT BEING REMOVED IN THIS PROJECT. (SEE MECHANICAL DEMOLITION CONTRACT DOCUMENTS ON THIS DRAWING).
7. ALL SALVAGEABLE EQUIPMENT REMOVED SHALL BECOME PROPERTY OF OWNER AND SHALL BE STORED ON SITE AS DIRECTED. ALL NON-SALVAGEABLE MATERIALS SHALL BE REMOVED IN ITS ENTIRETY FROM SITE AND DISPOSED OF BY ELECTRICAL CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LAWS.
8. TEMPORARILY RELOCATE ELECTRICAL EQUIPMENT AS REQUIRED TO ACCOMMODATE THE CONSTRUCTION SCHEDULE. ALL AREAS NOT UNDER CONSTRUCTION MUST BE KEPT OPERATIONAL DURING CONSTRUCTION. TO ACCOMPLISH THIS, PROVIDE THE NECESSARY TEMPORARY ELECTRICAL SERVICES. REMOVE TEMPORARY DEVICES UPON COMPLETION OF CONSTRUCTION.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY POWER AND LIGHTING AS REQUIRED DURING THE ENTIRE DURATION OF CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY POWER AND LIGHTING UPON COMPLETION OF THE PROJECT.
10. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY CIRCUITS PASSING THRU PROJECT AREA WHICH FEED ELECTRICAL DEVICES, LIGHTING, LIGHTING DEVICES, DATA DEVICES OR FIRE ALARM DEVICES OUTSIDE OF PROJECT SCOPE. ANY/ALL OF THESE CIRCUITS AFFECTED BY THE ELIMINATION OF CONDUIT, WIRE, CABLING OR JUNCTION BOXES SHALL BE REROUTED & REFED AS REQUIRED TO MAINTAIN CIRCUIT CONTINUITY.
11. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH WALLS, OPENINGS SHALL BE PATCHED, SEALED, AND PAINTED TO MATCH THE SURROUNDING WALL. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH FLOOR, OPENINGS SHALL BE PATCHED AND SEALED TO MATCH SURROUNDING FLOOR. CONSULT ARCHITECT ON LOCATIONS AND MATERIALS REQUIRED.
12. ELECTRICAL CONTRACTOR SHALL SEAL ALL ELECTRICAL PENETRATIONS THROUGH FIRE RATED PARTITIONS, INCLUDING THOSE LEFT DUE TO REMOVAL OF DEVICES OR CONDUIT DURING DEMOLITION, WITH FIRE RATED MATERIAL EQUAL TO DOW CORNING SILICONE RTV FOAM AS A MINIMUM. MATERIAL SELECTION SHALL BE BASED ON RATING OF PARTITION PENETRATED.
13. FURNISH AND INSTALL KNOCKOUT COVERS OR PLUGS ON ALL EXISTING PANELS, EQUIPMENT, AND OUTLET BOX OPENINGS CREATED BY REMOVAL OR RELOCATION OF EXISTING RACEWAYS.
14. ELECTRICAL CONTRACTOR SHALL COORDINATE INSTALLATION OF THE NEW FIRE ALARM DEVICES WITH REMOVAL OF THE EXISTING FIRE ALARM DEVICES. PROVIDE A FIRE WATCH FOR ANY TIME THE FIRE ALARM SYSTEM IS NONFUNCTIONAL OR WHEN BUILDING IS UNPROTECTED.
15. EXTEND/REROUTE WIRING AND CONDUIT, AS REQUIRED, TO ALL ELECTRICAL DEVICES, TELECOMMUNICATION, AND FIRE ALARM DEVICES, RELOCATED DURING DEMOLITION UNLESS SPECIFICALLY NOTED OTHERWISE.
16. COORDINATE POWER SHUTDOWN REQUIREMENTS WITH OWNER A MINIMUM OF 2 DAYS IN ADVANCE OF PLANNED SHUTDOWN. DO NOT PROCEED WITH SHUTDOWN WITHOUT WRITTEN AUTHORIZATION TO PROCEED.
17. COORDINATE REMOVAL OF EXISTING LIGHT FIXTURES WITH BUILDING OWNER. DO TO NATURE OF THIS PROJECT PRIOR TO BIDDING CONTRACTOR SHALL CONSULT WITH LANDLORD TO DETERMINE THE SCOPE OF DEMOLITION WORK.
18. DISCONNECT AND REMOVE ALL BALLASTS FROM LIGHT FIXTURES THAT DO NOT HAVE LABELS STATING "BALLAST DOES NOT CONTAIN PCBs" OR SIMILAR LABEL (BALLAST MAY CONTAIN PCBs). PLACE PCB BALLASTS IN D.O.T. APPROVED CONTAINERS. PROPERLY DISPOSE OF CONTAINERS WITH A FEDERALLY APPROVED DISPOSAL CONTRACTOR. DISPOSAL SHALL INVOLVE SEGREGATION OF COMPONENTS FOR RECYCLING AND INCINERATION OF PCB CONTENTS. ALL DISPOSAL DOCUMENTATION SHALL BE PROVIDED TO THE OWNER UPON COMPLETION OF PROJECT. CONTRACTOR SHALL MAINTAIN AN OWNER APPROVED LOG SHEET FOR EACH DRUM.
19. REMOVE ALL MERCURY-CONTAINING LAMPS, DO NOT BREAK OR CRUSH. RETAIN SERVICES OF A STATE APPROVED LAMP RECYCLING FACILITY ABLE TO ACCEPT WASTE D009. COORDINATE PACKAGING REQUIRED AND PACKAGE, SECURE, AND DELIVER LAMPS AS REQUIRED BY THE SELECTED RECYCLING FACILITY TO INSURE MINIMUM LAMP BREAKAGE. MINIMUM OF 95% OF LAMP MATERIAL MUST BE SHIPPED INTACT. CONTRACTOR MUST COMPLY WITH ALL REPORTING AND PAPERWORK REQUIREMENTS OF STATE LAWS REGARDING THE HANDLING, TRANSPORTATION, AND DISPOSITION OF HAZARDOUS WASTE. INCLUDING BUT NOT LIMITED TO FILING THE REQUIRED PAPERWORK AND MANIFEST WITH THE STATE AND OWNERS AS REQUIRED BY LAW. ALL DISPOSAL DOCUMENTATION SHALL BE PROVIDED TO THE OWNER UPON COMPLETION OF THE PROJECT.
20. EXTEND/REROUTE WIRING AND CONDUIT, AS REQUIRED, TO ALL LIGHTING DEVICES RELOCATED DURING DEMOLITION UNLESS SPECIFICALLY NOTED OTHERWISE.



1 OVERALL POWER DEMO PLAN
1/4" = 1'-0"

DEMOLITION POWER KEY NOTES:

D1 EXISTING COOKING EQUIPMENT IS BEING REPLACED WITH NEW. EXISTING POWER DEVICES FEEDING EXISTING EQUIPMENT SHALL BE RELOCATED TO MAINTAIN BRANCH CIRCUIT CONTINUITY TO NEW COOKING EQUIPMENT LOCATION IF APPLICABLE. ALTER EXTEND FEEDER/ CONDUIT AS NEEDED TO NEW LOCATION. COORDINATE EXACT POWER REQUIRMENTS IN FIELD. WITH ELECTRICAL CHARATERISTICS ON NAMEPLATE OF COOKING EQUIPMENT WHICH WILL BE SUPPLIED BY CLIENT. IF NEW ELECTRICAL EQUIPMENT EXCEEDS EXISTING BRANCH CIRCUIT AMPACITY, CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONDUIT, WIRE AND OVERCURRENT PROTECTION PER EQUIPMENT MANUFACTURER RECOMMENDATIONS. PROPOSED NEW LOCATION IS SHOWN ON THE OVERALL ELECTRICAL POWER PLAN. COORDINATE EXACT LOCATION WITH CLIENT REPRESENTATIVE PRIOR TO ROUGH IN. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH WALLS, OPENINGS SHALL BE PATCHED, SEALED, AND PAINTED TO MATCH THE SURROUNDING WALL. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH FLOOR, OPENINGS SHALL BE PATCHED AND SEALED TO MATCH SURROUNDING FLOOR. CONSULT ARCHITECT ON LOCATIONS AND MATERIALS REQUIRED. PROVIDE ALL MATERIALS AND EQUIPMENT FOR A COMPLETE INSTALLATION PER GOVERNING CODE AND EQUIPMENT MANUFACTURE INSTALLATION RECOMMENDATIONS.

D2 EXISTING POWER DEVICES SHALL BE REMOVED IN ITS ENTIREITY. REMOVE WIRE, CONDUIT AND EQUIPMENT BACK TO SOURCE. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH WALLS, OPENINGS SHALL BE PATCHED, SEALED, AND PAINTED TO MATCH THE SURROUNDING WALL. WHERE REMOVAL OR RELOCATION OF EXISTING CONDUIT PASSES THROUGH FLOOR, OPENINGS SHALL BE PATCHED AND SEALED TO MATCH SURROUNDING FLOOR. CONSULT ARCHITECT ON LOCATIONS AND MATERIALS REQUIRED. COORDINATE EXACT POWER DEVICES TO BE REMOVED WITH CLIENT REPRESENATIVE PRIOR TO START OF DEMO.

D3 EXISTING ELECTRICAL PANEL EXISTING TO REMAIN.

D4 EXISTING POWER DEVICES FEEDING COOKING EQUIPMENT ARE EXISTING TO REMAIN.

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Reviewed:	JJRZ
Project No.:	2201481
Date:	05/25/2023

Issued for:
PERMIT SET

Title:
OVERALL FIRST FLOOR DEMO PLAN

Sheet No.
ED1.01

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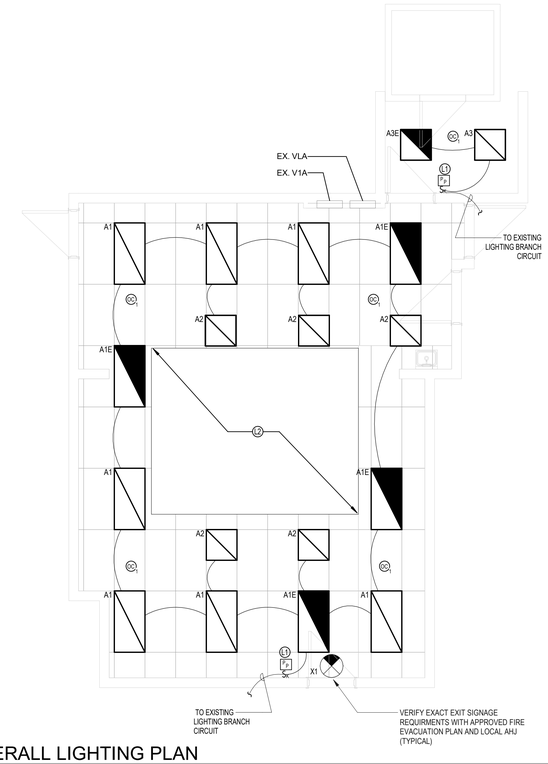
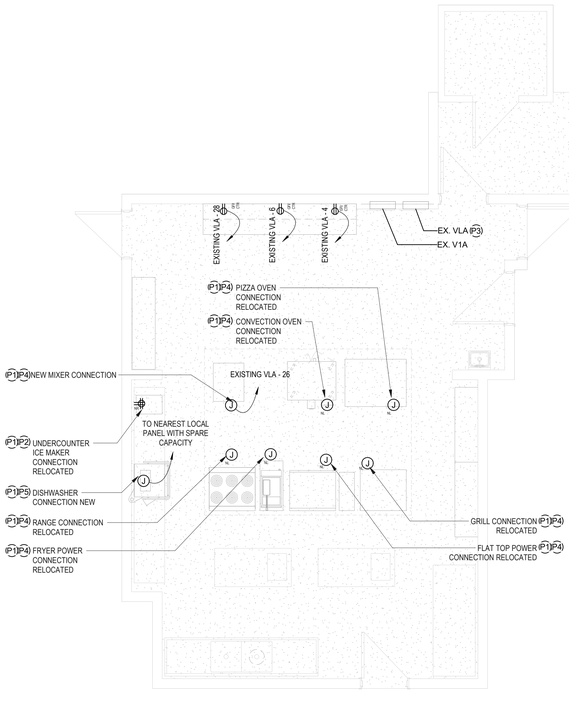


2 OVERALL LIGHTING PLAN
1/4" = 1'-0"



1 OVERALL POWER PLAN
1/4" = 1'-0"

LIGHTING PLAN KEY NOTES:

(NOT ALL KEY NOTES ARE INDICATED ON FLOOR PLAN)

L1 SPACES WITH CEILING MOUNTED OCCUPANCY SENSOR CONTROL (CLASSROOMS – IECC 2021 CV405.2.1):
- PROVIDE CEILING MOUNTED OCCUPANCY SENSOR WITH DUAL TECHNOLOGY SENSING. SENSOR SHALL BE SET UP AUTOMATIC CONTROL FOR ON OPERATION AND AUTOMATIC CONTROL FOR OFF OPERATION, AFTER NO OCCUPANCY IS DETECTED FOR 20 MINUTES. QUANTITY AND PLACEMENT TO BE DETERMINED BY MANUFACTURER BASED ON ACTUAL DEVICES UTILIZED.
- PROVIDE KEY WALL SWITCH AT ENTRY DOOR. SWITCH SHALL PROVIDE CODE REQUIRED ON/OFF CONTROL (IECC 2021 C405.2.1.1(3)).
- EMERGENCY FIXTURES (DESIGNATED WITH AN EM SUBSCRIPT), CONTROLLED WITH NORMAL LIGHTING AND ARE NOT INTENDED TO BE ON 24/7.
- FOR EMERGENCY FIXTURES INTENDED TO BE ON 24/7 (DESIGNATED WITH AN EM/NL SUBSCRIPT), FIXTURES SHALL BYPASS ANY LOCAL LIGHTING CONTROLS.
- CONNECT LIGHT FIXTURE CONTROLS AND SWITCH TO LINE VOLTAGE .
- REFER TO DETAILS #3 & #6 ON E4.07 FOR ADDITIONAL REQUIREMENTS.

L2 EXISTING LIGHTING TO REMAIN. CONTRACTOR SHALL CLEAN LENSES/HOUSING, RE- BALLAST AND RE-LAMP WITH NEW BULB TO MATCH EXISTING COLOR TEMPERATURE. AFTER COMPLETION OF WORK CONTRACTOR SHALL TEST EXISTING LIGHTING TO MAKE SURE IT IS IN PROPER WORKING CONDITION.

LIGHTING PLAN GENERAL NOTES:

(NOT ALL NOTES ARE INDICATED ON FLOOR PLAN)

1. ALL INSTALLATIONS SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AS WELL AS ALL APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL EQUIPMENT AND DEVICES SHALL BE SUITABLE FOR ITS APPLICATION PER THE LISTING INSTRUCTION OF A NATIONALLY RECOGNIZED AND APPROVED TESTING LABORATORY.
3. CONTRACTOR SHALL PROVIDE HOMERUNS FOR ALL NORMAL & EMERGENCY LIGHTING BRANCH CIRCUITS. HOMERUNS FOR 120V OR 277V, 20A, 1P BRANCH CIRCUITS SHALL BE 2-#12 & 1-#12 GND IN 3/4"C MINIMUM, AND HOMERUNS FOR 208V OR 480V, 20A, 2P BRANCH CIRCUITS SHALL BE 2-#10 & 1-#10 GND IN 3/4"C MINIMUM.
4. ACCESS TO AND CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL CONFORM TO N.E.C. ARTICLES 110. CONSULT ENGINEER WHERE SPACE APPEARS INADEQUATE DUE TO ARCHITECTURAL CHANGES, EQUIPMENT LAYOUT CHANGES, OR FIELD CONDITIONS. DO NOT COVER, OBSCURE OR BLOCK ACCESS TO EQUIPMENT, DATA PLATES, ACCESS PANELS OR MAINTENANCE AREAS WITH THE ELECTRICAL WORK.
5. THIS DRAWING SHOWS EQUIPMENT LOCATIONS ONLY. WIRING SHOWN IS SCHEMATIC IN NATURE. REFER TO RISERS & DETAILS FOR ALL REQUIRED POWER & CONTROL WIRING. COORDINATE CONDUIT ROUTE IN FIELD WITH OTHER TRADES, EQUIPMENT & OWNER. VERIFY ALL MOUNTING HEIGHTS WITH OWNER & ARCHITECT PRIOR TO INSTALLATION.
6. MINIMUM CONTROL WIRING SHALL BE 3/4"C., 2#14. SEE GENERAL NOTE #16 ON DWG. E0.01
7. CONTRACTOR SHALL COORDINATE WITH MECHANICAL PLANS FOR FINAL LOCATION OF ALL DEVICES MOUNTED ON OR IN THE VICINITY OF THE MECHANICAL WORK.
8. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL DEVICES WITH OWNER PRIOR TO INSTALLATION.
9. CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENTS OF ALL OWNER PROVIDED EQUIPMENT WITH ACTUAL EQUIP. PRIOR TO INSTALLATION.
10. CONTRACTOR SHALL COORDINATE LUMINAIRE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
11. ALL OCCUPANCY SENSORS REQUIRE POWER PACKS. ONLY ONE POWER PACK IS USED WHEN SENSORS ARE LINKED.
12. LIGHT FIXTURES SHOWN FULL SHADED SHALL BE UNSWITCHED AND SHALL SERVE AS NIGHT LIGHT.
13. ALL LIGHTING CONTROLS SHALL BE PROVIDED BY A SINGLE MANUFACTURER AND ALL CONTROLS SHALL BE COMPATIBLE WITH THE LIGHTING FIXTURES PROVIDED.
14. CONTRACTOR SHALL COORDINATE WITH LIGHTING CONTROL MANUFACTURER TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM. ALL REQUIRED, POWER PACKS, INTERCONNECTION WIRING, AND RELATED COMPONENTS. SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
15. CONTRACTOR SHALL COORDINATE DIMMING PROTOCOL (BASIS OF DESIGN: 0-10V) OF LIGHTING FIXTURES PROVIDED TO ENSURE COMPATIBILITY.
16. MANUFACTURER WILL ENSURE THAT THEIR BEST SENSING PROTOCOL (ULTRASONIC, INFRARED, MICROWAVE, ETC.) AND EITHER SINGLE OR DUAL TECHNOLOGY DEVICES ARE PROVIDED FOR EACH SPACE TYPE.
17. CONTRACTOR SHALL HAVE THEIR MANUFACTURER PROVIDE SHOP DRAWINGS WITH DETAILED INFORMATION SHOWING ALL REQUIRED LIGHTING CONTROL COMPONENTS AND INTERCONNECTIONS NECESSARY FOR THEIR SYSTEM TO FUNCTION AS DESCRIBED IN THE DRAWINGS AND LIGHTING CONTROL MATRIX ON LIGHTING CONTROL DETAIL SHEET. THESE DRAWINGS WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AND ANY REQUIRED CHANGES WILL BE CORRECT AT NO ADDITIONAL COST TO THE OWNER.
18. WALL SWITCH QUANTITY AND LOCATIONS HAVE BEEN NOTED ON THE LIGHTING PLANS. REFER TO LIGHTING CONTROLS SYMBOLS LEGEND FOR EACH TYPE OF SWITCH REQUIRED (DIMMING, KEYED, THREE-WAY, FOUR-WAY, OCCUPANCY SENSING, ETC.).
19. CONTRACTOR SHALL CLEARLY LABEL ALL ELECTRICAL EQUIPMENT & DEVICES WITH ASSOCIATED PANEL NAME & CIRCUIT BREAKER.

POWER PLAN KEY NOTES:

(NOT ALL KEY NOTES ARE INDICATED ON FLOOR PLAN)

P1 PROVIDE AND INSTALL ELECTRICAL DEVICES AND CONNECTIONS PER MANUFACTURER EQUIPMENT RECOMMENDATIONS. CONTRACTOR SHALL COORDINATE EXACT ELECTRICAL REQUIREMENTS OF ALL OWNER PROVIDED EQUIPMENT WITH ACTUAL EQUIPMENT TO BE INSTALLED PRIOR TO ROUGH IN. PROVIDE ALL MATERIALS REQUIRED FOR A COMPLETE INSTALLATION.

P2 PROVIDE A CLASS A GFCI BREAKER.

P3 EXISTING ELECTRICAL PANEL. DURING EXISTING CONDITIONS FIELD VISIT IT WAS DISCOVERED THAT THE EXISTING PANEL IS MISSING LABELS AND EXACT PANEL CHARACTERISTICS COULD NOT BE VERIFIED. CONTRACTOR SHALL INSPECT AND PROVIDE NEW LABELS WITH CORRECT VOLTAGE, AMP RAITING AND SOURCE PANEL BASED ON EXISTING PANEL FEEDER SIZE AND ORIGINAL POWER SOURCE OVECURRENT PROTECTION DEVICE RATING. NOTIFY ENGINEER OF RECORD IF DISCREPANCIES BETWEEN THE DESIGN AND FIELD CONDITIONS PRESENT THEMSELF PRIOR TO COMMENCING WORK. EXISTING BRANCH CIRCUITS ON PANELS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED. EXISTING BRANCH CIRCUITS IN PANEL SHOULD BE TRACED OUT AND A NEW WRITTEN TYPE DIRECTORY SHOULD BE PROVIDED. CONTRACTOR TO PROVIDE PANEL CONNECTED LOAD SUMMARY BASED ON EXISTING CONDITIONS. IF PANEL IS DEEMED TOO SMALL FOR ADDITIONAL LOAD THAN NEW LOADS SHALL BE ROUTED TO NEAREST LOCAL PANEL WITH SPARE CAPACITY. ACCESS TO & CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL CONFORM TO N.E.C. ARTICLE 110.

P4 ELECTRICAL CONTRACTOR TO ENSURE COMPLIANCE TO NEC 210-8 AND SHALL PROVIDE AND INSTALL GFCI PROTECTION WHERE NEEDED.

P5 DISHWASHER/BOOSTER SHALL BE ROUTED TO NEAREST LOCAL PANEL WITH SPARE CAPACITY. PROVIDE A CLASS A GFCI BREAKER AT LOCAL PANEL. BASIS OF DESIGN IS HOBART AM16VLT-BASX-2. PROVIDE AND INSTALL A NEW 208V, 3PH, 60A CIRCUIT BREAKER WITH ASSOCIATED WIRING. COORDINATE EXACT ELECTRICAL REQUIREMENTS WITH FINAL EQUIPMENT SELECTION AND INSTALL PER MANUFACTURER RECOMMENDATIONS. EXISTING CONDITIONS AND EQUIPMENT CHARACTERISTICS CANNOT BE VERIFIED BASED ON THE INFORMATION PROVIDED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING EXISTING ELECTRICAL EQUIPMENT AND DEVICES PRIOR TO ROUGH IN AND NOTIFY ENGINEER OF RECORD IF DISCREPANCIES BETWEEN THE DESIGN AND FIELD CONDITIONS PRESENT THEMSELVES PRIOR TO COMMENCING WORK.

POWER PLAN GENERAL NOTES:

(NOT ALL NOTES ARE INDICATED ON FLOOR PLAN)

1. ALL INSTALLATIONS SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AS WELL AS ALL APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL EQUIPMENT AND DEVICES SHALL BE SUITABLE FOR ITS APPLICATION PER THE LISTING INSTRUCTION OF A NATIONALLY RECOGNIZED AND APPROVED TESTING LABORATORY.
3. ACCESS TO & CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL CONFORM TO N.E.C. ARTICLE 110. CONTRACTOR SHALL CONSULT ENGINEER WHERE SPACE APPEARS INADEQUATE DUE TO ARCHITECTURAL CHANGES, EQUIPMENT LAYOUT CHANGES, OR FIELD CONDITIONS. DO NOT COVER, OBSCURE OR BLOCK ACCESS TO EQUIPMENT, DATA PLATES, ACCESS PANELS OR MAINTENANCE AREAS WITH THE ELECTRICAL WORK.
4. THIS DRAWING SHOWS EQUIPMENT LOCATIONS ONLY. WIRING SHOWN IS SCHEMATIC IN NATURE. REFER TO RISERS, & DETAILS FOR ALL REQUIRED POWER & CONTROL WIRING. COORDINATE CONDUIT ROUTE IN FIELD WITH OTHER TRADES, EQUIPMENT & OWNER. VERIFY ALL MOUNTING HEIGHTS WITH OWNER & ARCHITECT PRIOR TO INSTALLATION.
5. UNLESS NOTED OTHERWISE, ALL HOMERUNS SHOWN ARE 2-#12 & 1-#12GND IN 3/4"C. TO 20A-1P C/B IN PANEL LISTED.
6. UNLESS NOTED OTHERWISE, ALL POWER WIRING OF CIRCUIT SHALL MATCH HOMERUN WIRING OF CIRCUIT. MINIMUM POWER WIRING SHALL BE 2-#12 & 1-#12GND IN 3/4"C.. MINIMUM CONTROL WIRING SHALL BE 3/4"C., 2#14.
7. CONTRACTOR SHALL COORDINATE WITH MECHANICAL PLANS FOR FINAL LOCATION OF ALL DEVICES MOUNTED ON OR IN THE VICINITY OF THE MECHANICAL WORK.
8. ALL OUTLETS LOCATED WITHIN SIX (6) FEET OF A SINK OR A WATER SOURCE SHALL BE GROUND FAULT PROTECTED.
9. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL DEVICES WITH OWNER PRIOR TO INSTALLATION.
10. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING. ALL FIRE RATED PARTITIONS, BUILDING EXPANSION JOINTS AND MOUNTING HEIGHTS OF EQUIPMENT.
11. CONTRACTOR SHALL REFER TO THE HVAC DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING, MECHANICAL EQUIPMENT, CONTROL PANELS, MOTORS, AUTOMATIC TEMPERATURE CONTROL SYSTEM PANELS AND DEVICES, DUCT MOUNTED SMOKE DETECTORS, MOTORIZED DAMPERS AND CONTROL VALVES.
12. CONTRACTOR SHALL REFER TO THE PLUMBING DRAWINGS FOR THE LOCATIONS OF ELECTRIC WATER HEATERS AND ELECTRIC FLUSH VALVES.
13. CONTRACTOR SHALL REFER TO THE FIRE PROTECTION/SPRINKLER DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING, WATER FLOW AND TAMPER SWITCHES, PRE-ACTION AND/OR DELUGE SYSTEM CONTROL PANELS. COORDINATE FINAL LOCATIONS OF ALL FIRE PROTECTION EQUIPMENT DEVICES WITH FIRE PROTECTION SHOP DRAWINGS AND FIRE PROTECTION SYSTEM INSTALLER.
14. CONTRACTOR SHALL REFER TO THE APPROPRIATE VENDORS APPROVED DIMENSIONED LAYOUT DRAWINGS FOR THE LOCATIONS OF THE FOLLOWING. CONDUIT CONNECTIONS TO FURNITURE AND PREFABRICATED MILLWORK, ELEVATOR AND ESCALATOR RELATED POWER, LIGHTING AND EMPTY CONDUIT PROVISIONS, POWER AND CONTROL WIRING FOR ELECTRICALLY OPERATED DOORS.
15. CONTRACTOR SHALL COORDINATE WITH SITE SPECIFIC LOCAL REQUIREMENTS FOR SEISMIC BRACING OF ELECTRICAL EQUIPMENT AND CONDUITS.
16. CONTRACTOR SHALL COORDINATE SITE SPECIFIC CIVIL REQUIREMENTS FOR ANY CIVIL SPECIFIED EQUIPMENT THAT MAY REQUIRE ELECTRICAL POWER, (I.E. PUMPS, LIFT STATIONS, ETC.)
17. CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENTS OF ALL OWNER PROVIDED EQUIPMENT WITH ACTUAL EQUIPMENT PRIOR TO INSTALLATION.
18. CONTRACTOR SHALL REFER TO SCHEDULES FOR MECHANICAL EQUIPMENT FEEDER SCHEDULE.
19. CONTRACTOR SHALL CLEARLY LABEL ALL ELECTRICAL EQUIPMENT AND DEVICES WITH ASSOCIATED PANEL NAME AND CIRCUIT BREAKER.

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Wilby High School - Kitchen Renovation
568 Bucks Hl Rd, Waterbury, CT 06704

REVISIONS		
NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	RZ
Project No.:	2201481
Date:	05/25/2023
Issued for:	PERMIT SET

Title:
OVERALL FIRST FLOOR ELECTRICAL POWER PLAN & OVERALL FIRST FLOOR DEMO PLAN

Sheet No.
E1.01

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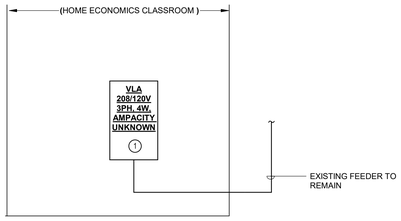
ELECTRICAL RISER DIAGRAM GENERAL NOTES:

1. ALUMINUM CONDUCTORS MAY BE SUBSTITUTED FOR COPPER CONDUCTORS FOR FEEDERS 150 AMPS & LARGER. ALUMINUM CONDUCTORS SHALL NOT BE USED WHERE EXPRESSLY FORBIDDEN BY LOCAL ELECTRICAL INSPECTIONS DEPARTMENT. UTILITY COMPANY OR THE PLAN REVIEW BOARD OF JURISDICTION. ELECTRICAL CONTRACTOR TO COORDINATE ALL CHANGES IN SIZE & QUANTITY OF PARALLEL CONDUITS FOR ANY/ALL ALUMINUM FEEDER CHANGES.
2. REFER TO DETAILS FOR SERVICE GROUNDING & BONDING.
3. ALL FLOOR-MOUNTED EQUIPMENT SHALL BE INSTALLED ON A 3" CONCRETE HOUSEKEEPING PAD, UNLESS OTHERWISE NOTED.
4. MAXIMUM DISTANCE THE SECONDARY CONDUCTORS CAN BE RUN PRIOR TO OVERCURRENT PROTECTION IS 10 FEET.
5. ALL CIRCUIT BREAKERS GREATER THAN 250A SHALL BE PROVIDED WITH LSI ADJUSTABLE TRIP SETTINGS.
6. PROVIDE A SHORT CIRCUIT-STUDY, SELECTIVE COORDINATION STUDY AND ARC FLASH ANALYSIS FOR ELECTRICAL SERVICE AND INFRASTRUCTURE BY A LICENSED ENGINEER. ADJUST TRIP SETTINGS ON CIRCUIT BREAKERS & MODIFY SHORT CIRCUIT RATINGS OF ELECTRICAL EQUIPMENT PER THE RESULTS. OVERCURRENT PROTECTIVE DEVICES SHALL BE SELECTIVELY COORDINATED FOR DISTRIBUTION SYSTEMS SERVING EMERGENCY AND STANDBY LOADS, FOR FAULTS WITH DURATIONS AT 0.01 SECONDS. ALL OTHER LOADS SHALL BE COORDINATED TO 0.1 SECONDS.
7. COORDINATE REQUIREMENTS OF NEC ARTICLE 240.87 WITH OVER CURRENT DEVICES INSTALLED IN CIRCUIT BREAKERS RATED OR ADJUSTABLE AT 1200A & HIGHER. PROVIDE ARC ENERGY REDUCTION MAINTENANCE SWITCH WITH INDICATOR LIGHTS.
8. COORDINATE REQUIREMENTS OF NEC ARTICLE 230.95. GROUND FAULT PROTECTION OF EQUIPMENT SHALL BE PROVIDED FOR SOLIDLY GROUNDED WYE ELECTRIC SERVICES OF MORE THAN 150 VOLTS TO GROUND BUT NOT EXCEEDING 1000 VOLTS PHASE-TO-PHASE FOR EACH SERVICE DISCONNECT RATED 1000 AMPERES OR MORE.
9. FEEDER CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2 PERCENT AT DESIGN LOAD. BRANCH CIRCUIT CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3 PERCENT AT DESIGN LOAD.
10. REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION.

ELECTRICAL RISER DIAGRAM KEY NOTES:

1. EXISTING ELECTRICAL PANELS SHALL REMAIN. ALTER EXTEND BRANCH FEEDERS/ CONDUIT AS REQUIRED. CONTRACTOR SHALL FIELD VERIFY EXISTING LOAD ON PANELS BEFORE CONNECTING NEW EQUIPMENT TO PANELS. EXISTING LOAD INFORMATION CANNOT BE VERIFIED BASED ON INFORMATION PROVIDED ON EXISTING DRAWINGS OR FROM SITE IMAGES. NOTIFY ENGINEER OF RECORD IF DISCREPANCIES BETWEEN THE DESIGN AND FIELD CONDITIONS PRESENT THEMSELVES.



Panel: EXISTING VLA

EXISTING PANEL

Location:
Supply From: V1A
Mounting: Recessed
Enclosure: Type 1

Volts: 120/208V
Phases: 3
Wires: 4

A.I.C. Rating: EXISTING
Mains Type: EXISTING
Mains Rating: 225 A
MCB Rating: EXISTING MCB UNKNOWN

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	EX. CIRCUIT	20 A	1	1.92	1.92					1	20 A	EX. CIRCUIT	2
3	EX. CIRCUIT	20 A	1			1.92	0.18			1	20 A	NEW REC- COUNTERTOP #1	4
5	EX. CIRCUIT	20 A	1					1.92	0.18	1	20 A	NEW REC- COUNTERTOP #2	6
7	EX. CIRCUIT	20 A	1	1.92	1.92					1	20 A	EX. CIRCUIT	8
9	EX. CIRCUIT	20 A	1			1.92	1.92			1	20 A	EX. CIRCUIT	10
11	EX. CIRCUIT	20 A	1					1.92	1.92	1	20 A	EX. CIRCUIT	12
13	EX. CIRCUIT	20 A	1	1.92	1.92					1	20 A	EX. CIRCUIT	14
15	EX. CIRCUIT	20 A	1			1.92	1.92			1	20 A	EX. CIRCUIT	16
17	EX. CIRCUIT	20 A	1					1.92	1.67	2	20 A	EX. CIRCUIT	18
19	EX. CIRCUIT	20 A	2	1.67	1.67								20
21						1.67	1.67			2	20 A	EX. CIRCUIT	22
23	EX. CIRCUIT	30 A	2					2.49	1.67				24
25				2.49	1.08					1	20 A	NEW MIXER	26
27	EX. CIRCUIT	20 A	1			1.92	0.18			1	20 A	NEW REC- COUNTERTOP #3	28
29	EX. CIRCUIT	20 A	1					1.92	0.00	--	--	SPACE	30
31	EX. CIRCUIT	20 A	3	1.92	0.00					--	--	SPACE	32
33						1.92	0.00			--	--	SPACE	34
35								1.92	0.00	--	--	SPACE	36
		Tot. Load:		20.35 kVA		17.14 kVA		17.53 kVA					
		Tot. Amps:		56 A		48 A		49 A					

Load Classification	Connected Load	Demand Factor	Estimated...	Panel Totals	
Power	14520 VA	100.00%	14520 VA		
Spare	39960 VA	100.00%	39960 VA	**Total Conn. Load:**	55020 VA
Receptacle	540 VA	100.00%	540 VA	**Total Est. Demand:**	55020 VA
				Total Conn.:	153 A
				Total Est. Demand:	153 A

Notes:

Spare load classification is the load of the existing circuits at 80% of the breaker ampacity rating.

PANELBOARD SCHEDULE GENERAL NOTES:

1. PROVIDE NEW TYPE WRITTEN DIRECTORIES IN PANELBOARDS AND SWITCHBOARDS WITH CHANGES TO PANEL SCHEDULES.
2. MATCH NEW BREAKERS IN EXISTING PANELBOARDS AND SWITCHBOARD WITH EXISTING BREAKER TYPE AND AIC RATING.

ELECTRICAL GENERAL NOTES:

A. CONTRACTOR SHALL VISIT THE SITE TO INSPECT THE NATURE AND EXTENT OF THE EXISTING CONDITIONS AND EQUIPMENT, AND DETERMINE HOW THEY WILL AFFECT THE INSTALLATION OF ELECTRICAL WORK. NO ADDITIONAL PAYMENT IN EXCESS OF THE CONTRACT PRICE WILL BE AUTHORIZED FOR "EXTRA" WORK PERFORMED DUE TO EXISTING CONDITIONS WHICH ARE OBVIOUS UPON INSPECTION.

B. CONTRACTOR SHALL FIELD VERIFY EXISTING LOAD ON PANELS BEFORE CONNECTING NEW EQUIPMENT LOAD TO PANELS. AS-BUILT DOCUMENTATION SHOULD BE USED TO VERIFY LOAD. EXISTING LOAD INFORMATION CANNOT BE VERIFIED BASED ON INFORMATION PROVIDED ON EXISTING DRAWINGS OR FROM SITE IMAGES. THE LOAD ON THE PANELBOARD IN THE DRAWINGS ARE ESTIMATED BY TAKING 80% OF THE BREAKER RATING AND APPLYING THE APPROPRIATE DEMAND. NOTIFY ENGINEER OF RECORD IF DISCREPANCIES BETWEEN THE DESIGN AND FIELD CONDITIONS PRESENT THEMSELVES.

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Wilby High School - Kitchen Renovation
568 Bucks Hl Rd, Waterbury, CT 06704

NO	DATE	DESCRIPTION

REVISIONS

Designed: RZ
Drawn: JCP
Reviewed: JJ/MWB
Project No.: 220148
Date: 05/25/2023
Issued for:
PERMIT SET

Title:
ONE LINE RISER AND PANELBOARD SCHEDULE

Sheet No.
E4.01

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COM*check* Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Wiliby High School-Kitchen Renovation
Project Type: Alteration

Construction Site:
568 Bucks Hl Rd.
Waterbury, Connecticut 06704

Owner/Agent:
Waterbury High School
300 Pierpont Rd
Waterbury, Connecticut 06705
203-574-8061

Designer/Contractor:
Shawn Poulin
BL Companies
355 Research Parkway
Meriden, Connecticut 06450
203-608-2559
spoulin@blcompanies.com

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Culinary Kitchen (Common Space Types:Classroom/Lecture/Training)	961	0.71	682
		Total Allowed Watts =	682

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Culinary Kitchen (Common Space Types: Classroom/Lecture/Training, 961 sq.ft.)				
LED 1: A1/A1E: 2 x 4 LED Troffer: Other:	1	11	22	246
LED 2: A2/A3/A3E: 2 x 2 LED Troffer: Other:	1	7	30	206
		Total Proposed Watts =		453

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

John Prete — Name - Title
John Prete — Signature
05-24-2023 — Date

Project Title: Wiliby High School-Kitchen Renovation — Report date: 05/24/23
Data filename: — Page 1 of 5

LIGHTING FIXTURE SCHEDULE

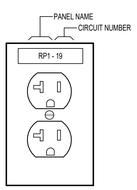
TYPE	SYMBOL	MANUFACTURER	CATALOG NO.	LAMP	VOLTS	MOUNTING	DESCRIPTION	WATTS	REMARKS
A1		LITHONIA LIGHTING	2BLTBA4-30LHE- ADSM-MVOLT-EZ1-LP840	LED	120/277	RECESSED CEILING	2X4 LED VOLUMETRIC ILLUMINATION, 4000K CCT, 82 CRI	22.4	'dh' INDICATES FIXTURE CONTROLLED BY DAY LIGHT HARVEST SENSOR, 0-10V DIMMING.
A1E		LITHONIA LIGHTING	2BLTBA4-30LHE- ADSM-MVOLT-EZ1-LP840-E10WLCP	LED	120/277	RECESSED CEILING	2X4 LED VOLUMETRIC ILLUMINATION, 4000K CCT, 82 CRI WITH INTERGRAL BATTERY	22.4	'dh' INDICATES FIXTURE CONTROLLED BY DAY LIGHT HARVEST SENSOR, 0-10V DIMMING. PROVIDE WITH INTEGRAL EMERGENCY BATTERY.
A2		LITHONIA LIGHTING	2BLTBA2-40LHE –MVOLT-EZ1--ADSM-LP840	LED	120/277	RECESSED CEILING	2X2 LED VOLUMETRIC ILLUMINATION, 4000K CCT, 82 CRI	29.5	'dh' INDICATES FIXTURE CONTROLLED BY DAY LIGHT HARVEST SENSOR, 0-10V DIMMING.
A3		LITHONIA LIGHTING	2BLTBA2-40LHE –MVOLT-EZ1--ADSM-LP840-DGA22	LED	120/277	RECESSED CEILING	2X2 LED VOLUMETRIC ILLUMINATION, 4000K CCT, 82 CRI	29.5	'dh' INDICATES FIXTURE CONTROLLED BY DAY LIGHT HARVEST SENSOR, 0-10V DIMMING. PROVIDE WITH DRYWALL FLANGE KIT
A3E		LITHONIA LIGHTING	2BLTBA2-40LHE –MVOLT-EZ1--ADSM-LP840-E10WLCP-DGA22	LED	120/277	RECESSED CEILING	2X2 LED VOLUMETRIC ILLUMINATION, 4000K CCT, 82 CRI	29.5	'dh' INDICATES FIXTURE CONTROLLED BY DAY LIGHT HARVEST SENSOR, 0-10V DIMMING. PROVIDE WITH DRYWALL FLANGE KIT AND INTEGRAL EMERGENCY BATTERY
X1		COOPER LIGHTING	CX61	LED	120/277	SURFACE WALL/CEILING	UNIVERSAL MOUNTING EXIT SIGN. DIE CAST ALUMINUM CONSTRUCTION, BRUSHED ALUMINUM FACEPLATE WITH MATTE BLACK ELECTROSTATIC POLYMERIC TRIM AND RED BACKLIT FACEPLATE.	2	FURNISH AND INSTALL SINGLE, DOUBLE FACE AND DIRECTIONAL CHEVRONS AS SPECIFIED ON DRAWINGS. PROVIDE WITH INTEGRAL 90 MINUTE EMERGENCY BATTERY.

LIGHTING FIXTURE SCHEDULE NOTES:

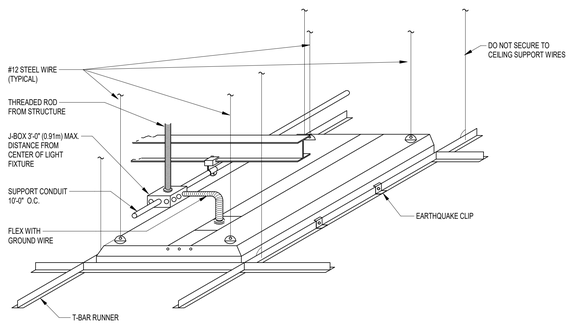
1. BIDS SHALL BE BASED ON THE LIGHTING FIXTURE SCHEDULE AND SPECIFICATIONS. REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. ALL FIXTURES SHALL BE UL LISTED.
3. ALL NECESSARY MOUNTING HARDWARE, HANGERS, BRACKETS, RAILS, YOKES, STEMS, CHAINS, ETC., SHALL BE FURNISHED AND INSTALLED.
4. REFER TO ARCHITECTURAL DRAWINGS FOR SPECIFIC DETAILS, ARRANGEMENT, MOUNTING HEIGHTS, CEILING CONSTRUCTION, ETC. ALL COLORS AND FINISHES SHALL BE VERIFIED BY THE ARCHITECT.
5. FIXTURES SHALL BE SEISMICALLY SUPPORTED AS REQUIRED BY BUILDING CODE.
6. WIRE ALL BATTERY PACK UNITS (I.E. EXIT SIGNS AND EMERGENCY UNITS) TO LINE SIDE OF LOCAL LIGHTING BRANCH CIRCUIT.

LIGHTING CONTROL MATRIX: SPACE BY SPACE

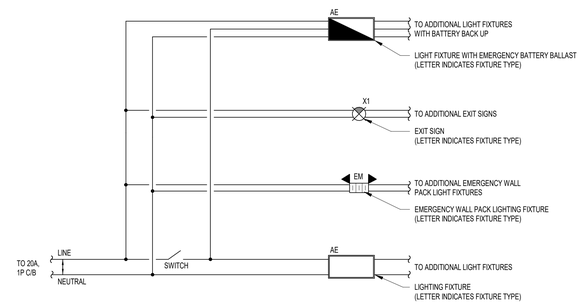
KITCHEN	Line voltage key switch, Dual technology occupancy sensor	Automatic on / Automatic off after 20 minutes of unoccupied.



1 RECEPTACLE LABEL DETAIL
NOT TO SCALE



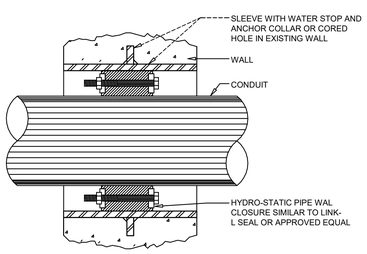
2 RECESSED LAY-IN FIXTURE MOUNTING DETAIL
NOT TO SCALE



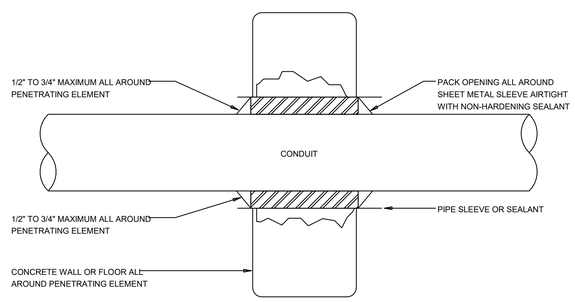
NOTES:

1. CONNECT THE EMERGENCY LIGHTING FIXTURE TO THE RESPECTIVE LOCAL BRANCH CIRCUIT THAT SUPPLIES NORMAL LIGHTING TO THE AREA IN WHICH IT IS LOCATED. CONNECTION TO THIS LOCAL BRANCH CIRCUIT MUST BE MADE AHEAD OF OR ON THE LINE SIDE OF SWITCH CONTROLLING THE NORMAL LIGHT AS SHOWN ON THE DETAIL ABOVE.
2. FIXTURE SHALL MONITOR MAJOR LIGHTING CIRCUIT IN AREA.

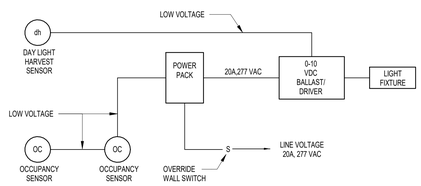
3 TYPICAL EMERGENCY LIGHTING WIRING DIAGRAM
NOT TO SCALE



4 CONDUIT THRU FOUNDATION WALL PENETRATION DETAIL
NOT TO SCALE



5 NON-RATED CONDUIT PENETRATION DETAIL
NOT TO SCALE



NOTES:

1. ALL FIXTURES WITHIN 15' OF AN EXTERIOR WINDOW SHALL BE CONTROLLED BY DAY LIGHT HARVEST SENSOR 'dh'.
2. REFER TO LIGHTING PLAN FOR DEVICE LOCATIONS.

6 TYPICAL LIGHTING CONTROL DETAIL
NOT TO SCALE

Architecture Engineering Environmental Land Surveying
BL Companies
355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax

Wiliby High School - Kitchen Renovation
568 Bucks Hl Rd, Waterbury, CT 06704

REVISIONS

NO	DATE	DESCRIPTION

Designed:	JCP
Drawn:	JCP
Reviewed:	JJ/RZ
Project No.:	2201481
Date:	05/25/2023
Issued for:	PERMIT SET

Title: ELECTRICAL DETAILS & FIXTURE SCHEDULE

Sheet No. E4.07

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PLUMBING SPECIFICATIONS

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO MADE PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIAL WHICH VIOLATES ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.

C. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHERE NECESSARY,EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM BUILDING OWNER AND TENANT AT WHAT TIMES OF DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.

D. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. PIPE ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF PIPE TO AVOID OBSTRUCTIONS. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.

E. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

F. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP THE WORK PROPOSAL.

G. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION.

H. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

I. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

J. THE LOCATIONS OF THE EXISTING SERVICES ARE BELIEVED TO BE AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION OF THESE SERVICES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING ANY WORK.

K. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH NON-SHRINKING FIRE PROOF CAULKING OR OTHER NON-COMBUSTIBLE MATERIAL.

L. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPING AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AS REQUIRED.

M. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF THE SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE. ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR

N. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

O. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.

P. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

Q. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

R. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

S. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK, THE CONTRACTOR IS RESPONSIBLE TO INDICATE ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO SUBMITTAL OF BID. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING PIPE SIZES, CLEARANCES ETC. AND CONDITIONS.

T. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

U. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

2. SCOPE OF WORK:

A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMITY WITH THE INTERNATIONAL PLUMBING CODE, STATE SUPPLEMENT, AND ALL OTHER LOCAL CODES AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.

B. THE BASE BUILDING OF DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLEMENTED OR SPECIFIED HEREIN.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

3. SHOP DRAWINGS:

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT PROVIDE COMPLETE SET OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:
1. PROJECT NAME AND LOCATION
2. NAME OF ARCHITECT AND ENGINEER
3. ITEM IDENTIFICATION
4. APPROVAL STAMP OF PRIME CONTRACTOR

C. SUBMISSIONS:
1. SUBMISSIONS 11 IN. X 17IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE (1) PDF ELECTRONIC COPY. ALL CATALOG CUTS SHALL BE COMPLETE.
2. SUBMISSIONS LARGER THAN THAT 11 IN. X 17 IN.: SUBMIT ONE (1) PDF ELECTRONIC COPY.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
1. PIPE AND FITTINGS VALVES
2. PLUMBING FIXTURES AND TRIM
3. PIPING LAYOUTS
4. SUPPORTS, HANGERS AND GUIDES
5. INSULATION

4. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:

A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

5. GENERAL PROVISIONS FOR PLUMBING WORK:

A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL,"SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

B. DEFINITIONS:

1. "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFEREED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2. "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3. "FURNISH" OR "SUPPLY": TO PURCHASE, PRODUCE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4. "WORK": LABOR, MATERIAL, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5. "WIRING": RACEWAY, FITTINGS, WIRE, BOXES AND OTHER RELATED ITEMS.

6. "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

7. "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

8. "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

C. QUALITY ASSURANCE:

1. QUALITY AND GAUGE OF MATERIALS: NEW, BEST OF THEIR RESPECTIVE KINDS, FREE FROM DEFECTS AND LISTED BY UNDERWRITERS LABORATORIES, INC., OR BEARING THEIR LABEL. MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

2. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.

D. PRODUCT DELIVERY, STORAGE AND HANDLING:

1. MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.

2. ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS SHALL BE PERMITTED. CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

E. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC CHROMATE FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGER, RODS, INSERTS AND SUPPORTS/ RED LEO OR ZINC CHROMATE WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD APPLIED ZINC CHROMATE PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRON WORK.

F. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED. CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

G. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL PLUMBING FIXTURES SHALL BE VERIFIED BY ARCHITECT

H. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

6. PIPE AND FITTINGS:

A. THE VARIOUS PIPING SYSTEMS ARE CLASSIFIED AS FOLLOWS, AND MATERIALS OF CONSTRUCTION SHALL BE AS SPECIFIED UNLESS OTHERWISE NOTED ON THE DRAWINGS.

B. PIPING, VALVES AND EQUIPMENT USED IN SIMILAR APPLICATIONS SHALL BE PROVIDED FROM THE SAME MANUFACTURER UNLESS NOTED OTHERWISE.

C. ALL EXPOSED PIPING PASSING THROUGH, WALLS, FLOORS, CEILINGS, AND PARTITIONS SHALL BE PROVIDED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.

D. ALL EXPOSED PIPE AND FITTINGS SHALL BE CHROME PLATED BRASS.

1. DOMESTIC WATER ABOVE GROUND

a. PIPING SYSTEMS
1. TYPE "L" HARD DRAWN COPPER TUBING PER ASTM B-88 AND FEDERAL SPECIFICATION WWT-799. PIPING, FITTINGS, AND JOINTS TO COMPLY WITH NSF.

a. FITTINGS
1. SOLDER OR BRAZED JOINT COPPER FITTINGS PER B16.18 OR 16.22.
2. GROOVED COOPER FITTINGS WITH FULL FLOW RADIUS ELBOWS.
3. PRESS FITTINGS RATED AT 200 PSI FOR 4" PIPING AND SMALLER

A. SANITARY, WASTE AND VENT SYSTEMS AND STORM DRAINAGE SYSTEMS ABOVE GROUND:

1. POLYVINYL CHLORIDE (PVC), SCHEDULE 40 DWV PVC PIPE, ASTM D1785. FITTINGS: SCHEDULE 40 DWV PVC, SOCKET TYPE FITTINGS, ASTM D2665. JOINTS: SOLVENT JOINTS FOR PVC, ASTM D2564. PVC PIPING IS NOT ACCEPTABLE IN PLENUM CEILINGS OR FOR WASTE PIPING RECEIVING WASTE DISCHARGE HIGHER THAN 130 DEGREES F, SUCH AS FROM LAUNDRY AND KITCHEN EQUIPMENT.

2. SINGLE AND DOUBLE SANITARY TEE FITTINGS ARE NOT ALLOWED FOR THE PIPING TO ANY PLUMBING FIXTURE; COMBINATION WYE AND EIGHTH BEND FITTINGS SHALL BE INSTALLED.

3. DOUBLE COMBINATION FITTINGS SHALL NOT BE USED FOR CONNECTIONS TO HORIZONTAL DRAINAGE PIPING; SINGLE WYE AND EIGHTH BEND FITTINGS SHALL BE USED FOR ALL CONNECTIONS.

4. FOAM CORE PVC PIPING IS NOT ACCEPTABLE FOR ANY DRAINAGE SYSTEM.

7. VALVES, FLANGES AND UNIONS:

A. GENERAL:
1. ALL SYSTEMS UNDER THIS SECTION SHALL BE PROVIDED WITH VALVES TO PERMIT COMPLETE AND SECTIONAL CONTROL OF THE SYSTEM. THEY SHALL BE LOCATED TO PERMIT EASY OPERATION, REPLACEMENT AND REPAIR. THEY SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS, OR AS HEREIN SPECIFIED. VALVES TO COMPLY WITH NSF 61-G, NSF 61, AND NSF 372. VALVES SHALL BE AS MANUFACTURED BY ONE OF THE FOLLOWING COMPANIES: AMERICAN, ANVIL INTERNATIONAL, FNW, KENNEDY, KITZ, MILWAUKEE, NIBCO, POWELL, STOCKHAM, VICTAULIC, WATTS, OR APPROVED EQUAL, AND SHALL CONFORM TO DESCRIPTION LISTED BELOW.

2. CONTROL VALVES SHALL BE PROVIDED FOR THE DOMESTIC COLD WATER SUPPLY TO ALL RISERS AND SPECIFIC AREAS SUCH AS, EQUIPMENT, HOSE BIBBS AND WALL HYDRANTS, AND BUILDING SEPARATIONS. VALVES SHALL BE LOCATED IN BACK-OF-HOUSE OR SERVICE AREAS WITH ACCESS PANELS OR ABOVE LAY-IN CEILINGS. NO ACCESS PANELS WILL BE PERMITTED IN PUBLIC SPACES WITH GYPSUM CEILINGS.

B. VALVE DESCRIPTION
1. CHECK VALVES:
a. 2" AND SMALLER, MILWAUKEE UP509, 200 LB., THREADED, LOW LEAD.
b. 2" AND LARGER, VICTAULIC SERIES 716, GROOVED ENDS.
c. 2-1/2" AND LARGER, MILWAUKEE FIG. F-2974, 125 LB. FLANGED.
d. 2-1/2" AND LARGER, STOCKHAM G-939, 175 LB. FLANGE.

2. BALL VALVES:
a. 2" AND SMALLER, MILWAUKEE UPBA 100 (OR EQUAL)

3. BACKFLOW PREVENTERS:
a. BACKFLOW PREVENTERS SHALL BE INSTALLED AT ALL LOCATIONS REQUIRED BY CODE AND LOCAL AUTHORITIES, AT ALL CONNECTIONS TO MECHANICAL EQUIPMENT, AND ELSEWHERE AS SHOWN ON THE DRAWINGS. BACKFLOW PREVENTERS SHALL BE REDUCED PRESSURE PRINCIPLE TYPE AND SHALL BE A COMPLETE ASSEMBLY INCLUDING TIGHT-CLOSING SHUTOFF VALVES BEFORE AND AFTER THE DEVICE. THE DESIGN SHALL INCLUDE TEST COCKS AND A PRESSURE-DIFFERENTIAL RELIEF SEATING CHECK VALVES. THE DEVICE SHALL MEET THE REQUIREMENTS OF AND BE CERTIFIED BY ASSE STANDARD 1013, AWWA STANDARD C-506, NSF 61-G, NSF 61, NSF 372, AND USC FOUNDATION FOR CROSS-CONNECTION CONTROL. A STRAINER SHALL BE LOCATED UPSTREAM OF THE DEVICE. ROUTE RELIEF OUTLET FROM CONE RECEPTOR TO AN AIR GAP FITTING FOR DISCHARGE TO SANITARY SEWER.
b. ACCEPTABLE MANUFACTURERS ARE AMES COMPANY, APOLLO VALVES, HERSEY PRODUCTS, WATTS REGULATOR, AND ZURN-WILKINS.

4. FLANGES:
a. ALL FLANGES SHALL BE FACED AND DRILLED FOR NOT LESS THAN 125 POUNDS STEAM WORKING PRESSURE COMPLETE WITH NECESSARY ADAPTER, AND SHALL BE OF SIZE AND MATERIAL OF ADJACENT PIPING. ALL FLANGES SHALL BE FACED (RAISED OR FLAT) TO BE COMPATIBLE WITH CONNECTING VALVES, EQUIPMENT, ETC. THE CONNECTION OF ONE RAISED FACE FLANGE TO A FLAT FACE FLANGE SHALL NOT BE PERMITTED.

5. UNIONS AND JOINTS:
a. UNIONS ON DRAINAGE PIPES ON FIXTURE SIDE OF TRAPS MAY BE SLIP OR FLANGED JOINTS WITH SOFT RUBBER WASHERS OR GASKETS. UNIONS 2" AND SMALLER ON COPPER PIPE SHALL BE ALL BRASS WITH GROUND JOINT AND SHALL BE 250# COPPER TO COPPER. UNIONS ABOVE 2" SHALL BE FLANGED WITH GASKETS. PROVIDE UNION AT WATER AND GAS CONNECTION TO ALL EQUIPMENT, EXCEPT PLUMBING FIXTURES.

b. UNIONS AND FLANGES FOR SERVICING AND DISCONNECT ARE NOT REQUIRED IN INSTALLATIONS USING GROOVED JOINT COUPLINGS. (THE COUPLINGS SHALL SERVE AS DISCONNECT POINTS.)

8. INSULATION:

A. THE FOLLOWING SHALL BE INSULATED:
1. ALL DOMESTIC HOT AND COLD WATER PIPING ABOVE GRADE.
2. ALL HORIZONTAL STORM DRAIN PIPING AND ROOF DRAIN BODIES

B. DOMESTIC COLD WATER, PRIMARY STORM DRAINAGE, AND WASTE DAINAGE PIPING SHALL BE INSULATED WITH 4 LB. DENSITY SECTIONAL FIBERGLASS INSULATION WITH A THERMAL CONDUCTIVITY NOT TO EXCEED 0.24 WITH WHITE ALL SERVICE JACKET AND VAPOR BARRIER. ALL JOINTS AND SEAMS SHALL BE SEALED VAPOR TIGHT. ALL SEAMS AND STAPLES SHALL THEN BE COVERED WITH "ALL SERVICE JACKET" THREE-INCH WIDE TAPE.

C. MATERIALS AS SPECIFIED IN THIS SECTION SHALL BE MANUFACURTED BY CERTAINTEED, JOHN MANVILLE, KNAUF, OWENS CORNING OR EQUAL. INSULATION THICKNESS SHALL BE AS SHOWN IN THE FOLLOWING TABLE:

MINIMUM PIPE INSULATION			INSULATION THICKNESS FOR PIPE SIZES				
PIPING SYSTEM TYPES	FLUID TEMPERATURE RANGE		LESS THAN 1"	1" TO 1-1/2"	1-1/2" TO 4"	4" TO 8"	8" AND LARGER
	°C	°F	IN.	IN.	IN.	IN.	IN.
PLUMBING							
DOMESTIC COLD WATER	AMBIENT	AMBIENT	0.5	0.5	1.0	1.0	1.0
DOMESTIC HOT WATER AND HOT WATER RECIRCULATION	40.5 - 60	105 - 140	1.0	1.0	1.5	1.5	1.5
ABOVE GRADE DRAINS AND PIPING RECIEVING, CONDENSATE OR ICE MACHINE DISCHARGE	4.5 - 15.5	40 - 60	0.5	0.5	1.0	1.0	1.0

9. PLUMBING FIXTURES:

A. PROVIDE ALL FIXTURES WITH SUPPLIES, LOOSE KEY STOPS, 17GA P-TRAPS AND SUPPORTS AS REQUIRED.

B. REFER TO FIXTURE SCHEDULE FOR FURTHER REQUIREMENTS AND DESCRIPTION

10. PIPING SUPPORTS:

A. SUPPORT ALL PIPING FROM BUILDING CONSTRUCTION BY PROVIDING INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), AND ACCEPTABLE BRACKETS. SUBMIT ALL METHODS FOR REVIEW.

B. PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR GROUPED LINES AND SERVICES.

C. PROVIDE ADDITIONAL FRAMING WHERE BUILDING CONSTRUCTION IS INADEQUATE. SUBMIT FOR REVIEW.

D. SUSPENDED HORIZONTAL PIPING:

1. ALL PIPING SHALL BE SUPPORTED BY MEANS OF HANGER RODS AND PIPE HANGERS FROM ROOF OR FLOOR CONSTRUCTION USING SUPPLEMENTARY STEEL AND/OR LAGBOLTS. WATER SUPPLY PIPE CONNECTING TO PUMPS, EQUIPMENT, FIXTURES OR FIXTURE SUPPLIES SHALL BE MADE RIGID AT THE CONNECTION POINT.
a. PIPING SHALL BE SUPPORTED FROM NEW STEEL CONSTRUCTION WITH ANVIL INTERNATIONAL FIG. 131 BEAM CLAMP, FIG. 61 BEAM CLAMP, FIG. 66 WELDED BEAM ATTACHMENT OR FIG. 60 WASHER PLATE WITH ALL-THREAD ROD.
b. PIPING AND BRACKETS SHALL BE SUPPORTED FROM HOLLOW BLOCK CONSTRUCTION USING MASONRY DRILLED HOLES AND TOGGLE BOLTS.
c. PIPING SHALL BE SUPPORTED FROM WOOD TRUSS CONSTRUCTION WITH PLATED LAG SCREWS OF BOLTS, B-3227 AND B-3228.
d. PIPING SHALL BE SUPPORTED FROM NEW CONCRETE WITH ANVIL INTERNATIONAL FIG. 282 INSERTS OR DRILLED EXPANSION ANCHORS.
e. PIPE SUPPORTS SHALL NOT BE ATTACHED TO FLOOR OR ROOF DECK.
f. ACCEPTABLE MANUFACTURERS ARE: ANVIL, B-LINE AND FNW.

2. UNLESS OTHERWISE NOTED, HANGERS AND CLAMPS SHALL BE AS LISTED BELOW (ALL MODEL NUMBERS NOTED ARE B-LINE SYSTEMS):
a. CAST IRON/STEEL PIPE - B3100 OR B3109
b. INSULATED WATER PIPE - B100 OR B3109 WITH B3151 PLACED OVER INSULATION PROTECTION SADDLE.
c. UNINSULATED BARE COPPER PIPE - B3170 CTC PLASTIC COATED
d. ALL SUPPORTS AND MOUNTING HARDWARE ARE TO BE GALVANIZED, CADMIUM PLATED, OR FACTORY ENAMEL PAINTED.

3. ALL SUPPORTS ON INSULATED PIPING SYSTEMS SHALL BE SIZED TO FIT OUTSIDE THE INSULATION AND SHALL BE PROVIDED WITH INSULATION INSERTS AND SHIELDS AT EACH HANGER OR SUPPORT POINT.

E. PROVIDE 180 DEGREE ARC GALVANIZED METAL COVERING SHIELDS ON HANGERS FOR INSULATED PIPING WITHOUT INCOMPRESSIBLE INSULATING BLOCK IN INSULATION AT HANGERS.

F. MAXIMUM HANGER SPACING AS INDICATED.

1. MAXIMUM SPACING BETWEEN PIPE HANGERS SHALL BE:
a. STEEL PIPE:
1. 1-1/4" AND SMALLER: 6'-0"
2. 1-1/2" - 2": 8'-0"
3. 2-1/2" AND LARGER: 10'-0"
b. CAST IRON SOIL PIPE:
1. 2" AND LARGER: 10'-0"
c. COPPER TUBING:
1. 1/2" - 1-1/4": 5'-0"
2. 1-1/2" - 2": 8'-0"
3. 2-1/2" AND LARGER: 10'-0"
d. PVC/CPVC AND ALL PLASTIC PIPE:
1. 1-1/4" AND SMALLER: 3'-0"
2. 1-1/2" AND LARGER: 4'-0"

G. AT LEAST ONE HANGER SHALL OCCUR WITHIN TWO FEET (2'-0") FROM WHERE A CHANGE IN DIRECTION TAKES PLACE IN THE LINE. WHERE PIPES EXTEND DOWN OR UP TO OTHER FLOORS, PIPE CLAMPS SHALL BE PROVIDED ON EACH FLOOR TO SUPPORT VERTICAL RISERS. VERTICAL PIPING DROPS SHALL BE RIGIDLY ANCHORED TO STRUCTURE AT THE TOP AND BOTTOM OFFSETS AND AT EIGHT FOOT INCREMENTS ALONG THE VERTICAL DROP. EQUAL MANUFACTURERS FOR HANGERS AND CLAMPS ARE B-LINE SYSTEMS, ANVIL INTERNATIONAL, FEE AND MASON, PHD MANUFACTURING, OR APPROVED EQUAL.

H. ALL CONNECTIONS TO PUMPS AND OTHER VIBRATING MACHINERY SHALL BE PROVIDED WITH STAINLESS STEEL BRAIDED FLEXIBLE HOSE CONNECTIONS. CONNECTIONS TO POTABLE WATER SYSTEMS SHALL MEET ANSI/NSF 61 DESIGN STANDARDS.

I. VERTICAL PIPING:

1. PROVIDE SPACING AS INDICATED.
a. THREADED PIPING SHALL BE EVERY OTHER FLOOR LEVEL, AT A MAXIMUM OF 25 FEET ON CENTERS.

b. CAST IRON PIPING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 20 FEET ON CENTERS; HUBLESS PIPE IS THE EXCEPTION, REQUIRING A MAXIMUM OF 10 FEET ON CENTERS.

c. TUBING SHALL BE EVERY FLOOR LEVEL MAXIMUM 10 FEET ON CENTERS.

11. TESTS:

A. DOMESTIC WATER PIPING:

1. TEST PIPING HYDROSTATICALLY AT A PRESSURE OF 125PSI.
2. DURATION OF TEST SHALL BE 2 HOURS WITHOUT A LOSS IN PRESSURE.

B. SOIL, WASTE AND VENT PIPING:

1. CAP ALL OUTLETS AND FILL PIPING SYSTEM TO OVERFLOWING FROM A POINT AT LEAST 10 FEET ABOVE THE FLOOR.
2. THE WATER LEVEL SHALL REMAIN CONSTANT THROUGHOUT THE TEST DURATION OF 2 HOURS.

C. CLEAN, DISINFECT AND FLUSH NEW PIPING PRIOR TO TESTING. ARRANGE AND COORDINATE TESTS WITH OWNER 48 HOURS IN ADVANCE NOTIFY ENGINEER AND ARCHITECT OF TEST DATE AND TIME.

12. CODES AND REGULATIONS

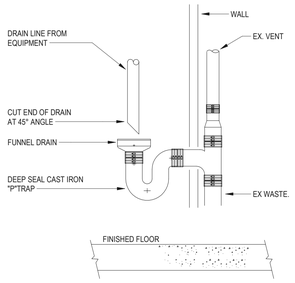
A. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CURRENT PLUMBING CODES AND STANDARDS ADOPTED BY THE STATE.

PLUMBING SYMBOLS

- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC HOT WATER RECIRCULATING
- VENT
- S — SOIL OR WASTE (ABOVE GRADE)

FITTINGS AND VALVES

- BALL VALVE
- DIRECTION OF F



3 TYPICAL FUNNEL DRAIN DETAIL
1/8" = 1'-0"

PLUMBING KITCHEN EQUIPMENT SCHEDULES

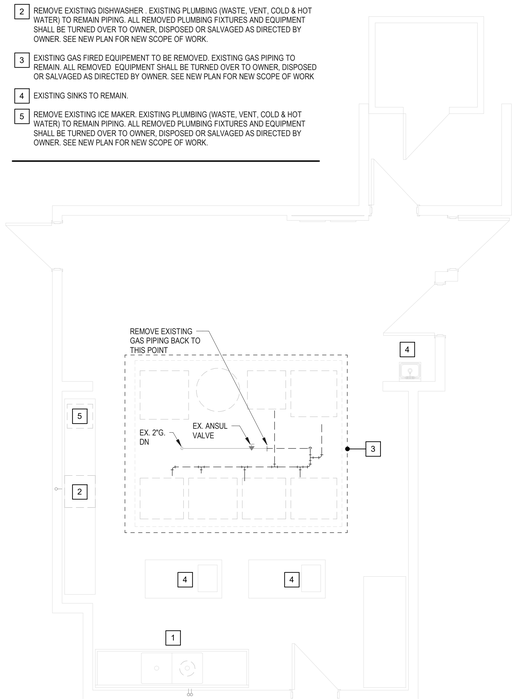
GENERAL NOTES:

1. FOOD SERVICE EQUIPMENT IS TO BE FURNISHED AND SET IN PLACE UNDER OTHER INDIVIDUAL TRADE SECTIONS. CONTRACTOR SHALL COORDINATE AND VERIFY ALL EQUIPMENT LOCATIONS WITH THE KITCHEN EQUIPMENT CONTRACTOR PRIOR TO ANY ROUGH-IN OF DRAINAGE AND WATER PIPING FOR KITCHEN EQUIPMENT CONNECTION. REFER TO AND COORDINATE WITH LATEST APPROVED KITCHEN FOOD SERVICE EQUIPMENT CUTS FOR COMPLETE DESCRIPTIONS & ROUGH-IN LOCATIONS.
2. ALL PIPE SIZES SHOWN ARE FOR SUPPLY AND DRAIN ONLY - SEE LATEST APPROVED KITCHEN EQUIPMENT CUTS FOR ACTUAL CONNECTION SIZES. FURNISH AND INSTALL ALL WASTE, VENT, HOT & COLD WATER PIPING, INCLUDING TRAPS, STOPS WITH SUPPLIES, ESCUTCHEONS, VALVES, AND ALL NECESSARY FITTINGS, ADAPTERS, UNIONS REDUCERS ETC. AS REQUIRED TO MAKE FINAL CONNECTION AND TO COMPLETE INSTALLATION.
3. INSTALL ALL WATER PRESSURE REDUCING VALVES, VACUUM BREAKERS, SOLENOID VALVES, WATER REGULATORS AND ANY OTHER MISCELLANEOUS FITTINGS FOR ALL EQUIPMENT LISTED BELOW.
4. ALL INDIRECT WASTE DRAINS FROM FIXTURES OR EQUIPMENT SHALL BE PIPED TO FLOOR DRAINS/JHUB DRAINS THRU AIR GAP AS NEATLY AND CLEARLY AS POSSIBLE. CUT END OF INDIRECT WASTE PIPE AT 45 DEGREE ANGLE TO AVOID SPLASHING.
5. ALL EXPOSED VALVES, STOPS WITH SUPPLIES, FITTINGS AND WATER WASTE AND VENT PIPING WHICH ARE VISIBLE TO OCCUPANTS IN FINISHED AREAS SHALL BE CHROME-PLATED COPPER WITH CHROME-PLATED ESCUTCHEONS AT WALL PENETRATIONS, REFER TO SPECS FOR MANUFACTURERS.
6. ANY PLUMBING ITEMS NECESSARY FOR PROPER OPERATION OF EQUIPMENT WHICH ARE NOT SHOWN ON THE PLUMBING DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS SHALL BE SUPPLIED BY THE KITCHEN EQUIPMENT PROVIDERS AND INSTALLED BY THE PLUMBING CONTRACTOR
7. (1) INDICATES EQUIPMENT LOCATION

ITEM	DESCRIPTION	CW	HW	W	IW	GAS	REMARKS
44	DISHWASHER WITH BOOSTER	3/4"	-	-	2"	-	PIPE PUMP DRAIN IW TO FUNNEL DRAIN
45	PIZZA BAKE OVEN	-	-	-	-	3/4"	85 MBH
46	CONVECTION OVEN, GAS (DOUBLE)	-	-	-	-	3/4"	53 MBH PER OVEN CAVITY = 106 MBH
48	GAS FLOOR FRYER	-	-	-	-	3/4"	140 MBH
49a	RANGE, 36"	-	-	-	-	1"	230 MBH
49b	RANGE, 36", GRIDDLE	-	-	-	-	1"	92 MBH
51	UNDER COUNTER ICE MAKER	1/2"	-	-	3/4"	-	NOT INCLUDED
52	GARBAGE DISPOSAL	-	-	-	2"	-	-
53	GRILLE, 36"	-	-	-	-	1"	120 MBH

PLUMBING DEMOLITION KEY NOTES

1. EXISTING 2-BAY POT SINK TO REMAIN. REPLACE EXISTING GARBAGE DISPOSAL. EXISTING PIPING (WASTE, VENT, COLD & HOT WATER) TO REMAIN. ALL REMOVED PLUMBING FIXTURES AND EQUIPMENT SHALL BE TURNED OVER TO OWNER, DISPOSED OR SALVAGED AS DIRECTED BY OWNER. SEE NEW PLAN FOR NEW SCOPE OF WORK.
2. REMOVE EXISTING DISHWASHER. EXISTING PLUMBING (WASTE, VENT, COLD & HOT WATER) TO REMAIN PIPING. ALL REMOVED PLUMBING FIXTURES AND EQUIPMENT SHALL BE TURNED OVER TO OWNER, DISPOSED OR SALVAGED AS DIRECTED BY OWNER. SEE NEW PLAN FOR NEW SCOPE OF WORK.
3. EXISTING GAS FIRED EQUIPEMENT TO BE REMOVED. EXISTING GAS PIPING TO REMAIN. ALL REMOVED EQUIPMENT SHALL BE TURNED OVER TO OWNER, DISPOSED OR SALVAGED AS DIRECTED BY OWNER. SEE NEW PLAN FOR NEW SCOPE OF WORK
4. EXISTING SINKS TO REMAIN.
5. REMOVE EXISTING ICE MAKER. EXISTING PLUMBING (WASTE, VENT, COLD & HOT WATER) TO REMAIN PIPING. ALL REMOVED PLUMBING FIXTURES AND EQUIPMENT SHALL BE TURNED OVER TO OWNER, DISPOSED OR SALVAGED AS DIRECTED BY OWNER. SEE NEW PLAN FOR NEW SCOPE OF WORK.

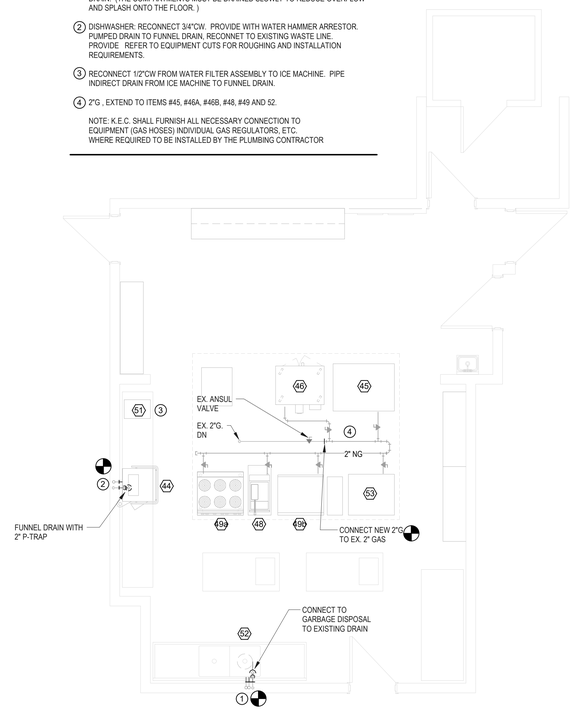


2 PLUMBING DEMOLITION PLAN
1/4" = 1'-0"

PLUMBING NEW KEY NOTES

1. 2-BAY COMPARTMENT SINK: CONNECT GARBAGE DISPOSAL TO EX. 2"W. MODIFY PIPING CONNECTIONS AS REQUIRED. INDIRECT WASTE TO DRAIN TO FUNNEL DRAIN. (THE COMPARTMENTS MUST BE DRAINED SLOWLY TO REDUCE OVERFLOW AND SPLASH ONTO THE FLOOR.)
2. DISHWASHER: RECONNECT 3/4"CW. PROVIDE WITH WATER HAMMER ARRESTOR. PUMPED DRAIN TO FUNNEL DRAIN. RECONNET TO EXISTING WASTE LINE. PROVIDE REFER TO EQUIPMENT CUTS FOR ROUGHING AND INSTALLATION REQUIREMENTS.
3. RECONNECT 1/2"CW FROM WATER FILTER ASSEMBLY TO ICE MACHINE. PIPE INDIRECT DRAIN FROM ICE MACHINE TO FUNNEL DRAIN.
4. 2"G , EXTEND TO ITEMS #45, #46A, #46B, #48, #49 AND 52.

NOTE: K.E.C. SHALL FURNISH ALL NECESSARY CONNECTION TO EQUIPMENT (GAS HOSES) INDIVIDUAL GAS REGULATORS, ETC. WHERE REQUIRED TO BE INSTALLED BY THE PLUMBING CONTRACTOR



1 NEW PLUMBING PLAN
1/4" = 1'-0"

Architecture
Engineering
Environmental
Land Surveying
BL Companies
355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax

Wilby High School - Kitchen Renovation
568 Bucks Hl Rd, Waterbury, CT 06704

NO	DATE	DESCRIPTION

REVISIONS

Designed: MK
Drawn: MK
Reviewed: JK
Project No.: 2201481
Date: 05/25/2023
Issued for:
PERMIT SET

Title:
CULINARY CLASSROOM PLUMBING PLANS

Sheet No.
P1.01

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#11

WATERBURY
PUBLIC SCHOOLS

Nicholas J. Albini
Chief Operating Officer
(203) 346-2340
nalbini@waterbury-k12-ct-us

EXECUTIVE SUMMARY

DATE: November 30, 2023

TO: Honorable Board of Education Commissioners
Honorable Board of Aldermen Members

FROM: Nicholas J. Albini, Chief Operating Officer

RE: Contract for Gutter Repairs at Maloney and Rotella Magnet Schools with New England Masonry and Roofing Company

The Education Department respectfully requests your review and approval of a construction contract for the repair and fabrication of the existing gutter systems at Maloney and Rotella Magnet Schools in the total amount of $98,024 (Maloney $25,723; Rotella $72,301) for work requested and approved by the Education Department under the scope. The contract was initiated under the Request for Proposal #7778. The job was sent to bid twice with New England Masonry and Roofing Company being the only responder to both bids. This Agreement is subject to minor, non-substantive changes to be approved by the Office of the Corporation Counsel.

The project entails gutter system repair and replacement. The work at Maloney consists of replacement of three sections of gutters on the west side of the school, including removal and disposal of existing gutters, fabrication of new aluminum gutters, hangers and outlets. The work at Rotella consists of cleaning and removal of debris from gutters, patching, and fabrication and replacement of straps and outlets. The project is being funded through the Capital Budget. All services will be completed by April 1,2024. New England Masonry and Roofing Company has performed satisfactorily in the past on Education projects.

The Education Department will have a representative present at your upcoming meetings to answer any questions you may have regarding this matter. Thank you for your continued assistance on this matter.

c: Dave Heavener, Mike Konopka

CONSTRUCTION CONTRACT
for

THE CITY OF WATERBURY BOARD OF EDUCATION
FOR
Rotella Magnet & Maloney Elementary School Gutter Repairs
between

the City of Waterbury
and

NEW ENGLAND MASONRY & ROOFING COMPANY

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the CITY OF WATERBURY, City Hall, 235 Grand Street, Waterbury, Connecticut (the "City") and **NEW ENGLAND MASONRY & ROOFING COMPANY**, located at 146 SHERIDAN DRIVE, NAUGATUCK, CT 06770, a State of Connecticut duly registered domestic corporation (the "Contractor").

WHEREAS, the Contractor submitted a Proposal to the City in response to **Request for Proposal ("RFP") Number 7778** for **Rotella Magnet & Maloney Elementary School Gutter Repairs**; and,

WHEREAS, the City accepted the Contractor's Proposal (as subsequently negotiated and revised) for **RFP Number 7778** and,

WHEREAS, the City desires to obtain the Contractor's services for **Rotella Magnet & Maloney Elementary School Gutter Repairs** pursuant to the terms set forth in this Contract (the "Project").

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all of the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with **(i)** any and all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and **(ii)** generally accepted professional standards.

1.1. The Project consists of **Rotella Magnet & Maloney Elementary School Gutter Repairs** as detailed and described in the Bid Documents in **Attachment A** and are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 **RFP Number 7778** (acknowledged by the Contractor as having been received and incorporated by reference);

1.1.2 Contractor's Proposal, dated July 31, 2023 and consisting of 68 pages, including Contractor's 2 page Price Proposal, and Contractor's 1 page Revised Price Proposal, dated October 10, 2023, submitted in response to **RFP Number 7778** (attached hereto);

1.1.3 Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit (incorporated by reference);

1.1.4 Certificates of Insurance (attached hereto);

1.1.5 Performance Bond and Payment Bond (attached hereto);

1.1.6 Technical Specifications consisting of 1 page (attached hereto);

1.1.7 Special Conditions (Article 1 – Article 33) consisting of 5 pages (attached hereto);

1.1.8 General Conditions (Article 1 – Article 111) consisting of 36 pages (attached hereto);

1.1.9 Any and all amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.10 All applicable Federal, State and local statutes, regulations, charter and ordinances (incorporated by reference), and

1.1.11 All permits (including, but not limited to, City of Waterbury Building permit(s)) and licenses (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. In the event that any provision in the Contract Documents conflict with any other provision therein, the provision in the

component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically.

1.2.1 Federal laws and regulations
1.2.2 State, and local laws, regulations, charter and ordinances
1.2.3 Contract Amendment(s) and Change Orders
1.2.4 Contract
1.2.5 Contractor's Price Proposal Form
1.2.6 Special Conditions
1.2.7 General Conditions
1.2.8 Technical Specifications

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Consultant shall provide to the City a copy of the Consultant's licenses, certifications, registrations, etc.

2.3. Activities, Work, and Services Performed in Department of Education Facilities, on School Grounds, at Student Sporting Events, and/or where City Students are Present. For all activities in school facilities and/or Department of Education facilities, the Contractor shall first be required to coordinate all on-site visits and activities with the appropriate Department/personnel in Education, or the designated person and shall obtain any necessary clearance, ID badges, etc. Contractor shall enter and exit all school facilities and Department of Educational facilities as

designated as authorized by the appropriate Department/personnel in Education, or the designated person.

2.4. Criminal Background Check and DCF Registry Check. The Contractor shall comply with the requirements of C.G.S. 10-222 c (g) and shall ensure, and represents to the City, that any employee who will be on school grounds/Department of Education Property/at Department of Education events and/or where City students are present, that will or may have direct contact with a student while providing services pursuant to this Agreement, has stated, in writing, whether such person has ever been convicted of a crime or whether criminal charges were ever pending against such person. The Contractor shall further ensure, and represents to the City that any person who will have direct contact with a student has submitted to a records check of the Department of Children and Families Child Abuse and Neglect Registry established pursuant to Conn. Gen. Stat. §17a-101k, as well as State and National criminal history records checks conducted in accordance with Conn. Gen. Stat. §29-17a, the Federal National Child Protection Act of 1993, and the Federal Volunteers for Children Act of 1998. The Contractor shall not permit any person with a disqualifying criminal history to have contact with a student. The Contractor agrees that "direct contact" shall include the Contractor and its employees providing services under this contract if said services are performed on school grounds/Department of Education Property/at Department of Education events and/or where City students are present.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibilities to examine and to be thoroughly familiar with the City's bid document, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume any and all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submittal of its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP Number 7778** (collectively "Proposal Documents");

3.1.7. it agrees that the Proposal Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8. it has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes; and

3.1.10 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections

and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, state and federal health and safety regulations. Contractor shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall confirm in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense **(i)** adequate off-site storage space for equipment, materials, incidentals, etc., and **(ii)** all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times. This provision shall not excuse the Contractor from timely performance under the Contract.

3.5. Cleaning Up. The Contractor shall at all times keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity, unless the City gives prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform

in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the Contractor shall be made only with the prior written consent of an authorized representative of the City's Using Agency.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. **Contractor's Employees.** The Contractor shall at all times enforce strict discipline and good order among its employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are **(i)** subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or **(ii)** unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed. The Contractor shall thereafter wait for written instructions from the City before proceeding with regard to such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, or necessary, or prudent for the performance of the Contractor's obligations under this Contract and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to

mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions similar to those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment.

4. Responsibilities of the City and City Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract within **FORTY-FIVE (45)** consecutive calendar days of the City's written Notice to Proceed and shall reach Final Completion by **April 1, 2024** (hereinafter referred to as "Contract Time"):

5.1. Within one (1) week of the City's issuance of its written notice to proceed, and prior to the commencement of any work on the Project site, the Contractor shall submit for the City's written approval a construction progress schedule. On a monthly basis, the Contractor shall deliver to the City a written status report

setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **SEVEN HUNDRED FIFTY DOLLARS AND ZERO CENTS ($750.00)** per calendar day for each and every calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damages from any monies due the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire Section 5, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay

In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work,

regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for satisfactory provision of all of the goods and services set forth in this Contract as follows in this Section 6. No claims for additional compensation will be considered for conditions made known to the Contractor prior to bidding. No claims for additional compensation will be considered on account of failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this Section 6, the fee payable to the Contractor shall not exceed **NINETY-EIGHT THOUSAND TWENTY-FOUR DOLLARS AND ZERO CENTS ($98,024.00)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Revised Price Proposal set forth in **Attachment A's** "Contractor's Revised Price Proposal, dated October 10, 2023 and consisting of 1 page, which is summarized below:

i. $ 72,301.00 …. (Bid Item No. 1- Lump Sum for Rotella Magnet School Gutter Replacement)
ii. $ 25,723.00 …. (Bid Item No. 2 – Lump Sum for Maloney Elementary School Gutter Replacement)

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage five percent (5.0 %) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not does not include additional sums that the City may withhold due to the Contractor's failure to comply with provisions of this Contract.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc, all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Vendor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

6.4. Proposal Costs. All costs of the Contractor in preparing its bid for **RFP Number 7778** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final City payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all of the foregoing payment obligations have been fully completed.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

6.7. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.8. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.9. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.9.1 submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment by the City's or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment can not be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide at the City's request, reasonable documentation to substantiate Contractor's Application for Payment.

6.9.2 Progress and Final Payments

The City will make progress payments on account of the Contract Price on the basis of the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be on the basis of the progress of the Scope of Services as determined by the City, according to the schedule of values provided for in the Contract Documents, and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i) three hundred sixty-five (365)** calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time period or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from any and all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. City beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon the City's final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project work-site and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project work-site without securing the prior written consent of an authorized City Using Agency employee.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, Board of Education or any of City's boards, agents, employees or officers by the Contractor or any employee of the Contractor , any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, the Board of Education, any of City's boards, agents, employees as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, agents, employees or officers as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** three hundred sixty-five (365) calendar days after the City delivers its written notice of its acceptance of the Project.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, at all times during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance:
$1,000,000.00 each Occurrence
$2,000,000.00 General Aggregate
$2,000,000.00 Products/Completed Operations Aggregate
Providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance:
$1,000,000.00 Combined Single Limit Each Accident
Any Auto, All Owned and Hired Autos
Providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employer Liability (EL):
EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance:
$1,000,000.00 each Occurrence
$1,000,000.00 Aggregate
Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: All Contractor's Insurance except Workers' Compensation shall be endorsed to add the City and the City of Waterbury Board of Education as additional insured and provide waiver of subrogation on all policies. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury and the City of Waterbury Board of Education are listed as Additional Insured on a primary and non-contributory basis on all policies except Workers' Compensation and Professional Liability. All policies shall include a Waiver of Subrogation".** The City's Request for Proposal Number must be shown on the certificate of insurance to assure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy(ies).

11.8. If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this

contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

11.9 Original, completed Certificates of Insurance must be presented to the City of Waterbury prior to contract issuance. Contractor agrees to provide replacement/renewal certificates at least thirty (30) calendar days prior to the expiration date of the policies. Should any of the above described policies be cancelled, limits reduced or coverage altered, thirty (30) calendar days written notice must be given to the City of Waterbury.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT, as supplemented in the Department of Labor Regulations (29 CFR, Part 3); DAVIS BACON ACT as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the HOUSING and COMMUNITY DEVELOPMENT ACT of 1974, as amended; TITLE 31 and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new

construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn.Gen.Statute 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.2.2 The Contractor is aware of, and shall comply with, the provisions of both the Federal Davis-Bacon Act and the Federal American Recovery and Reinvestment Act of 2009, the provisions of both acts hereby incorporated by reference and made a part of this Contract. The Federal Davis-Bacon Act provides that Federal wage rate laws apply to certain federally funded contracts. The American Recovery and Reinvestment Act ("ARRA") provides that Federal wage rate laws apply to all ARRA funded contracts regardless of the contract's dollar value.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

12.4. Compliance with CONN. GEN. STAT. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5.

12.4.1 Definitions – For purposes of this paragraph:

i. "Small contractor" means any contractor, subcontractor, manufacturer, service company or nonprofit corporation (A) that maintains its principal place of business in the state, (B) that had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year prior to such application, and (C) that is independent. "Small contractor" does not include any person who is affiliated with another person if both persons considered together have a gross revenue exceeding fifteen million dollars.

ii. "Minority business enterprise" means any small contractor (A) fifty-one per cent or more of the capital stock, if any, or assets of which are owned by a person or persons who (i) exercise operational authority over the daily affairs of the enterprise, (ii) have the power to direct the management and

policies and receive the beneficial interest of the enterprise, (iii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, and (iv) are members of a minority, as such term is defined in subsection (a) of section 32-9n, or are individuals with a disability, or (B) which is a nonprofit corporation in which fifty-one per cent or more of the persons who (i) exercise operational authority over the enterprise, (ii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, (iii) have the power to direct the management and policies of the enterprise, and (iv) are members of a minority, as defined in this subsection, or are individuals with a disability.

iii. "Municipal public works contract" means that portion of an agreement entered into on or after October 1, 2015, between any individual, Contractor or corporation and a municipality for the construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, which is financed in whole or in part by the state, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees but excluding any project of an alliance district, as defined in section 10-262u, as amended by this act, financed by state funding in an amount equal to fifty thousand dollars or less.

12.4.2 The Contractor and subcontractor shall comply with the specific requirements of the State of Connecticut Set Aside Program, CONN. GEN. STAT. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5, if the municipal public works contact awarded to the Contactor is funded in whole or in part by state funds.

12.4.3 The Contactor shall be subject to the following set-aside requirements if the municipal public works contact, is funded in whole or in part by the State of Connecticut, and is in excess of FIFTY THOUSAND DOLLARS ($50,000.00), for the construction, rehabilitation, conversion, extension, demolition, or repairing of a public building or highway, or other changes or improvements in real property.

12.4.4 Set-Aside requirements – Any contractor awarded a municipal public works contract, on the basis of competitive bidding procedures, shall comply with the following Set –Aside requirements:

i. set aside at least twenty-five per cent (25%) of the total value of the state's financial assistance for such contract for award to subcontractors who are small contractors, and

ii. of that portion to be set aside in accordance with Subparagraph i. of this subdivision, reserve a portion equivalent to twenty-five per cent (25%) of the total value of the contract or portion thereof to be set aside for awards to subcontractors who are minority business enterprises.

12.4.5 Failure of the Contractor or subcontractor to comply with the State of Connecticut Set-Aside requirements shall be a material breach of this Contract.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as herein specified. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements, and will require the same of all subcontractors

13.3. Affirmative Action.

13.3.1. Pursuant to CONN. GEN. STAT. § 4a-60, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every quasi-public agency project contract and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression,

intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, as amended by this act, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56, as amended by this act.

(b) If the contract is a public works contract, municipal public works contract or contract for a quasi-public agency project, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works or quasi-public agency project.

13.3.2. Pursuant to CONN. GEN. STAT. § 4a-60a, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the state of Connecticut, and that employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

14. Good Jobs Ordinance

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly-Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term "Good Faith Efforts" shall have the same meaning as it does in the Good Jobs Ordinance.

The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan-of-action shall include the anticipated number of job positions required for the Work. Not later than five (5) business day prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-action and other relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2 Liquidated Damages Applicable To Section 14.1

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay

one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due the City, as liquidated damages, as a result of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated hereunder to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Housing and Urban Development Section 3 Clause. In the event this Contract is funded, in whole or in part, through Housing and Urban Development assistance, 24 C.F.R. §135.38 may apply and the Contractor shall then be required to comply with the following (referred to as the "Section 3 clause"):

15.1. The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. § 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted Projects covered by Section 3, shall, to the greatest extent feasible, be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

15.2. The parties to this Contract agree to comply with HUD's regulations in 24 C.F.R. part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

15.3. The Contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the Contractor's commitments under this Section 3 clause, and will

post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

15.4. The Contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 C.F.R. part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 C.F.R. part 135. The Contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 C.F.R. part 135.

15.5. The Contractor will certify that any vacant employment positions, including training positions, that are filled **(i)** after the Contractor is selected but before the Contract is executed, and **(ii)** with persons other than those to whom the regulations of 24 C.F.R. part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 C.F.R. part 135.

15.6. Noncompliance with HUD's regulations in 24 C.F.R. part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

15.7. With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 450e) also applies to the work to be performed under this Contract. Section 7(b) requires that to the greatest extent feasible **(i)** preference and opportunities for training and employment shall be given to Indians, and **(ii)** preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this Contract that are subject to the provisions of Section 3 and section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving

written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services actually performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation and disbursement of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City in the event that sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services

and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. With regard to third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, any and all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City's Using Agency, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work

so as to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing, made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract any time during the period of this Contract or at any time during the twelve month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor, and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition, or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period of time as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional cost or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request**.**

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP Number 7778**, and **(ii)** the Contractor's response to **RFP Number 7778**. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party due to the fact that the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that its waives a trial by jury as to any and all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor: New England Masonry & Roofing Company
146 Sheridan Drive
Naugatuck, CT 06770

City: Nicholas J. Albini
Interim Chief Operating Officer
Waterbury Public Schools
236 Grand Street
Waterbury, CT 06702

With copy to: City of Waterbury
Office of the Corporation Counsel
City Hall Municipal Building - 3rd Floor
235 Grand Street
Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions.
The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether or not they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized

Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10 The Contractor hereby acknowledges receipt of a copy of the Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM". For Chapter 39, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of any

and all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1 Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2 Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3 Bidder or Proposer: A person, partnership, corporation or other business organization submitting a bid or proposal on the form for the Work contemplated.

35.4 City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5 Construction Supervisor: An employee of the City of Waterbury, or other City duly authorized person.

35.6 Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion (ii) Final Completion and any other identified Project Milestone.

35.7 Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8 Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized City representative's, written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9 Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.10 Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11 Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.12 Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13 Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14 Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15 Substantial Completion: The time at which, in the opinion of the Project Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work mean Substantial Completion thereof.

35.16 Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17 Supplementary General Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18 Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19 Using Agency: **City of Waterbury Education Department School Inspector's Office.**

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

CITY OF WATERBURY

By:_____
Neil M. O'Leary, Mayor

Date: _____

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

NEW ENGLAND MASONRY & ROOFING COMPANY

By:_____
Print name:
Its _____

Date: _____

ATTACHMENT A

Attachment A shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 **RFP Number 7778** (acknowledged by the Contractor as having been received and incorporated by reference);

1.1.2 Contractor's Proposal, dated July 31, 2023 and consisting of 68 pages, including Contractor's 2 page Price Proposal, and Contractor's 1 page Revised Price Proposal, dated October 10, 2023, submitted in response to **RFP Number 7778** (attached hereto);

1.1.3 Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit (incorporated by reference);

1.1.4 Certificates of Insurance (attached hereto);

1.1.5 Performance Bond and Payment Bond (attached hereto);

1.1.6 Technical Specifications consisting of 1 page (attached hereto);

1.1.7 Special Conditions (Article 1 – Article 33) consisting of 5 pages (attached hereto);

1.1.8 General Conditions (Article 1 – Article 111) consisting of 36 pages (attached hereto);

1.1.9 Any and all amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.10 All applicable Federal, State and local statutes, regulations, charter and ordinances (incorporated by reference), and

1.1.11 All permits (including, but not limited to, City of Waterbury Building permit(s)) and licenses (incorporated by reference).

NEW ENGLAND
Masonry & Roofing Company
RESTORATION CONTRACTOR Since 1947
146 Sheridan Drive • Naugatuck, Connecticut 06770 203.729.2266 • Fax 203.723.9633 • www.nemasonry.com

The City of Waterbury Board of Education
Proposal #7778
Rotella Magnet & Maloney Elementary School
Gutter Repairs

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Index

Section 1 – Attachment A Documents
Section 2 – Attachment C Documents
Section 3 – Certificate of Insurance
Section 4 – Proposer Information Including Bid Proposal
Section 5 – AIA Document A305

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 2023)
Persons or Entities Conducting Business with the City

I. Outstanding Purchase Orders of Contracts with the City

A. Contracts

No Contracts with the City ☐

Roof Replacement at Water Pollution Control
(Service or Commodity Covered by Contract)

120
(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 2023)
Persons or Entities Conducting Business with the City

B. Purchase Order(s).

No Purchase Order(s) with the City [X]

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 2023)
Persons or Entities Conducting Business with the City

II. Financial Interest Disclosure
(Public Officials, Employees or Board and Commission Members with interest in Person or Entity Conducting Business with the City)

No Officials, Employees or Board and Commission Members with Financial Interest [X]

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc...)

Interest Held By:
Self [ ] Spouse [ ] Joint [ ] Child [ ]

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc...)

Interest Held By:
Self [ ] Spouse [ ] Joint [ ] Child [ ]

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

1. I certify that this Annual Statement of Financial Interests is a complete and accurate statement of those matter required to be disclosed by me pursuant to §39.061 of the Code of Ordinances.

2. I understand that if I fail to file an Annual Statement (or amendment thereto) or an inaccurate Statement I will be in violation with Chapter 39 of the Code of Ordinance and, thereby, subject to the remedies set forth in §§38.71 and 39.101 of said Code.

3. I understand that I must file with the City Clerk, within fifteen (15) days following any reportable occurrence, any amendments to the Annual Statement.

I have read and agree to the above certification.

New England Masonry & Roofing Co.
(Name of Company, if applicable)

Signature of Individual (or Authorized Signatory)

July 31, 2023
Date

John Ciaralli - Senior Vice President
Print or Type Name and Title (if applicable)

DELIVERED | By Mail ☐ Hand-Delivered ☒

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

City of Waterbury Certification
Regarding
Debarment, Suspension, Ineligibility and Exclusion

If the transaction is Federally funded, in whole or in part (including pass through grants to state and/or municipal government), this certification is required by the regulations implementing one or more Presidential Executive Orders. If this transaction is funded by the State of Connecticut, in whole or in part, this certification is required in accordance with one or more State of Connecticut general statutes.

1. By signing and submitting the attached proposal and/or this document, the prospective lower tier participant, vendor, or contractor is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant, vendor, or contractor knowingly rendered an erroneous certification, in addition to other remedies available to the Federal , State, or City government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant, vendor or contractor shall provide immediate written notice to the person to which the attached proposal and/or this document is submitted if at any time the prospective lower tier participant, vendor or contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction", "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principal", "proposal", and "voluntarily excluded", as used herein, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 and/or State of Connecticut statutes and regulations. You may contact the person to which this proposal and/or this document is submitted for assistance in obtaining a copy of the foregoing.
5. The prospective lower tier participant, vendor or contractor agrees by submitting the attached proposal and/or this document that, should the proposed covered transaction be entered into, it shall not knowingly enter into any covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant, vendor or contractor further agrees by submitting the attached proposal and/or this document that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion-Lower Tier Covered Transactions", without modification, in all covered transaction and in all solicitations for covered transactions.
7. A participant in a covered transaction may rely upon the certification of a prospective participant in a covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may but is not required to, check the Non-procurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required herein. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 herein, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal, State or Municipal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification

(1) The prospective recipient of monies hereby certifies, by submission of its attached proposal and/or by execution of this document, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, disqualified, or voluntarily excluded from bidding or participation in the proposed transaction by any Federal, State, or Municipal department or agency or by the statutes, regulations or ordinances of the foregoing departments and agencies.

(2) Where the prospective recipient of monies is unable to certify to any of the statements in this certification, such prospective participant shall attach a written explanation hereto.

Full Legal Name and address of Recipient, Vendor, or Contractor: New England Masonry & Roofing Co.
146 Sheridan Dr.
Naugatuck, CT 06770

Print Name and Title of Authorized Representative: John Ciaralli - Senior Vice President

Signature of Authorized Representative:

Date: 07/31/23

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CITY OF WATERBURY

DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

For the purposes of this Disclosure of Outstanding Financial Obligations, the following definitions apply:

(a) "Contract" means any Public Contract as defined below.

(b) "Person" means one (1) or more individuals, partnerships, corporations, associations, or joint ventures.

(c) "Public Contract" means any agreement or formal commitment entered into by the city to expend funds in return for work, labor, services, supplies, equipment, materials or any combination of the foregoing, or any lease, lease by way of concession, concession agreement, permit, or per agreement whereby the city leases, grants or demises property belonging to the city, or otherwise grants a right of privilege to occupy or to use said property of the city.

(d) "City" means any official agency, board, authority, department office, or other subdivision of the City of Waterbury.

State of CT

SS.: Naugatuck

County of New Haven

John Ciaralli, being first duly sworn, deposes and says that:

1. I am the ***owner, partner, officer, representative, agent or*** Senior Vice President of New England Masonry & Roofing Co. (Contractor's Name), the Contractor that has submitted the attached agreement.

2. I am fully informed respecting the preparation and contents of the attached Agreement and of all pertinent circumstances respecting such Agreement;

3. That as a person desiring to contract with the City (check all that apply):

____ The Contractor and each owner, partner, officer, representative, agent or affiliate of the Contractor has filed a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

_X_ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor are required to file a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

_X_ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, owes back taxes to the City of Waterbury

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

X Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, has any other outstanding obligations to the City of Waterbury

4. The following list is a list of the names of all persons affiliated with the business of the Contractor, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1 None				
2				
3				
4				

5. That as a person desiring to contract with the City:

(a) The Contractor or an owner, partner, officer, representative, agent or affiliate of the Contractor provides, or has provided, services or materials to the City within one (1) year prior to the date of this disclosure, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1 None				
2				
3				
4				

(b) The Contractor possesses an ownership interest in the following business organizations, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized) :

Organization Name	Address	Type of Ownership
1 None		
2		
3		
4		

(c) The following persons possess an ownership interest in the Contractor. If the Contractor is a corporation, list all of the officers of the corporation and the names of each stockholder whose shares exceed twenty-five

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

(25) percent of the outstanding stock, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	DOB	Stock %
1 Lorraine Emanuel	President	09/29/49	39.14
2 Joan Mancinone	Executive Vice President	02/23/52	23.61
3			
4			

(d) Of the following of the affiliates, individuals or business entities identified in this affidavit, list each that owns, owned, or within one (1) year prior to the date of this disclosure has owned, taxable property situated in the City of Waterbury, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Address	DOB
1				
2				
3				
4				

(e) If the Contractor conducts business under a trade name, the following additional information is required: the place where such entity is incorporated or is registered to conduct such business; and the address of its principal place of business, if none, state none:

TRADE NAME	PLACE OF INCORPORATION/REGISTRY	PRINCIPAL PLACE OF BUSINESS
1		
2		
3		
4		

I hereby certify that the statements set forth above are true and complete, and I understand that any incorrect information or omission of information from this affidavit may result in the immediate termination of the Contractor's agreement with the City of Waterbury.

For Partnership/Sole Proprietor

In presence of:

Witness

Name of Partnership/Business

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

By: _____
Name of General Partner/ Sole Proprietor

_____
Address of Business

State of _____)
) SS
County of _____)

_____ being duly sworn,

Deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202_.

_____
(Notary Public)

My Commission Expires: _____

For Corporation

_____
Witness

John Ciaralli
Name of Corporate Signatory

146 Sheridan Dr. Naugatuck, CT 06770
Address of Business

Affix
Corporate
Seal

By: _____
Name of Authorized Corporate Officer

Its: Senior Vice President
Title

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

State of CT)
) SS Naugatuck
County of New Haven)

John Ciaralli being duly sworn,
deposes and says that he/she is Senior Vice President of New England Masonry & Roofing Co. and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this 31st day of July 2023.

(Notary Public)

My Commission Expires: May 31, 2028

LORETTA M. SMITH
NOTARY PUBLIC
MY COMMISSION EXPIRES MAY 31, 2028

New England Masonry & Roofing Co
146 Sheridan Drive
Naugatuck, CT 06770

CORPORATE RESOLUTION

I, Alexis Langlois, hereby certify that I am the duly elected and acting Secretary of New England Masonry Roofing Co., a corporation organized and existing under the laws of the State of CT, do hereby certify that the following facts are true and were taken from the records of said corporation.

The following resolution was adopted at a meeting of the corporation duly held on the 1st day of June, 2023.

"It is hereby resolved that John Ciaralli - Senior Vice President is authorized to make, execute and approve, on behalf of this corporation, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the corporate seal of said New England Masonry & Roofing Co. corporation this 31st day of July, 2023.

Secretary

ATTACHMENT C

KEVIN MC CAFFERY
DIRECTOR OF PURCHASING
235 GRAND STREET, ROOM 103
WATERBURY, CT 06702

The undersigned declares that the only persons or parties interested in this Proposal as principals are as stated; that the Proposal is made without any collusion with other persons, firms, or corporations; that Proposer has carefully examined the entire Request for Proposal; that Proposer has informed itself fully in regard to all conditions pertaining to the Work and the place where it is to be performed; and that with this representation, the undersigned makes this Proposal. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Proposal and Form are a part.

The undersigned agrees and covenants that the Contract Time shall commence on delivery of the City of Waterbury's written notice to proceed, which shall occur after contract execution by both parties.

The undersigned acknowledges receipt of addenda numbered: (insert date)

1 N/A _____ 4 _____

2 _____ 5 _____

3 _____ 6 _____

All Work for this Project shall be performed at the Proposal Prices as described in the Proposal Documents.

The undersigned hereby certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

06-0811146
Social Security Number
or Federal Identification Number

Signature of Individual or Corporate Name

John Ciaralli
Corporate Officer
(if applicable)

City notice of acceptance should be mailed, telegraphed or delivered to the undersigned Proposer at the following address:

Name New England Masonry & Roofing Co.
By: Senior Vice President
(Title)
Business Address: 146 Sheridan Dr., Naugatuck, CT 06770
(City, State, Zip Code)

Phone: Office 203-729-2266 Cell 203-410-5958
Email: johnc@nemasonry.com
Date: July 31, 2023

Note: If the Proposer is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 7/27/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
IMA, Inc. - Colorado Division
1705 17th Street, Suite 100
Denver CO 80202

CONTACT NAME: IMA Construction Team
PHONE (A/C, No, Ext): FAX (A/C, No):
E-MAIL ADDRESS: constructioncerts@imacorp.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Arch Insurance Company	11150
INSURER B : Navigators Insurance Company	42307
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
New England Masonry & Roofing Company
146 Sheridan Drive
Naugatuck, CT 06770

NEWENGL-01

COVERAGES **CERTIFICATE NUMBER:** 1886772711 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY	Y	Y	ZAGLB9229006	5/1/2023	5/1/2024	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE [X] OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
							MED EXP (Any one person)	$ 5,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY [X] PRO-JECT [X] LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY	Y	Y	ZACAT9250206	5/1/2023	5/1/2024	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
B	UMBRELLA LIAB [X] OCCUR		Y	PT23EXCZ056KQIV	5/1/2023	5/1/2024	EACH OCCURRENCE	$ 5,000,000
	X EXCESS LIAB [ ] CLAIMS-MADE						AGGREGATE	$ 5,000,000
	DED RETENTION $							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY		Y	ZAWCI9421406	5/1/2023	5/1/2024	X PER STATUTE / OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [N] N/A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
City of Waterbury and the Waterbury Board of Education are included as Additional Insured on the General Liability and Automobile Liability Policies, if required by written contract or agreement, subject to the policy terms and conditions. This Insurance is Primary & Non-Contributory on the General Liability, Automobile Liability and Excess Liability Policies, if required by written contract or agreement, subject to the policy terms and conditions. A Waiver of Subrogation is provided in favor of Certificate Holder and all other parties required by the contract on the General Liability, Automobile Liability, Excess Liability and Workers Compensation Policies, if required by written contract or agreement, subject to the policy terms and conditions.

CERTIFICATE HOLDER

City of Waterbury
235 Grand St., Room 103
Waterbury CT 06702

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Brenda Vinsit

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location(s) Of Covered Operations
ALL PARTIES WHERE REQUIRED BY A WRITTEN CONTRACT	
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

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C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location And Description Of Completed Operations
ALL PARTIES WHERE REQUIRED BY A WRITTEN CONTRACT	
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – ENGINEERS, ARCHITECTS OR SURVEYORS NOT ENGAGED BY THE NAMED INSURED

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Engineers, Architects Or Surveyors Not Engaged By The Named Insured:
ALL PARTIES WHERE REQUIRED BY A WRITTEN CONTRACT
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

A. **Section II – Who Is An Insured** is amended to include as an additional insured the architects, engineers or surveyors shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations performed by you or on your behalf.

Such architects, engineers or surveyors, while not engaged by you, are contractually required to be added as an additional insured to your policy.

However, the insurance afforded to such additional insured:

1. Only applies to the extent permitted by law; and
2. Will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusion applies:

This insurance does not apply to "bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of or the failure to render any professional services, including:

1. The preparing, approving, or failing to prepare or approve, maps, drawings, opinions, reports, surveys, change orders, designs or specifications; or
2. Supervisory, inspection or engineering services.

This exclusion applies even if the claims against any insured allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that insured, if the "occurrence" which caused the "bodily injury" or "property damage", or the offense which caused the "personal and advertising injury", involved the rendering of or the failure to render any professional services.

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C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

The most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

PRIMARY AND NONCONTRIBUTORY – OTHER INSURANCE CONDITION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

The following is added to the **Other Insurance** Condition and supersedes any provision to the contrary:

Primary And Noncontributory Insurance

This insurance is primary to and will not seek contribution from any other insurance available to an additional insured under your policy provided that:

(1) The additional insured is a Named Insured under such other insurance; and

(2) You have agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

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WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Person Or Organization:
ANY PERSON OR ORGANIZATION WHERE WAIVER OF OUR RIGHT TO RECOVER IS PERMITTED BY LAW AND IS REQUIRED BY WRITTEN CONTRACT PROVIDED SUCH CONTRACT WAS EXECUTED PRIOR TO THE LOSS
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions:**

We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". This waiver applies only to the person or organization shown in the Schedule above.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – DESIGNATED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

SCHEDULE

Name of Person(s) or Organization(s):
ANY PERSON OR ORGANIZATION THAT YOU HAVE AGREED IN WRITTEN CONTRACT THAT SUCH PERSON OR ORGANIZATION IS AN ADDITIONAL INSURED ON THIS POLICY. THE COVERAGE PROVIDED BY THIS ENDORSEMENT IS PRIMARY TO AND NON-CONTRIBUTORY WITH, ANY OTHER INSURANCE AVAILABLE TO THE ADDITIONAL INSURED

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

Under **Covered Autos Liability Coverage**, the **Who is An Insured** provision is amended to include as an "insured" the person(s) or organization(s) named in the Schedule above, but only with respect to their legal liability for your acts or omissions or acts or omissions of any person for whom **Covered Auto Liability Coverage** is afforded under this policy.

All other terms and conditions of this Policy remain unchanged.

Endorsement Number:

Policy Number:

Named Insured:

This endorsement is effective on the inception date of this Policy unless otherwise stated herein:

Endorsement Effective Date:

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured:
Endorsement Effective Date:

SCHEDULE

Name(s) Of Person(s) Or Organization(s): ANY PERSON OR ORGANIZATION WHERE WAIVER OF OUR RIGHT TO RECOVER IS PERMITTED BY LAW AND IS REQUIRED BY WRITTEN CONTRACT PROVIDED SUCH CONTRACT WAS EXECUTED PRIOR TO THE LOSS
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The **Transfer Of Rights Of Recovery Against Others To Us** condition does not apply to the person(s) or organization(s) shown in the Schedule, but only to the extent that subrogation is waived prior to the "accident" or the "loss" under a contract with that person or organization.

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WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

ANY PERSON OR ORGANIZATION WHERE WAIVER OF OUR RIGHT TO RECOVER IS PERMITTED BY LAW AND IS REQUIRED BY WRITTEN CONTRACT PROVIDED SUCH CONTRACT WAS EXECUTED PRIOR TO DATE OF LOSS

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.
(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective Policy No. Endorsement No.
Insured NEW ENGLAND MASONRY & ROOFING CO. Premium INCL.
Insurance Company ARCH INSURANCE COMPANY

DATE OF ISSUE: Countersigned By _____

© 1983 National Council on Compensation Insurance.

MASSACHUSETTS LIMITS OF LIABILITY ENDORSEMENT

This endorsement applies only to the insurance provided by Part Two (Employers Liability Insurance) because Massachusetts is listed in Item 3.A. of the Information Page.

Our liability to you under Section 25 of Chapter 152 of the General Laws of Massachusetts is not subject to the limit of liability that applies to Part Two (Employers Liability Insurance).

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NEW YORK LIMIT OF LIABILITY ENDORSEMENT

This endorsement applies only to the insurance provided by Part Two (Employers Liability Insurance) because New York is shown in Item 3.A. of the Information Page.

We may not limit our liability to pay damages for which we become legally liable to pay because of bodily injury to your employees if the bodily injury arises out of and in the course of employment that is subject to and is compensable under the Workers' Compensation Law of New York.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

NOTICE OF CANCELLATION – CERTIFICATE HOLDERS (SPECIFIED DAYS)

The person(s) or organization(s) listed or described in the Schedule below have requested that they receive written notice of cancellation when this policy is cancelled by us. We will mail or deliver to the Person(s) or Organization(s) listed or described in the Schedule a copy of the written notice of cancellation that we sent to you. If possible, such copies of the notice will be mailed at least 60 days, except for cancellation for non-payment of premium which will be mailed 10 days, prior to the effective date of the cancellation, to the address or addresses of certificate holders as provided by your broker or agent.

Schedule

Person(s) or Organization(s) including mailing address:

All certificate holders where written notice of the cancellation of this policy is required by written contract, permit or agreement with the Named Insured and whose names and addresses will be provided by the broker or agent listed in the Declarations Page of this policy for the purposes of complying with such request.

This notification of cancellation of the policy is intended as a courtesy only. Our failure to provide such notification to the person(s) or organization(s) shown in the Schedule will not extend any policy cancellation date nor impact or negate any cancellation of the policy. This endorsement does not entitle the person(s) or organization(s) listed or described in the Schedule above to any benefit, rights or protection under this policy.

Any provision of this endorsement that is in conflict with a statute or rule is hereby amended to conform to that statute or rule.

All other terms and conditions of this policy remain unchanged.

Endorsement Number:

Policy Number:

Named Insured:

This endorsement is effective on the inception date of this Policy unless otherwise stated herein:

Endorsement Effective Date:

NEW ENGLAND
Masonry & Roofing Company
RESTORATION CONTRACTOR Since 1947
146 Sheridan Drive • Naugatuck, Connecticut 06770 203.729.2266 • Fax 203.723.9633 • www.nemasonry.com

REQUEST FOR PROPOSAL #7778
BY
THE CITY OF WATERBURY BOARD OF EDUCATION
FOR
Rotella Magnet & Maloney Elementary School Gutter Repairs

ATTACHMENT E

Price Proposal

(Must be submitted as part of Proposal in a separate sealed envelope, marked "Confidential: Price Proposal.")

Date: July 31, 2023

Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

Sir:

Pursuant to and in compliance with your RFP, the Undersigned,

New England Masonry & Roofing Co.
(Print or Type Company/Corporate Name)

146 Sheridan Dr. Naugatuck, CT 06770
(Print or Type Business Address)

having carefully examined all the RFP Documents, together with all Addenda, as acknowledged on Attachment C, and having informed itself fully in regard to all conditions and related requirements pertaining to the performance of services required under this RFP; and that with this representation, the undersigned makes this Proposal, as follows:

[Proposal continued on following page(s)]

NEW ENGLAND
Masonry & Roofing Company
RESTORATION CONTRACTOR Since 1947
146 Sheridan Drive • Naugatuck, Connecticut 06770 203.729.2266 • Fax 203.723.9633 • www.nemasonry.com

September 6, 2023

Waterbury Public Schools
School Inspector's Office
236 Grand Street
Waterbury, CT 06702
Attn: Paul Schoening

Re: RFP 7778

As requested, the following bid breakdown is submitted for the Rotella and Maloney gutter projects.

ROTELLA – BUILT IN GUTTER MAINTENANCE:

A. Install necessary man lift, rigging and fall protection equipment to work in a neat and safe manner.
B. Clean out and remove all debris from gutters.
C. Patch holes in gutter using 26 gauge sheet metal set into sealant and pop riveted into place.
D. Fabricate and replace up to 24 leader outlets with new, attach existing leaders to new outlets.
E. Examine all gutter straps and repair or replace missing or damaged straps as required.
F. Strip in all seams with Geocel 1200 Poly Mesh Fabric set into two layers of brush applied Geocel 2315LRF Leak Repair-Fibered Brushable Coating.

Price for above work $73,283.00
Deduct for eliminating the leader that was to be added on the east side. - 982.00
New total for Rotella School $72,301.00

Unit price for additional outlet fabrication and replacement..... $190.00 each

MALONEY SCHOOL - GUTTER REPLACEMENT:

A. Provide man lift and fall protection equipment to work in a neat and safe manner.
B. Remove the existing K-style gutters from the roof.
G. Fabricate new .040 aluminum gutters matching the profile, size, and color of the existing gutters as close as possible.

NEW ENGLAND
Masonry & Roofing Company
RESTORATION CONTRACTOR Since 1947
146 Sheridan Drive • Naugatuck, Connecticut 06770 203.729.2266 • Fax 203.723.9633 • www.nemasonry.com

H. Reinforce gutters using 1/8x1" aluminum bar.
I. Fabricate hangers using 1/8x1" aluminum bar.
J. Attach to the existing standing seam metal roof.
K. Fabricate leader outlets and attach to the existing leaders.
L. Replace missing sections of leader with new.

Price for above work $25,723.00

JC/Waterbury Public Schools.9

It is responsibility of the customer to (1) advise New England Masonry & Roofing Company in writing of the location of any wires, conduit, pipes, or other structures concealed within the existing roof assembly; and (2) protect the interior of the building, and any personal property therein, from damage that may occur from dust, debris, or roofing material falling through the existing roof deck.

CT State Sales Tax will be added to above price, if applicable. Prices are subject to change after 30 days from above date based on material price increases. This company is fully covered by Worker's Compensation, Public liability and Property Damage Insurance. Any city, town, or state permits required to complete specified job will be an added charge to the base price, unless otherwise specified.

The undersigned agrees to pay interest on such sums as remain unpaid thirty days after the date of invoice, at the rate of 1 1/2% per month (18% annually) plus cost of collection and attorney's fees incurred in the collection of sums due. Please read carefully printed conditions on reverse side of this sheet as they are part of this estimate.

Accepted

By _____ By _____

Date _____

John Ciaralli
Vice President of Sales

An Affirmative Action / Equal Opportunity Employer

RFP 7778 – revised proposal

Rotella & Maloney Magnet Schools Gutter Replacement		
Description	**Amount (In Words)**	**Amount (In $)**
Rotella	Seventy two thousand, three hundred & one dollars	$ 72,301.00
Maloney	Twenty five thousand, seven hundred twenty three dollars	$ 25,723.00
	GRAND TOTAL	98,024.00

END OF ATTACHMENT E

Senior Vice President

New England Masonry & Roofing Co.

October 10, 2023

NEW ENGLAND
Masonry & Roofing Company
RESTORATION CONTRACTOR Since 1947
146 Sheridan Drive • Naugatuck, Connecticut 06770 203.729.2266 • Fax 203.723.9633 • www.nemasonry.com

The City of Waterbury
Proposal #7778
City of Waterbury Board of Education
Rotella Magnet & Maloney Elementary School Gutter Repairs

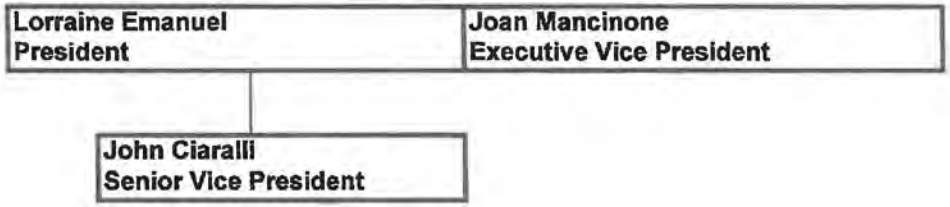
1. Proposer Information:
   a. New England Masonry & Roofing Co.
   b. 146 Sheridan Dr., Naugatuck, CT 06770
   c. Organized in 1947
   d. Incorporated in the State of CT on October 4, 1962
   e. Our current Company name has been in effect for 17 years.
   f. Please see the attached resumes and organizational chart showing experience and reporting relationships.

2. Experience, Expertise and Capabilities
   a. Philosophy statement and business focus – See attached
   b. Summary of relevant experience-
      Please see the attached resumes and organizational chart showing experience and reporting relationships.
   c. Personnel Listing: Service Dept. techs well versed with several roof systems.
   d. Conflict of Interest - None

3. Statement of Qualifications and Work Plan
   a. Qualifications- Experience with all types of roof systems on the existing structure.
   b. Work Plan- Install necessary rigging and fall protection equipment to work in a neat and safe manner.
   c. Services Expected of the City- Roof repairs as required for different roof systems.

4. Cost Schedule- See attached price sheet.

NEW ENGLAND MASONRY & ROOFING CO.
Organizational Chart - Principal Members



NEW ENGLAND
Masonry & Roofing Company
RESTORATION
CONTRACTORS
Since 1947
146 Sheridan Drive • Naugatuck, Connecticut 06770 • 203.729.2266 • Fax 203.723.9633 • www.nemasonry.com

Joan A. Mancinone
Executive Vice President
(Resume)

EMPLOYMENT HISTORY

New England Masonry & Roofing Co.
146 Sheridan Drive
Naugatuck, CT 06770
203-729-2266

POSITIONS HELD:

2005-Present Executive Vice President
- Oversees Personnel Payroll Department. Assists the President in the general supervision of Company management.

1992-2005 2nd Corporate Secretary/Personnel
- In charge of all aspects of personnel including payroll, worker's compensation, and employee benefits. Also oversees employee's training for lead and asbestos abatement certification and keeps records of same. Member of Board of Directors.

1988 to 1992 Assistant Office Manager
- Payroll, Accounts Payable and general office duties.

Devino Fuels
Matoon Road
Waterbury, CT 06708

1987 to 1988 Office Manager
- Managed Payroll, Accounts Receivable and Accounts Payable departments. Administered staff of ten employees. Did Credit and Collections, also did all State and Federal fuel taxes.

Andy's Oil Service
Walnut Street
Waterbury, CT 06704

1981 to 1987 Full Charge Bookkeeper
- Payroll, Accounts Receivable, Accounts Payable, Bank reconciliation's along with Credit and Collections. Responsible for State and Federal payroll and fuel taxes. Posted to General Ledger.

Postal Instant Press
Park Square
Boston, MA

1976 to 1980 Office Manager
- Payroll, Accounts Payable, Bank Reconciliation's. Managed Accounts Receivable Department staff of two. Did State and Federal payroll taxes and posted to General Ledger.

Education

1970 Graduate of Saint John Baptist High School.
- College Preparatory Courses

Personal

Active for 35 years as a volunteer in animal welfare. Founder and director of Straykatz, Inc., a 501C3 organization that raises funds to spay/neuter cats and re-home strays.

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John Ciaralli

Senior Vice President of New England Masonry & Roofing Co.

(Resume)

2005 – Present

- Promoted to Vice President of Sales for Masonry and Roofing Divisions in 2005
- Assists in the direct general supervision of Company management
- Reviews estimates and project take offs with Company estimators and superintendants
- In charge of marketing strategies for New England Masonry and Roofing Co.
- Heads up the roofing service division utilizing a close rapport with major manufacturers for warranty related services

July 1983

- Hired on July 6th at New England Masonry & Roofing Co. as a junior estimator
- Moved up through the ranks to project manager working in both roofing and masonry divisions
- Has managed projects performed in-house up to $2,000,000
- Extensive knowledge of many trades
    - Masonry restoration projects including the following scopes of work; brick laying and repairs, stone repairs, cleaning, pointing, caulking, painting, concrete repair, structural repairs, carpentry, waterproofing, asbestos, lead and PCB abatement and carpentry
    - Roofing projects including the following scopes of work; built up roof systems, single ply roof systems, slate, metal, shingles, tile and custom sheet metal
- Preparing of preventive maintenance programs and budgets

Summer 1979

- Introduced to masonry trade as laborer

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Lorraine M. Emanuel
President of New England Masonry & Roofing Co.
(Resume)

EMPLOYMENT HISTORY

New England Masonry & Roofing Co.
146 Sheridan Drive
Naugatuck, CT 06770
203-729-2266

POSITIONS HELD:

2005-Present President
- Presides over all Board of Director Meetings, Employee Committee Meetings, monthly foreman meetings and weekly Estimator meetings where Company policies are discussed and created. Supervises enforcement of Company policies, all departments of accounting, finances and preparation of information for tax returns. Handles all of the insurance coverage and annual renewals and audits.

1991-2005 Executive Vice President
- Assists the President in the general supervision of Company management.

1988-1990 Office Manager/Treasurer
- Oversee all office functions such as accounts payable, accounts receivable, payroll, supervision of clerical staff, preparation of quarterly tax returns and postings to disbursement, receipts and general ledger.

1980-1986 Assistant Office Manager
- Payroll, accounts payable, bookkeeping and various office duties.

Exceptional Cancer Patients
Chapel Street
New Haven, CT

Position Held:

1986-1990 Psychotherapist
- Individual therapy, facilitation of group therapy for people dealing with catastrophic illness. Created and supervised AIDS program.

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EDUCATION:

1986 M.S. in Counseling
Southern CT State University

1971 B.S. in Education
Lesley College

1967 High School
St. John Baptist School

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5. Information Regarding: Failure to Complete Work, Default, Litigation
   a. NEMRCO has never failed to complete work awarded to us.
   b. NEMRCO has never defaulted on a contract.
   c. NEMRCO does not have any pending litigation which would our organization's ability to perform this agreement.
   d. NEMRCO has not had a contract terminated for cause within the past 5 years.
   e. NEMRCO has not been named in a lawsuit related to errors and omissions within the past 5 years.
   f. NEMRCO has not filed for protection under the Federal bankruptcy laws during the past 7 years, or ever.

6. Exceptions and Alternatives
   None taken

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City of Waterbury
236 Grand Street
Waterbury, CT 06702

New England Masonry & Roofing Company is no stranger to roofing. We have been installing roof systems for 75 years. We have been successfully installing EPDM roof systems since 1984. We are approved applicators in good standing for Carlisle, Firestone, Johns Manville, Garland, Siplast, Sarnafil, FiberTite, Soprema and Tremco. and have applied over 5 million square feet of EPDM throughout the years.

New England Masonry and Roofing Company is a woman owned company that employs an office staff of twelve with forty of the finest craftsman in the field.

We are listed as a WBE and SBE contractor in the State of Connecticut.

We are on the State of Connecticut's Dept of Administrative Services (D.A.S.) contractors list for masonry restoration, roofing, carpentry, sheet metal and general contracting.

We are a premier restoration company experienced in every facet of masonry restoration, from stone to bricks to stucco as well as EIFS wall systems since our founding in 1947.

Here at New England Masonry & Roofing Company we install several types of single ply roofs, built-up systems, slate and shingles, as well as maintenance programs to fit every need and budget.

Our employees are certified for asbestos removal and lead abatement and are trained for OSHA 10's and OSHA 30's, as well as forklift and man lift driving, defensive driving, fall protection, sexual harassment & VIRTUS and competent scaffold personnel training.

We also service roofs for repairs and are available for any emergency that may arise, twenty four hours a day, seven days a week. We are authorized by major manufacturers to perform warranty related repairs.

New England Masonry & Roofing Company is fully covered by Workman's Compensation, Public Liability, and Property Damage.

We are members of the National Roofing Contractors Association, North East Roofing Contractors Association, and I'm currently on the board of directors for The Connecticut Roofing Contractors Association.

Sincerely,

John Ciaralli
Vice President of Sales

An Affirmative Action/Equal Opportunity Employer

AIA® Document A305™ – 1986

Contractor's Qualification Statement

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

SUBMITTED TO: City of Waterbury

ADDRESS: 235 Grand St.
Room 103
Waterbury, CT 06702

SUBMITTED BY: John Ciaralli - Senior Vice President

NAME: New England Masonry & Roofing Co.

ADDRESS: 146 Sheridan Dr.
Naugatuck, CT 06770

PRINCIPAL OFFICE:

[X] Corporation

[ ] Partnership

[ ] Individual

[ ] Joint Venture

[ ] Other

NAME OF PROJECT *(if applicable)*:
Proposal #7778 Rotella Magnet & Maloney Elementary School Gutter Repairs

TYPE OF WORK (file separate form for each Classification of Work):

[ ] General Construction

[ ] HVAC

[ ] Electrical

[ ] Plumbing

[X] Other (please specify) Roofing

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This form is approved and recommended by the American Institute of Architects (AIA) and The Associated General Contractors of America (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

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§ 1. ORGANIZATION

§ 1.1 How many years has your organization been in business as a Contractor? 75 years

§ 1.2 How many years has your organization been in business under its present business name? 17 Years

§ 1.2.1 Under what other or former names has your organization operated?

New England Masonry Co./New England Roofing and Sheet Metal Divison

§ 1.3 If your organization is a corporation, answer the following:

§ 1.3.1 Date of incorporation: October 4, 1962

§ 1.3.2 State of incorporation: CT

§ 1.3.3 President's name: Lorraine Emanuel

§ 1.3.4 Vice-president's name(s)

Joan Mancinone - Executive Vice President

John Ciaralli - Senior Vice President

§ 1.3.5 Secretary's name: Alexis Langlois

§ 1.3.6 Treasurer's name: NA

§ 1.4 If your organization is a partnership, answer the following:

§ 1.4.1 Date of organization:

§ 1.4.2 Type of partnership (if applicable):

§ 1.4.3 Name(s) of general partner(s)

§ 1.5 If your organization is individually owned, answer the following:

§ 1.5.1 Date of organization:

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User Notes: (2533789901)

§ 1.5.2 Name of owner:

§ 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

§ 2. LICENSING

§ 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

Asbestos Contractor - 000039
Home Improvement Contractor - HIC.0537371
Lead Abatement Contractor - 000206
Major Contractor - MCO.0900197

§ 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

§ 3. EXPERIENCE

§ 3.1 List the categories of work that your organization normally performs with its own forces.

See attached Work Categories

§ 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

§ 3.2.1 Has your organization ever failed to complete any work awarded to it? No

§ 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers? No

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Rotella & Maloney Magnet Schools Gutter Replacement		
Description	**Amount (In Words)**	**Amount (In $)**
Rotella	Seventy two thousand, three hundred & one dollars	$ 72,301.00
Maloney	Twenty five thousand, seven hundred twenty three dollars	$ 25,723.00
	GRAND TOTAL	98,024.00

END OF ATTACHMENT E

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Work Performed with our own Forces

Roofing

- Built-Up and Single Ply Roofing
- Slate Work
- Shingles
- Custom Sheet Metal (Gutters, Leaders, Copper Work)
- Asbestos Abatement
- Immediate Emergency Repairs
- Preventive Maintenance Programs

Exterior Restoration

- Brick, Concrete and Stone Restoration
- Pointing, Painting and Caulking
- Pressure Washing, Chemical Cleaning and Sand Blasting
- Waterproofing, Stone Strengthening
- Protective Overglazing
- Exterior Wall Systems
- Concrete Floor Coatings

Work Categories

§ 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years? **No**

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

No

§ 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

Southern CT State University
Contract Amount: $347,000
Percent Complete: 10%
Scheduled Completion Date: September 1, 2023

§ 3.4.1 State total worth of work in progress and under contract:

2 Million

§ 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.

See attached major projects completed in the past 5 years.

§ 3.5.1 State average annual amount of construction work performed during the past five years.

6 Million

§ 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

See attached Key Individuals

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Major Projects Completed in the past 5 Years

Veolia Water
Roof Replacement
Naugatuck, CT
$360,690.00
Completed 04/30/22
100% of our own work force

YMCA
Roof Replacement & Gutters
Bridgeport, Orange, Monroe, Milford & Fairfield, CT
$425,241.00
Completed 07/30/22
100% of our own work force

Town of Cheshire
Dodd School – Roof Replacement
Cheshire, CT
$475,000.00
Completed 08/31/22
100% of our own work force

Okay Industries
Roof Replacements – Sections #2 & #3
Berlin, CT
$315,347.44
09/30/22
100% of our own work force

State of CT DOT
Roof Replacement
Rocky Hill, CT
$772,838.00
10/31/21
100% of our own work force

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KEY INDIVIDUALS

Lorraine Emanuel, President & CEO
42 years with organization
42 years executive management & finance experience

Joan Mancinone, Executive Vice President
34 years with organization
51 years accounting/human resource experience

John Ciaralli, Senior Vice President
38 years with organization
47 years construction experience
38 years estimating experience

Fred Mancinone, Vice President of Field Operations
42 years with organization
36 years field experience – roofing foreman experience
18 years estimating experience

§ 4. REFERENCES

§ 4.1 Trade References:

See attached Trade References

§ 4.2 Bank References:

See attached Bank References

§ 4.3 Surety:

§ 4.3.1 Name of bonding company:

National Grange Mutual Insurance Co.
55 West St.
Keene, NH 03431

§ 4.3.2 Name and address of agent:

IMA, Inc. - Colorado Division
1705 17th Street, Suite 100
Denver, CO 80202

§ 5. FINANCING

§ 5.1 Financial Statement. See Attached Financial Statement

§ 5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

§ 5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

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Trade References

ABC Supply Co.
Attn: Cindy Damon - AR
Acct # 53185200
PO Box 417622
249 Weston Street
Boston, MA 02241
Office: 860-828-0339
Direct Line: 413-737-9229
cfs961@abcsupply.com

Beacon Roofing Supply
Allied a Beacon Roofing Supply Co.
Attn: John Rockett - Credit Mgr
Acct # 97006
PO Box 414727
251 Locust Street
Hartford, CT 06114
Direct Line: 413-519-4330
Office: 800-336-0855
john.rockett@becn.com

Industrial Riggers
Attn: Donna Truncale - VP
264 Chase River Rd.
PO Box 4297
Waterbury, CT 06704
Phone: 203-573-1116
Fax: 203-755-8481
dtruncale@industrialriggers.com

New Castle Building Products
Attn: Siobhan Finley - Credit Dept.
Acct # 917473
16 Muller Avenue
Norwalk, CT 06851
sfinlay@newcastlencbp.com
Tel: 203-229-0448

Summit Scaffold Services, LLC
Peter Persechino
21 Oaklawn Drive
Barkhamsted, CT 06063
Office: 860-637-4081
peter@summitscaffold.com

USA Waste & Recycling, Inc.
Acct # 002490
PO Box 1000, East Windsor, CT 06088
Phone: 860-746-3200
Fax: 860-741-3934

United Rentals
Branch 307
11 Southwood Drive
Bloomfield, CT 06002-1913
Bernie Furmanek
Cell: 860-243-9225
Office: 860-243-9225

An Affirmative Action/Equal Opportunity Employer

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BANK REFERENCES

Webster Bank
137 Bank St.
Waterbury, CT 06702
(203) 203-578-2200

TD Bank
1254 West Main St.
Waterbury, CT 06708
(203) 573-8011
John Ashford – Financial Services

Bank References Rev. 09/22

NEW ENGLAND MASONRY AND ROOFING COMPANY

NAUGATUCK, CONNECTICUT

FINANCIAL STATEMENTS
AND SUPPLEMENTARY INFORMATION

DECEMBER 31, 2022 AND 2021

NEW ENGLAND MASONRY AND ROOFING COMPANY

TABLE OF CONTENTS

DECEMBER 31, 2022 AND 2021

	PAGE
INDEPENDENT ACCOUNTANTS' REVIEW REPORT	1
FINANCIAL STATEMENTS	
Balance Sheets	2
Statements of Income	3
Statements of Changes in Stockholders' Equity	4
Statements of Cash Flows	5
Notes to Financial Statements	6-10
SUPPLEMENTARY INFORMATION	
Schedules of Cost of Revenue and Operating Expenses	11

BOWMAN, BLACK & DEFILIO, LLC
CERTIFIED PUBLIC ACCOUNTANTS

INDEPENDENT ACCOUNTANTS' REVIEW REPORT

To the Board of Directors of
New England Masonry and Roofing Company

We have reviewed the accompanying financial statements of

NEW ENGLAND MASONRY AND ROOFING COMPANY
(A Connecticut corporation)

which comprise the balance sheets as of December 31, 2022 and 2021 and the related statements of income, changes in stockholders' equity and cash flows for the years then ended, and the related notes to the financial statements. A review includes primarily applying analytical procedures to management's financial data and making inquiries of company management. A review is substantially less in scope than an audit, the objective of which is the expression of an opinion regarding the financial statements as a whole. Accordingly, we do not express such an opinion.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement whether due to fraud or error.

Accountants' Responsibility

Our responsibility is to conduct the review engagements in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the AICPA. Those standards require us to perform procedures to obtain limited assurance as a basis for reporting whether we are aware of any material modifications that should be made to the financial statements for them to be in accordance with accounting principles generally accepted in the United States of America. We believe that the results of our procedures provide a reasonable basis for our conclusion.

We are required to be independent of New England Masonry and Roofing Company and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements related to our reviews.

Accountants' Conclusion

Based on our reviews, we are not aware of any material modifications that should be made to the accompanying financial statements in order for them to be in accordance with accounting principles generally accepted in the United States of America.

Supplementary Information

The supplementary information included in Schedule I is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from, and relates directly to, the underlying accounting and other records used to prepare the financial statements. The supplementary information has been subjected to the review procedures applied in our review of the basic financial statements. We are not aware of any material modifications that should be made to the supplementary information. We have not audited the supplementary information and do not express an opinion on such information.

Bowman, Black & DeFilio LLC

Cheshire, Connecticut
March 31, 2023

365 Highland Avenue, Suite 201 • PO Box 585 • Cheshire, CT 06410 • (203) 272-9008 • Fax (203) 272-2485

NEW ENGLAND MASONRY AND ROOFING COMPANY

BALANCE SHEETS

DECEMBER 31, 2022 AND 2021

ASSETS

	2022	2021
	$	$
CURRENT ASSETS		
Cash	810,915	602,021
Accounts Receivable, net of Allowance for Doubtful Accounts of $25,000	2,045,634	1,805,559
Costs and Estimated Earnings in Excess of Billings on Long-Term Contracts	38,000	31,000
Inventories	290,277	61,097
Loan Receivable - Shareholders	145,974	145,974
Deposits	1,750	47,936
Prepaid Expenses	15,125	349,268
Total Current Assets	3,347,675	3,042,855
FIXED ASSETS		
Building Improvements	50,156	50,156
Furniture and Fixtures	45,615	45,615
Machinery and Equipment	290,221	290,221
Motor Vehicles	1,282,836	1,226,254
	1,668,828	1,612,246
Less: Accumulated Depreciation	(1,415,890)	(1,342,999)
Net Fixed Assets	252,938	269,247
TOTAL	3,600,613	3,312,102

LIABILITIES AND STOCKHOLDERS' EQUITY

CURRENT LIABILITIES		
Current Portion of Long-Term Debt	17,362	19,010
Accounts Payable	438,964	206,287
Accrued Expenses and Taxes	55,829	51,990
Total Current Liabilities	512,155	277,287
LONG-TERM DEBT LIABILITIES		
Long Term Debt - Net of Current Portion	62,009	34,383
Deferred Taxes	33,400	18,700
Total Long-Term Liabilities	95,409	53,083
STOCKHOLDERS' EQUITY		
Class A, Voting Common Stock - $100 Par Value, Authorized, 50,000 Shares; Issued and Outstanding 5,200 Shares	520,000	520,000
Retained Earnings	2,762,544	2,751,227
	3,282,544	3,271,227
Less: Treasury Stock; 1,495 Shares, at Cost	(289,495)	(289,495)
Total Stockholders' Equity	2,993,049	2,981,732
TOTAL	3,600,613	3,312,102

SEE ACCOMPANYING NOTES AND INDEPENDENT ACCOUNTANTS' REVIEW REPORT

NEW ENGLAND MASONRY AND ROOFING COMPANY

STATEMENTS OF INCOME

FOR THE YEARS ENDED DECEMBER 31, 2022 AND 2021

	2022		2021	
	$	%	$	%
REVENUE	7,918,372	100.0	5,133,638	100.0
COST OF REVENUE	5,720,384	72.2	2,813,593	54.8
GROSS PROFIT	2,197,988	27.8	2,320,045	45.2
OPERATING EXPENSES	2,136,248	26.9	2,319,521	45.2
OPERATING INCOME	61,740	0.9	524	0.0
INTEREST EXPENSE	(2,712)	-	(1,230)	-
GAIN ON DISPOSAL OF ASSETS	-	-	3,492	0.1
OTHER INCOME	5,899	-	1,100,951	21.4
INCOME BEFORE PROVISION FOR INCOME TAXES	64,927	0.9	1,103,737	21.5
PROVISION FOR INCOME TAXES	28,500	0.4	9,100	0.2
NET INCOME	36,427	0.5	1,094,637	21.3

SEE ACCOMPANYING NOTES AND INDEPENDENT ACCOUNTANTS' REVIEW REPORT

NEW ENGLAND MASONRY AND ROOFING COMPANY

STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

FOR THE YEARS ENDED DECEMBER 31, 2022 AND 2021

	Common Stock	Treasury Stock	Retained Earnings	Total
	$	$	$	$
January 1, 2021	520,000	(362,482)	1,681,700	1,839,218
Purchase of Treasury Stock		72,987	-	72,987
Net Income	-	-	1,094,637	1,094,637
Dividends Paid	-	-	(25,110)	(25,110)
December 31, 2021	520,000	(289,495)	2,751,227	2,981,732
Net Income	-	-	36,427	36,427
Dividends Paid	-	-	(25,110)	(25,110)
December 31, 2022	520,000	(289,495)	2,762,544	2,993,049

SEE ACCOMPANYING NOTES AND INDEPENDENT ACCOUNTANTS' REVIEW REPORT

NEW ENGLAND MASONRY AND ROOFING COMPANY

STATEMENTS OF CASH FLOWS

FOR THE YEARS ENDED DECEMBER 31, 2022 AND 2021

	2022	2021
	$	$
CASH FLOWS FROM OPERATING ACTIVITIES		
NET INCOME	36,427	1,094,637
ADJUSTMENTS TO RECONCILE NET INCOME TO NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES:		
Depreciation	72,891	76,829
Gain on Disposal of Assets	-	(3,492)
Paycheck Protection Program Loan Forgiveness	-	(1,075,052)
Costs and Estimated Earnings in Excess of Billings on Long-Term Contracts	(7,000)	(8,000)
Deferred Taxes	14,700	(6,200)
Decrease (Increase) in:		
Accounts Receivable	(240,075)	(103,842)
Inventories	(229,180)	(24,246)
Deposits	46,186	(9,531)
Prepaid Expenses	334,143	(341,471)
Increase (Decrease) in:		
Accounts Payable	232,677	(387,160)
Accrued Expenses and Taxes	3,840	(211,131)
Net Cash Provided By (Used In) Operating Activities	264,609	(998,659)
CASH FLOWS FROM INVESTING ACTIVITIES		
Purchase of Fixed Assets	(5,955)	(56,229)
Proceeds from Sale of Assets	-	25,000
Net Cash Used in Investing Activities	(5,955)	(31,229)
CASH FLOWS FROM FINANCING ACTIVITIES		
Long-Term Debt Payments	(24,650)	(25,212)
Proceeds From Paycheck Protection Program Loan	-	508,527
Dividend Payments	(25,110)	(25,110)
Net Cash Provided By (Used In) Financing Activities	(49,760)	458,205
NET INCREASE (DECREASE) IN CASH	208,894	(571,683)
CASH - BEGINNING OF YEAR	602,021	1,173,704
CASH - END OF YEAR	810,915	602,021
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION		
Cash Paid During the Year For:		
Interest	2,712	1,230
Income Taxes	15,649	18,688
Cost of Fixed Assets Acquired	56,582	56,229
Long Term Debt Incurred	(50,627)	-
Cash Paid	5,955	56,229
SUPPLEMENTAL SCHEDULE OF NON CASH INVESTING AND FINANCING ACTIVITIES		
Purchase of Treasury Stock		72,987
Increase In Loan Recievable - Shareholders		(72,987)
Cash Paid		-

SEE ACCOMPANYING NOTES AND INDEPENDENT ACCOUNTANTS' REVIEW REPORT

NOTE 1 - ORGANIZATION

New England Masonry and Roofing Company (the Company) is primarily engaged in the building restoration, roofing and construction industry. The Company's customers are primarily located in the States of Connecticut and Rhode Island.

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Estimates in Preparing Financial Statements

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and judgments that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from these estimates.

Cash

For purposes of the statements of cash flows, the Company considers all highly liquid investments with a maturity of three months or less to be cash equivalents.

Accounts Receivable

Accounts receivable are stated at net realizable value. The Company evaluates credit risk on its accounts receivable and accordingly estimates an allowance for doubtful accounts on a periodic basis. The evaluation includes historical loss experience, adverse situations that may affect a customer's ability to pay, and prevailing economic conditions. The Company makes adjustments to its allowance if the evaluation of allowance requirements differs from the actual aggregate reserve.

Inventories

Inventories, consisting of construction materials and supplies, are valued at the lower of cost or market, using the first-in, first-out method.

Fixed Assets and Depreciation

Fixed assets are stated at cost. Depreciation has been provided using both the straight-line and accelerated methods. The lives used to compute depreciation are as follows:

Furniture and Fixtures	5 to 7 years
Machinery and Equipment	5 years
Motor Vehicles	5 years
Building Improvements	10 to 20 years

Maintenance and repairs are charged to operations as incurred except expenditures which substantially increase the useful lives of the related assets are capitalized.

Depreciation charged to operations was $72,891 and $76,829 for the years ended December 31, 2022 and 2021, respectively.

Revenue Recognition

The Company recognizes its revenues from long-term contracts using the percentage-of-completion method, measured by the cost-to-cost method. Revenue from other contracts and services are recognized as the work is completed.

Bad Debts

The Company uses the reserve method for bad debts.

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Income Taxes

The Company recognizes taxes under generally accepted accounting principles, utilizing the liability method and deferred taxes are determined based on the estimated future tax effects of assets and liabilities given the provisions of enacted tax laws. The Company evaluates all significant tax positions as required by generally accepted accounting principles in the United States. As of December 31, 2022, the Company does not believe that it has taken any positions that would require the recording of any additional tax liability nor does it believe that there are any unrealized tax benefits that would either increase or decrease within the next twelve months. The Company's income tax returns are subject to examination by the appropriate taxing jurisdictions. As of December 31, 2022, the Company's federal and state tax returns generally remain open for the last three years.

Financial Instruments

The carrying amounts of the Company's financial instruments, which include cash equivalents, accounts receivable, prepaid expenses, accounts payable and accrued expenses approximate fair value because of the short-term nature of these instruments. The estimated fair value of the Company's long-term debt approximates its carrying value.

Fair Value of Financial Instruments

The Company follows the *Fair Value Measurements* topic of the FASB Codification, which defines fair value and establishes a framework for measuring fair value in generally accepted accounting principles. The topic defines fair value as the exchange price that would be received upon sale of an asset or paid upon transfer of a liability in an orderly transaction between market participants at the measurement date and in the principal or most advantageous market for that asset or liability. The fair value should be calculated based on assumptions that market participants would use in pricing the asset or liability, not on assumptions specific to the entity. In addition, the fair value of liabilities should include consideration of non-performance risk including the Company's own credit risk. In addition to defining fair value, the *Fair Value Measurements* topic expands the disclosure requirements around fair value and establishes a fair value hierarchy for valuation inputs. The hierarchy prioritizes the inputs into three levels based on the extent to which inputs used in measuring fair value are observable in the market. These levels are:

- Level 1 - inputs are based upon unadjusted quoted prices for identical instruments traded in active markets.

- Level 2 - inputs are based upon quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

- Level 3 - inputs are generally unobservable and typically reflect management's estimates of assumptions that market participants would use in pricing the asset or liability. The fair values are therefore determined using model-based techniques that include option pricing models, discounted cash flow models, and similar techniques. Valuation techniques based on unobservable inputs are highly subjective and require judgments regarding significant matters, such as the amount and timing of future cash flows and the selection of discount rates that may appropriately reflect market and credit risks. Changes in these judgments often have a material impact on the fair value estimates. In addition, since these estimates are as of a specific point in time, they are susceptible to material near-term changes.

Financial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. The assessment of the significance of a particular input to the fair value measurement requires judgment, and may affect the valuation of assets and liabilities and their placement within the fair value hierarchy levels. The level in the fair value hierarchy within which the fair value instrument is classified is determined based on the lowest level input that is significant to the fair value measurement in its entirety.

Presentation of Sales Tax

The State of Connecticut imposes a sales tax on all of the Company's sales to non-exempt customers. The Company collects that sales tax from customers and remits the entire amount to the State. The Company's accounting policy is to exclude the tax collected and remitted to the State from revenue earned and cost of revenue earned.

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Advertising

The Company expenses advertising costs as incurred. Advertising costs for the years ended December 31, 2022 and 2021 amounted to approximately $7,000 and $14,000, respectively.

COVID – 19

In response to COVID-19 the U.S. government initiated the Paycheck Protection Program (PPP) through the U.S. Small Business Administration (SBA). In April of 2020, the Company applied for and received a loan of $566,525. At December 31, 2020, the Company had substantially met the forgiveness criteria with respect to the PPP loan. The Company applied for and received full loan forgiveness in January, 2021. This amount has been included in other income for the year ended December 31, 2021.

In January 2021, the U.S. government initiated the Second Draw Paycheck Protection Program through the SBA. Under the terms of the Program, if certain conditions are met regarding expenditure of loan proceeds to fund qualifying payroll, rent and utilities during a designated twenty-four-week period, all or part of the loan can be forgiven. The Company applied for and received a loan of approximately $508,527 in February, 2021. The Company applied for and received full loan forgiveness in August, 2021. This amount has been included in other income for the year ended December 31, 2021.

The Company is following *ASU 2021-10 Government Assistance (Topic 832): Disclosures by Business Entities about Government Assistance,* which requires business entities to disclose information about certain types of government assistance received. Under the provisions of the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") signed into law on March 27, 2020 and the subsequent extension of the CARES Act, the Company was eligible for a refundable employee retention credit subject to certain criteria. The Company recognized $530,189 of employee retention credits during the year ended December 31, 2021. For the year ended December 31, 2021, $375,507 is included in Cost of Revenue and $154,682 is included in Operating Expenses on the accompanying Schedules of Cost of Revenue and Operating Expenses. The Company has filed for refunds of the employee retention credits and as of December 31, 2021, $192,697 has been received. The remaining refund in the amount of $337,492 was received in January, 2022 and is included in Prepaid Expenses on the accompanying Balance Sheets. As of September 30, 2021, the Company was no longer eligible to receive refundable employee retention credits due to the Infrastructure Investment and Jobs Act which terminated the employee retention credit for wages paid in the fourth quarter of 2021.

Government Assistance

The Company is required to retain the relevant Paycheck Protection Program loan documentation for a period of up to 6 years after the loan is forgiven. The Company's loans were forgiven in 2021. The Company is also required to retain the relevant Employee Retention Credit documentation for a period of up to 5 years. The Company received the credit in 2021.

Reclassifications

Certain amounts in the prior year's financial statements have been reclassified to conform to the current year's financial statement presentation.

Subsequent Events

The Company evaluated all events or transactions that occurred after the Balance Sheet date of December 31, 2022 through March 31, 2023, the date these financial statements were available to be issued.

NOTE 3 - COSTS AND ESTIMATED EARNINGS IN EXCESS OF BILLINGS

	2022	2021
	$	$
Costs Incurred on Uncompleted Contracts	297,000	22,500
Estimated Earnings	73,000	8,500
	370,000	31,000
Less: Billings to Date	(332,000)	-
Total	38,000	31,000

NOTE 3 - COSTS AND ESTIMATED EARNINGS IN EXCESS OF BILLINGS(CONTINUED)

This amount is included in the accompanying Balance Sheet under Costs and Estimated Earnings in Excess of Billings.

NOTE 4 –DEBT

Long-Term Debt

Long-Term Debt at December 31, consists of the following:

	2022 $	2021 $
Note payable to Ally in monthly installments of $625 per month, 0% interest through October, 2022. This loan was paid in full during the year ended December 31, 2022.	-	6,250
Note payable to a finance company in monthly installments of $625 per month, 0% interest through June, 2027, secured by a vehicle with a carrying value of $25,661.	34,382	41,884
Note payable to a finance company in monthly installments of $625 per month, 0% interest through June, 2027, secured by a vehicle with a carrying value of $49,981.	44,989	-
Note payable to Ally in monthly installments of $557 per month, 2.99% interest through June, 2022. This loan was paid in full during the year ended December 31, 2022.	-	5,259
Subtotal	79,371	53,593
Less: Current portion:	(17,362)	(19,010)
	62,009	34,383

At December 31, 2022, maturities of Long-Term debt over the next five years are as follows: $17,362, $17,551, $17,744, $17,940 and $8,774.

NOTE 5 - INCENTIVE SAVINGS PLAN

The Company maintains a qualified profit-sharing plan (the Plan) under the provisions of Section 401(k) of the Internal Revenue Code. Under the terms of the Plan, each eligible participant is able to defer the receipt of compensation up to 15% of their annual compensation. The Company may, in its discretion, elect to make a matching contribution equal to a percentage of the amount that the participant deferred into the Plan.

Eligible participants are those who have reached age 21 and who have completed at least one year of service, as defined. Participants are fully vested in the Company's contributions after completing 6 years of service. Contributions to the Plan were $10,466 and $5,160 for 2022 and 2021, respectively and are included in Welfare and Employee Benefits.

NOTE 6 - INCOME TAXES

For the years ended December 31, 2022 and 2021, the provision for income taxes, consisted of:

	2022	2021
	$	$
Currently Payable		
Federal Income Tax	3,600	6,800
State Corporation Tax	10,200	8,500
Deferred Tax	14,700	(6,200)
Total	28,500	9,100

At December 31, 2022 and 2021, the Company had a net deferred tax liability in the amount of $33,400 and $18,700, respectively, related to the allowance for doubtful accounts, accelerated depreciation for tax reporting purposes and straight-line depreciation for book purposes, and costs and estimated earnings in excess of billings on long-term contracts which have not yet been recognized for tax reporting purposes.

NOTE 7 - RELATED PARTY TRANSACTIONS

Rent

The Company is renting on a month-to-month basis real property and equipment from partnerships owned by its officers. Rental expense for the years ended December 31, 2022 and 2021 as follows:

	2022	2021
		$
Equipment	68,810	55,350
Real Estate	66,000	66,000
Total	134,810	121,350

As of December 31, 2022, the Company has reviewed all of its lease agreements and has determined that there are no financing or operating leases as of December 31, 2022.

The Company also rents specific equipment on an as needed basis per job specifications.

NOTE 8- TREASURY STOCK

Purchase of Treasury Stock

In 2020, two key employees each purchased 120 shares of Treasury stock from the Company. Each share was valued at $150 for a total cost of $72,987. Those same two employees purchased 120 additional shares of Treasury stock in 2021 for a total cost of $72,987. This amount has been classified as Loan Receivable – Shareholders on the accompanying Balance Sheets.

NOTE 9 - BACKLOG

As of December 31, 2022 and 2021 the Company has a backlog of contracts of approximately $810,000 and $2,600,000, respectively.

NOTE 10 - CONTINGENCIES

The Company maintains cash accounts at various local banks which are insured by the Federal Deposit Insurance Corporation (FDIC) up to $250,000. The Company had uninsured bank balances at various times throughout the year.

NEW ENGLAND MASONRY AND ROOFING COMPANY

SCHEDULES OF COST OF REVENUE AND OPERATING EXPENSES

FOR THE YEARS ENDED DECEMBER 31, 2022 AND 2021

SCHEDULE I

	2022		2021	
	$	%	$	%
REVENUE	7,918,372	100.0	5,133,638	100.0
COST OF REVENUE				
Labor	1,808,987	22.8	845,655	16.6
Materials and Supplies	1,791,740	22.6	827,262	16.1
Subcontract	959,676	12.1	377,086	7.3
Equipment Rental	366,696	4.6	192,208	3.7
Welfare and Employee Benefits	283,766	3.6	228,876	4.5
Payroll and Other Taxes	218,285	2.8	162,808	3.2
Truck & Automobile	163,589	2.1	108,500	2.1
Waste Removal	90,711	1.1	40,434	0.8
Warranties	36,934	0.5	30,763	0.6
TOTAL	5,720,384	72.2	2,813,593	54.8
OPERATING EXPENSES				
Insurance	667,270	8.4	784,253	15.3
Other Salaries and Wages	367,498	4.6	446,364	8.7
Administrative Salaries	353,589	4.5	292,280	5.7
Welfare and Employee Benefits	121,614	1.5	152,584	3.0
Payroll and Other Taxes	93,151	1.2	108,539	2.1
Utilities	79,758	1.0	48,721	0.9
Depreciation	72,891	0.9	76,829	1.5
Office Expense	72,869	0.9	73,084	1.4
Truck & Automobile	70,109	0.9	72,334	1.4
Rent	66,000	0.8	66,000	1.3
Repairs and Maintenance	46,076	0.6	82,973	1.6
Professional Fees	37,696	0.5	38,086	0.7
Employee Travel	19,210	0.2	22,762	0.4
Bad Debt Expense	17,634	0.2	-	-
Dues, Subscriptions and Training	16,718	0.2	14,009	0.3
Meals and Entertainment	10,901	0.1	9,270	0.2
Advertising	6,972	0.1	14,064	0.3
Temporary Labor	4,950	0.1	8,080	0.2
Security	4,686	0.1	3,048	0.1
Miscellaneous	3,689	-	2,677	0.1
Sales Promotion	2,967	-	3,565	0.1
TOTAL	2,136,248	26.9	2,319,521	45.2

SEE INDEPENDENT ACCOUNTANTS' REVIEW REPORT

BBD BOWMAN, BLACK & DEFILIO, LLC
CERTIFIED PUBLIC ACCOUNTANTS

INDEPENDENT ACCOUNTANTS' REVIEW REPORT

To the Board of Directors of
New England Masonry and Roofing Company

We have reviewed the accompanying financial statements of

NEW ENGLAND MASONRY AND ROOFING COMPANY
(A Connecticut corporation)

which comprise the balance sheets as of December 31, 2022 and 2021 and the related statements of income, changes in stockholders' equity and cash flows for the years then ended, and the related notes to the financial statements. A review includes primarily applying analytical procedures to management's financial data and making inquiries of company management. A review is substantially less in scope than an audit, the objective of which is the expression of an opinion regarding the financial statements as a whole. Accordingly, we do not express such an opinion.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement whether due to fraud or error.

Accountants' Responsibility

Our responsibility is to conduct the review engagements in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the AICPA. Those standards require us to perform procedures to obtain limited assurance as a basis for reporting whether we are aware of any material modifications that should be made to the financial statements for them to be in accordance with accounting principles generally accepted in the United States of America. We believe that the results of our procedures provide a reasonable basis for our conclusion.

We are required to be independent of New England Masonry and Roofing Company and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements related to our reviews.

Accountants' Conclusion

Based on our reviews, we are not aware of any material modifications that should be made to the accompanying financial statements in order for them to be in accordance with accounting principles generally accepted in the United States of America.

Supplementary Information

The supplementary information included in Schedule I is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from, and relates directly to, the underlying accounting and other records used to prepare the financial statements. The supplementary information has been subjected to the review procedures applied in our review of the basic financial statements. We are not aware of any material modifications that should be made to the supplementary information. We have not audited the supplementary information and do not express an opinion on such information.

Bowman, Black & DeFilio LLC

Cheshire, Connecticut
March 31, 2023

365 Highland Avenue, Suite 201 • PO Box 585 • Cheshire, CT 06410 • (203) 272-9008 • Fax (203) 272-2485

§ 5.1.3 Is the attached financial statement for the identical organization named on page one?
Yes

§ 5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

§ 5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

§ 6. SIGNATURE

§ 6.1 Dated at this 31st day of July 2023

Name of Organization: New England Masonry & Roofing Co.

By: John Ciaralli

Title: Senior Vice President

§ 6.2

John Ciaralli being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this 31st day of July 20 23

Notary Public:

My Commission Expires: May 31, 2028

LORETTA M. SMITH
NOTARY PUBLIC
MY COMMISSION EXPIRES MAY 31, 2028

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#12

WATERBURY
PUBLIC SCHOOLS

Nicholas J. Albini
Chief Operating Officer
(203) 346-2340
nalbini@waterbury-k12-ct-us

EXECUTIVE SUMMARY

DATE: November 30, 2023

TO: Honorable Board of Education Commissioners
Honorable Board of Aldermen Members

FROM: Nicholas J. Albini, Chief Operating Officer

RE: Contract for Bleacher and Bench Replacement at Kennedy and Wilby High Schools with National Equipment and Facility Solutions, Incorporated

The Education Department respectfully requests your review and approval of a construction contract for the removal and replacement of the existing pool bleachers at Kennedy and Wilby High Schools and the locker room benches at Wilby High School in the total amount of $161,226 for work requested and approved by the Education Department under the scope. The contract was initiated under the Request for Proposal #7829. The job was sent to bid twice with National Equipment and Facility Solutions, Incorporated being the only responder to both bids. This Agreement is subject to minor, non-substantive changes to be approved by the Office of the Corporation Counsel.

The project consists of demolition and removal of existing bleachers and installation of new telescopic bleacher system at Kennedy High School in the natatorium (indoor pool area), removal and disposal of existing wood seating planks from bleacher base and installation of new PVC seating planks at Wilby High School's natatorium, and removal and disposal of existing wood seating planks from the locker room and installation of new PVC seating planks at Wilby High School's Girls and Boys Locker Rooms. The project is being funded through the Capital Budget. All services will be completed within 120 consecutive calendar days from the City's notice to proceed. National Equipment and Facility Solutions has performed satisfactory in the past on Education projects.

The Education Department will have a representative present at your upcoming meetings to answer any questions you may have regarding this matter. Thank you for your continued assistance on this matter.

c: Dave Heavener, Mike Konopka

CONSTRUCTION CONTRACT
for

Bleacher and Bench Replacement at Two Schools

between

The City of Waterbury, Connecticut

and

National Equipment and Facility Solutions, Inc.

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the CITY OF WATERBURY, City Hall, 235 Grand Street, Waterbury, Connecticut 06702 (the "City") and National Equipment and Facility Solutions, Inc. with a mailing address at 166 Masons Island Road, Mystic, CT 06355, a State of Connecticut duly registered domestic corporation (the "Contractor").

WHEREAS, the Contractor submitted a Proposal to the City in response to **Request for Proposal ("RFP") Number 7829 for Bleacher and Bench Replacement at Two Schools**; and,

WHEREAS, the City accepted the Contractor's Proposal (as subsequently negotiated and revised) for **RFP Number 7829;** and,

WHEREAS, the City desires to obtain the Contractor's services for **Bleacher and Bench Replacement at Two Schools** pursuant to the terms set forth in this Contract (the "Project").

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all of the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with **(i)** any and all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and **(ii)** generally accepted professional standards.

1.1. The Project consists of **Bleacher and Bench Replacement at Two Schools (Kennedy High School Pool, Wilby High School Pool and Wilby High School Locker Rooms)** as detailed and described in the Proposal Documents* in **Attachment A** and are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 **RFP Number 7829** (acknowledged by the Contractor as having been received and incorporated by reference);

1.1.2 Contractor's Proposal, dated October 6, 2023 and consisting of 32 pages, submitted in response to **RFP Number 7829**, including Contractor's Price Proposal, dated October 6, 2023 and consisting of 2 pages, and Contractor's revised Price Proposal, dated October 18, 2023 and consisting of 1 page (all attached hereto);

1.1.3 Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit (incorporated by reference);

1.1.4 Certificates of Insurance (attached hereto);

1.1.5 Performance Bond and Payment Bond (attached hereto);

1.1.6 Special Conditions (Article 1 – Article 19 consisting of 6 pages (attached hereto);

1.1.7 General Conditions (Article 1 – Article 114) consisting of 36 pages (attached hereto);

1.1.8 State Wage Rate Documentation (attached hereto);

1.1.9 Any and all amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.10 All applicable Federal, State and local statutes, regulations, charter and ordinances (incorporated by reference), and

1.1.11 All permits (including, but not limited to, City of Waterbury Building permit(s)) and licenses (incorporated by reference).

***The parties hereto acknowledge and agree that Friction Power on telescopic bleachers at Kennedy Natatorium are not included within the scope of this Project.**

1.2. The entirety of **Attachment A** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. In the event that any provision in the Contract Documents conflict with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically.

1.2.1 Federal laws and regulations
1.2.2 State, and local laws, regulations, charter and ordinances
1.2.3 Contract Amendment(s) and Change Orders
1.2.4 Contract
1.2.5 Contractor's Revised Price Proposal Form, dated October 18, 2023
1.2.6 Special Conditions
1.2.7 General Conditions

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Consultant shall provide to the City a copy of the Consultant's licenses, certifications, registrations, etc.

********** **IF WORKING IN/ON SCHOOL GROUNDS**********

2.3. Activities, Work, and Services Performed in Department of Education Facilities, on School Grounds, at Student Sporting Events, and/or where City

Students Present. For all activities in school facilities and/or Department of Education facilities, the Contractor shall first be required to coordinate all on-site visits and activities with the appropriate Department/personnel in Education, or the designated person and shall obtain any necessary clearance, ID badges, etc.

2.4. Criminal Background Check and DCF Registry Check. The Contractor shall ensure, and represents to the City, that any employee who will be on school grounds/Department of Education Property/at Department of Education events and/or where City Students Present, that will or may have direct contact with a Student pursuant to this Agreement has stated, in writing, whether such person has ever been convicted of a crime or whether criminal charges were ever pending against such person. The Contractor shall further ensure, and represents to the City that any person who will have direct contact with a Student has submitted to a records check of the Department of Children and Families child abuse and neglect registry established pursuant to Conn. Gen. Stat. §17a-101k, as well as state and national criminal history records checks conducted in accordance with Conn. Gen. Stat. §29-17a, the federal National Child Protection Act of 1993, and the federal Volunteers for Children Act of 1998. The Contractor shall not permit any person with a disqualifying criminal history to have direct contact with a student.

2.5. Activities, Work, and Services Performed on other City Property (Non-Education facilities). For all activities involving non-Board of Education facilities and/or buildings, Contractor shall first be required to coordinate all on-site visits and activities with the appropriate City Department or its designee.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibilities to examine and to be thoroughly familiar with the City's bid document, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore,

the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume any and all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submittal of its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's proposal documents and other documents for **RFP Number 7829** (collectively "Proposal Documents");

3.1.7. it agrees that the Proposal Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8. it has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes; and

3.1.10 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, state and federal health and safety regulations. Contractor shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall confirm in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense **(i)** adequate off-site storage space for equipment, materials, incidentals, etc., and **(ii)** all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times. This provision shall not excuse the Contractor from timely performance under the Contract.

3.5. Cleaning Up. The Contractor shall at all times keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity, unless the City gives prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the Contractor shall be made only with the prior written consent of an authorized representative of the City's Using Agency.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. **Contractor's Employees.** The Contractor shall at all times enforce strict discipline and good order among its employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are **(i)** subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or **(ii)** unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed. The Contractor shall thereafter wait for written instructions from the City before proceeding with regard to such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, or necessary, or prudent for the performance of the Contractor's obligations under this Contract and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions similar to those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment.

4. Responsibilities of the City and City Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract within **Ninety (90)** consecutive calendar days of the City's written Notice to Proceed and shall reach Final Completion of all work and services required under this Contract within **One Hundred Twenty** (**120)** consecutive calendar days of the City's written Notice to Proceed ("Contract Time").

5.1. Within one (1) week of the City's issuance of its written notice to proceed, and prior to the commencement of any work on the Project site, the Contractor shall submit for the City's written approval a construction progress schedule. On a monthly basis, the Contractor shall deliver to the City a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **SEVEN HUNDRED FIFTY DOLLARS AND ZERO CENTS ($750.00)** per calendar day for each and every calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damages from any monies due the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire Section 5, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay

In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation,

consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for satisfactory provision of all of the goods and services set forth in this Contract as follows in this Section 6. No claims for additional compensation will be considered for conditions made known to the Contractor prior to bidding. No claims for additional compensation will be considered on account of failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this Section 6, the fee payable to the Contractor shall not exceed **ONE HUNDRED SIXTY-ONE THOUSAND TWO HUNDRED TWENTY-SIX DOLLARS AND ZERO CENTS ($161,226.00**) (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Proposal set forth in **Attachment A's** Contractor's Revised Price Proposal, dated October 18, 2023 and consisting of 1 page, which is summarized below:

i.	$ 6,000.00	(Bid Item 1)
ii.	$95,675.00	(Bid Item 2)
iii.	$ 7,715.00	(Bid Item 3)
iv.	$44,469.00	(Bid Item 4)
v.	$ 2,860.00	(Bid Item 5)
vi.	$ 4,507.00	(Bid Item 6)

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage five percent (5.0 %) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not does not include additional sums that the City may withhold due to the Contractor's failure to comply with provisions of this Contract.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc, all City payment(s) shall fully

comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Vendor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

6.4. Proposal Costs. All costs of the Contractor in preparing its bid for **RFP Number 7829** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final City payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all of the foregoing payment obligations have been fully completed.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

6.7. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.8. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.9. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.9.1 submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment by the City's or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment can not be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide at the City's request, reasonable documentation to substantiate Contractor's Application for Payment.

6.9.2 Progress and Final Payments

The City will make progress payments on account of the Contract Price on the basis of the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be on the basis of the progress of the Scope of Services as determined by the City, according to the schedule of values provided for in the Contract Documents, and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component,

equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i) three hundred sixty-five (365)** calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time period or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from any and all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. City beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon the City's final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project work-site and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project work-site without securing the prior written consent of an authorized City Using Agency employee.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or

consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, Board of Education or any of the City's boards, agents, employees or officers by the Contractor or any employee of the Contractor, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, the Board of Education, any of City's boards, agents, employees as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, agents, employees or officers as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a

penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** three hundred sixty-five (365) calendar days after the City delivers its written notice of its acceptance of the Project.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, at all times during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance:
$1,000,000.00 each Occurrence
$2,000,000.00 General Aggregate
$2,000,000.00 Products/Completed Operations Aggregate
Providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance:

$1,000,000.00 Combined Single Limit Each Accident
Any Auto, All Owned and Hired Autos
Providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employer Liability (EL):
EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance:
$1,000,000.00 each Occurrence
$1,000,000.00 Aggregate
Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: All Contractor's Insurance except Workers' Compensation and Professional Liability shall be endorsed to add the City of Waterbury and its Board of Education, as additional insured and provide waiver of subrogation on all policies except Builders Risk. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury and its Board of Education are listed as Additional Insured on a primary and non-contributory basis on all policies except Workers' Compensation and Professional Liability. All policies shall include a Waiver of Subrogation."** The

City's Request for Proposal Number must be shown on the certificate of insurance to assure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy(ies).

11.8. If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

11.9 Original, completed Certificates of Insurance must be presented to the City of Waterbury prior to contract issuance. Contractor agrees to provide replacement/renewal certificates at least thirty (30) calendar days prior to the expiration date of the policies. Should any of the above described policies be cancelled, limits reduced or coverage altered, thirty (30) calendar days written notice must be given to the City of Waterbury.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT, as supplemented in the Department of Labor Regulations (29 CFR, Part 3); DAVIS BACON ACT as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the HOUSING and COMMUNITY DEVELOPMENT ACT of 1974, as amended; TITLE 31 and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn.Gen.Statute 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.2.2 The Contractor is aware of, and shall comply with, the provisions of both the Federal Davis-Bacon Act and the Federal American Recovery and Reinvestment Act of 2009, the provisions of both acts hereby incorporated by reference and made a part of this Contract. The Federal Davis-Bacon Act provides that Federal wage rate laws apply to certain federally funded contracts. The American Recovery and Reinvestment Act ("ARRA") provides that Federal wage rate laws apply to all ARRA funded contracts regardless of the contract's dollar value.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

12.4. Compliance with CONN. GEN. STAT. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5.

12.4.1 Definitions – For purposes of this paragraph:

i. "Small contractor" means any contractor, subcontractor, manufacturer, service company or nonprofit corporation (A) that maintains its principal place of business in the state, (B) that had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year prior to such application, and (C) that is independent. "Small contractor" does not

include any person who is affiliated with another person if both persons considered together have a gross revenue exceeding fifteen million dollars.

ii. "Minority business enterprise" means any small contractor (A) fifty-one per cent or more of the capital stock, if any, or assets of which are owned by a person or persons who (i) exercise operational authority over the daily affairs of the enterprise, (ii) have the power to direct the management and policies and receive the beneficial interest of the enterprise, (iii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, and (iv) are members of a minority, as such term is defined in subsection (a) of section 32-9n, or are individuals with a disability, or (B) which is a nonprofit corporation in which fifty-one per cent or more of the persons who (i) exercise operational authority over the enterprise, (ii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, (iii) have the power to direct the management and policies of the enterprise, and (iv) are members of a minority, as defined in this subsection, or are individuals with a disability.

iii. "Municipal public works contract" means that portion of an agreement entered into on or after October 1, 2015, between any individual, Contractor or corporation and a municipality for the construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, which is financed in whole or in part by the state, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees but excluding any project of an alliance district, as defined in section 10-262u, as amended by this act, financed by state funding in an amount equal to fifty thousand dollars or less.

12.4.2 The Contractor and subcontractor shall comply with the specific requirements of the State of Connecticut Set Aside Program, CONN. GEN. STAT. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5, if the municipal public works contact awarded to the Contactor is funded in whole or in part by state funds.

12.4.3 The Contactor shall be subject to the following set-aside requirements if the municipal public works contact, is funded in whole or in part by the State of Connecticut, and is in excess of FIFTY THOUSAND DOLLARS ($50,000.00), for the construction, rehabilitation, conversion, extension, demolition, or repairing of a public building or highway, or other changes or improvements in real property.

12.4.4 Set-Aside requirements – Any contractor awarded a municipal public works contract, on the basis of competitive bidding procedures, shall comply with the following Set –Aside requirements:

i. set aside at least twenty-five per cent (25%) of the total value of the state's financial assistance for such contract for award to subcontractors who are small contractors, and

ii. of that portion to be set aside in accordance with Subparagraph i. of this subdivision, reserve a portion equivalent to twenty-five per cent (25%) of the total value of the contract or portion thereof to be set aside for awards to subcontractors who are minority business enterprises.

12.4.5 Failure of the Contractor or subcontractor to comply with the State of Connecticut Set-Aside requirements shall be a material breach of this Contract.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as herein specified. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements, and will require the same of all subcontractors

13.3. Affirmative Action.

13.3.1. Pursuant to CONN. GEN. STAT. § 4a-60, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every quasi-public agency project contract and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, as amended by this act, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56, as amended by this act.

(b) If the contract is a public works contract, municipal public works contract or contract for a quasi-public agency project, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works or quasi-public agency project.

13.3.2. Pursuant to CONN. GEN. STAT. § 4a-60a, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the state of Connecticut, and that employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

14. Good Jobs Ordinance

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly-Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific

requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term “Good Faith Efforts” shall have the same meaning as it does in the Good Jobs Ordinance.

The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan-of-action shall include the anticipated number of job positions required for the Work. Not later than five (5) business day prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-action and other

relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2 Liquidated Damages Applicable To Section 14.1

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due the City, as liquidated damages, as a result of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated hereunder to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Housing and Urban Development Section 3 Clause. In the event this Contract is funded, in whole or in part, through Housing and Urban Development assistance, 24 C.F.R. §135.38 may apply and the Contractor shall then be required to comply with the following (referred to as the "Section 3 clause"):

15.1. The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. § 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted Projects covered by Section 3, shall, to the greatest extent feasible, be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

15.2. The parties to this Contract agree to comply with HUD's regulations in 24 C.F.R. part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

15.3. The Contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the Contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

15.4. The Contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 C.F.R. part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 C.F.R. part 135. The Contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 C.F.R. part 135.

15.5. The Contractor will certify that any vacant employment positions, including training positions, that are filled **(i)** after the Contractor is selected but before the Contract is executed, and **(ii)** with persons other than those to whom the regulations of 24 C.F.R. part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 C.F.R. part 135.

15.6. Noncompliance with HUD's regulations in 24 C.F.R. part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

15.7. With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 450e) also applies to the work to be performed under this Contract. Section 7(b) requires that to the greatest extent feasible **(i)** preference and opportunities for training and employment shall be given to Indians, and **(ii)** preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this Contract that are subject to the provisions of Section 3 and section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services actually performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation and disbursement of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City in the event that sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. With regard to third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in

and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, any and all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City's Using Agency, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work so as to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing, made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract any time during the period of this Contract or at any time during the twelve month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous

agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor, and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition, or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period of time as the Parties may

mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional cost or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request**.**

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP Number 7829**, and **(ii)** the Contractor's response to **RFP Number 7829**. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party due to the fact that the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that its waives a trial by jury as to any and all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor: National Equipment and Facility Solutions, Inc.
166 Masons Island Road
Mystic, CT 06355

City: Mike Konopka, School Inspector
Waterbury Public Schools
236 Grand Street
Waterbury, CT 06702

With copy to:

City of Waterbury
Office of the Corporation Counsel
City Hall Municipal Building - 3rd Floor
235 Grand Street
Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions.
The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether or not they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular

matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this

subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10 The Contractor hereby acknowledges receipt of a copy of the Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM". For Chapter 39, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which

this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of any and all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1 Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2 Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3 Bidder or Proposer: A person, partnership, corporation or other business organization submitting a bid or proposal on the form for the Work contemplated.

35.4 City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5 Construction Supervisor: An employee of the City of Waterbury, or other City duly authorized person.

35.6 Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion (ii) Final Completion and any other identified Project Milestone.

35.7 Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8 Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized City representative's, written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9 General Conditions and/or Special Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.10 Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.11 Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.12 Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.13 Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.14 Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.15 Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.16 Substantial Completion: The time at which, in the opinion of the Project Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work mean Substantial Completion thereof.

35.17 Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.18 Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19 Using Agency: **City of Waterbury Department of Education, School Inspector's Office.**

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

CITY OF WATERBURY

By:_____
_____, Mayor

Date: _____

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

NATIONAL EQUIPMENT AND FACILITY SOLUTIONS, INC.

By:_____
Print name:
Its _____

Date: _____

ATTACHMENT A

Attachment A shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 **RFP Number 7829** (acknowledged by the Contractor as having been received and incorporated by reference);

1.1.2 Contractor's Proposal, dated October 6, 2023 and consisting of 32 pages, submitted in response to **RFP Number 7829**, including Contractor's Price Proposal, dated October 6, 2023 and consisting of 2 pages, and Contractor's revised Price Proposal, dated October 18, 2023 and consisting of 1 page (all attached hereto);

1.1.3 Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit (incorporated by reference);

1.1.4 Certificates of Insurance (attached hereto);

1.1.5 Performance Bond and Payment Bond (attached hereto);

1.1.6 Special Conditions (Article 1 – Article 19 consisting of 6 pages (attached hereto);

1.1.7 General Conditions (Article 1 – Article 114) consisting of 36 pages (attached hereto);

1.1.8 State Wage Rate Documentation (attached hereto);

1.1.9 Any and all amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.10 All applicable Federal, State and local statutes, regulations, charter and ordinances (incorporated by reference), and

1.1.11 All permits (including, but not limited to, City of Waterbury Building permit(s)) and licenses (incorporated by reference).

REQUEST FOR PROPOSAL
#7829
BY
THE CITY OF WATERBURY
BOARD OF EDUCATION
Bleacher and Bench Replacement at Two Schools

The City of Waterbury, Department of *Education* (hereinafter "City"), is seeking a Contractor to *Bleacher and Bench Replacement at Two schools*.

A. Background and Intent

Removal of Existing and Replacement of Bleachers at Kennedy High School Pool, Wilby High School Pool & Benches at Wilby High School Locker Room.

B. Qualifications

Eligible proposers will be those consultants, businesses, and institutions that have the following qualifications:

1. Experience and expertise in regard to providing the types of or similar services as those outlined in the Scope of Services in this RFP
2. A proposer with a proven track record in providing these types of or similar services for municipal governments.
3. Knowledge of federal and State laws and regulations governing the services outlined in the scope of services.

C. Scope of Services

**** There are existing bleachers at KHS pool and WHS pool as well as benches in WHS locker rooms. All existing will need to be removed as part of scope of work. <u>All measurements will be obtained/confirmed at mandatory pre-bid walk thru.</u>**

<u>Kennedy High School Pool:</u>

Demolish and remove existing wood bleacher system.
Install new wall attached electronically motorized telescopic seating system. Contractor will be responsible for all aspects of install including establishing power source. (Current system is 2 sections, each approximately 50' long, 15 rows high).

<u>Wilby High School Pool:</u>

Remove existing seating planks from concrete base and replace as same with PVC boards.

Wilby High School Locker Room:

Remove existing seating planks of treated wood, replace as same with PVC boards.

D. Agreement Period

The agreement period for any contract or purchase order resulting from this RFP is anticipated to be 90 calender days to substantial completion & 120 days to final completion.

E. Insurance

The respondent shall provide insurance as set for in **Attachment D** provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial category as shown in the most current A.M. Best Company ratings.

F. General Information

1. The City is an Equal Opportunity and Affirmative Action employer and does not discriminate in its hiring, employment, or business practices. The City is committed to complying with the Americans with Disabilities Act of 1990 (ADA) and does not discriminate on the basis of disability, in admission to, access to, or operation of its programs, services, or activities.

2. ***There will be a mandatory Information Session with respect to this RFP on 9/25/2023 @ 9am, Kennedy High School - 422 Highland Ave., Waterbury CT, and will immediately continue to Wilby High School, 568 Bucks Hill Rd., Waterbury CT. ATTENDANCE AND ON-TIME SIGN-IN AT BOTH LOCATIONS OF THE Information Session IS MANDATORY. THOSE LATE/NOT ATTENDING WILL NOT BE ELIGIBLE TO SUBMIT A PROPOSAL.***

   ******If you attended the previous meeting for RFP #7773, your attendance at this additional walk thru is NOT required.***

3. Proposers must complete and sign the items and any forms included in Attachment A. (Contract Compliance Packet).

4. All questions and communications about this request for Proposal and submission requirements must be directed to the City of Waterbury ProcureWare website and must be received **by 2:00 PM on 9/28/2023**. Prospective proposers must limit their contact regarding this RFP to the Purchasing Director or such other person otherwise designated by the Purchasing Director. Responses to questions submitted by the above date

or identified at any Information Session to be held in regard to this RFP, **along with any changes or amendments to this RFP**, will be available via the City of Waterbury ProcureWare website **by 10/3/2023, 2:00 PM**. It shall be the responsibility of the proposer to download this information. If you have any procedural questions in this regard, please call the Purchasing Director at (203) 574-6748.

G. Management

Any contract or purchase order resulting from this RFP will be managed by The School Inspector's Office.

H. Conditions

All those submitting proposals must be willing to adhere to the following conditions and must positively state this in the proposal:

1. All proposals in response to this RFP are to be the sole property of the City. Proposers are encouraged **not** to include in their proposals any information which is proprietary. All materials associated with this procurement process are subject to the terms of state laws defining freedom of information and privacy and all rules, regulations and interpretations resulting from those laws.

2. Any product, whether acceptable or unacceptable, developed under a contract awarded as a result of the RFP is to be the sole property of the City.

3. The timing and sequence of events resulting from this RFP will ultimately be determined by the City.

4. The proposer agrees that the proposal will remain valid for a period of ***(120)*** days after the closing date for the submission and may be extended beyond that time by mutual agreement.

5. The City may amend the terms or cancel this RFP any time prior to the execution of a contract or purchase order for these services if the City deems it to be necessary, appropriate or otherwise in the best interests of the City. Failure to acknowledge receipt of amendments, in accordance with the instructions contained in the amendments, may result in a proposal not being considered. At his option, the City's Director of Purchasing may provide all proposers with a limited opportunity to remedy any technical deficiencies identified by the City in their initial review of proposals.

6. The proposer must certify that the personnel identified in its response to this RFP will be the persons actually assigned to the project. Any additions, deletions or changes in personnel from the proposal during the course of the agreement period must be approved by the City, with the exception of

personnel who have terminated employment. Replacements for personnel who have terminated employment are subject to approval by the City. At its discretion, the City may require the removal and replacement of any of the proposer's personnel who do not perform adequately, regardless of whether they were previously approved by the City.

7. All subcontractors hired by the proposer awarded a contract or purchase order as a result of this RFP must have prior approval of the City prior to and during the agreement period.

8. Any costs and expenses incurred by proposers in preparing or submitting proposals are the sole responsibility of the proposer.

9. A proposer must be prepared to present evidence of experience, ability, financial standing, and any other information deemed necessary by the City to satisfactorily meet the requirements set forth or implied in the proposal.

10. No additions or changes to the original proposal will be allowed after submittal, except as may be allowed by the City, at its option, in accordance with Section H.5. of this RFP. While changes are not permitted, clarification of proposals may be required by the City at the proposer's sole cost and expense. The final price and scope of services of any contract or purchase order resulting from this RFP may be negotiated with responsible proposers.

11. The proposer may be required to give presentations to the extent necessary to satisfy the City's requirements or needs. In some cases, proposers may have to give presentations or further explanation to any RFP selection committee established by the City.

12. The proposer represents and warrants that the proposal is not made in connection with any other proposer and is in all respects fair and without collusion or fraud. The proposer further represents and warrants that it did not participate in any part of the RFP development process, had no knowledge of the specific contents of the RFP prior to its issuance, and that no agent, representative or employee of the City participated directly in the proposer's proposal preparation.

13. All responses to the RFP must conform to instruction. Failure to include any required signatures, provide the required number of copies, to meet deadlines, answer all questions, follow the requested format, or failure to comply with any other requirements of this RFP may be considered appropriate cause for rejection of the response.

14. The proposer must accept the City's standard agreement language. <u>See Attachment B.</u>

15. Any contract or purchase order resulting from this RFP process will represent the entire agreement between the proposer and the City and will supersede all prior negotiations, representations or agreements, alleged or made,

between the parties. The City shall assume no liability for payment of services under the terms of the contract or purchase order until the successful proposer is notified that the contract or purchase order has been accepted and approved by the City. Any contract resulting from this RFP may be amended only by means of a written instrument signed by the proposer and signed by the Mayor.

I. Proposal Requirements & Required Format

One original (clearly identified as such) and ***(3)*** paper copies of the proposal, as well as a copy of the original proposal in pdf format on a CD or flash drive, must be received at the following address no later than **10:30 AM on 10/*11/2023.* Proposals received after that time shall <u>not</u> be considered.**

Mr. Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street
Room 103
Waterbury, CT 06702

Proposals submitted must be bound, paginated, indexed and numbered consecutively. <u>Proposers shall complete **Attachment C** addressed to Mr. McCaffery, which, in part, includes a statement by the proposer accepting all terms and conditions and requirements contained in the RFP, and which shall be signed by a duly authorized official of the organization submitting the proposal. Proposers shall also, as indicated in Attachment C, identify the name of a contact person, along with their telephone number, email address, if applicable, and address, who can be contacted for the purpose of clarifying the information contained in their response to this RFP. In addition to any other information required in Attachment C, proposers shall provide their firm's authorization and a request to any persons, firm, or corporation to furnish any information requested by the City of Waterbury in verification of the recitals included in its response to this RFP</u>.

Proposals must set forth accurate and complete information for each of the items listed below. At the City's discretion, failure to do so could result in disqualification.

1. <u>Proposer Information</u>: Please provide the following information:

    a. Firm Name
    b. Permanent main office address
    c. Date firm organized.
    d. Legal Form of ownership. If a corporation, indicate where incorporated.
    e. How many years have you been engaged in services you provide under your present name?
    f. Names, titles, reporting relationships, and background and experience of the principal members of your organization, including officers.

2. Experience, Expertise and Capabilities

a. Philosophy Statement and Business Focus. A statement of the proposer's philosophy and approach in undertaking the services of the nature outlined in the RFP, as well as a description of its primary business focus.
b. Summary of Relevant Experience. A listing of all projects that the proposer has completed within the last three (3) years must be provided, as well as all projects of a similar nature to those included in the Scope of Services in this RFP. The following information shall be provided for each organization listed under this subsection:
    - Organization name and the name, title, address and telephone number of a responsible contact person.
    - Nature of services provided and dates services started and actually completed. Please indicate, for each assignment, if it was completed within the original contract timeframe and budget. If not, please explain.
    - For each project done for a municipality or other government agency, please indicate the gross cost of the agreement.

    Additionally, please list any contracts or purchase orders in the last three (3) years between the proposer and any agency of the City of Waterbury.
c. Personnel Listing. A complete listing of the staff identified in the work plan by job classification, along with their resumes. Each resume shall include the individual's qualifications and experience in the subject area.
d. Conflict of Interest. Disclose any current (within the last 3 years) business, financial, personal or other types of relationships which may pose a conflict of interest.

3. Statement of Qualifications and Work Plan

a. Qualifications. Please describe your firm's qualifications, experience and capabilities as they pertain to each of the areas of qualifications listed, as well as those of the personnel to be assigned to this project.
b. Work Plan. Please describe the approach that would be generally followed in undertaking the Scope of Services in Section C above.
c. Services Expected of the City. Identify the nature and scope of the services that would be generally required of the City in undertaking these projects.

4. Cost Schedule. Proposals shall complete Attachment F: Proposal Form, for work to be performed in accordance with this RFP, inclusive of all personnel and non-personnel expenses. This price should encompass the entire Scope of Services in this RFP. The City reserves the right to negotiate costs, scope of services, and key personnel based on provider proposals. In order for the City to evaluate the proposed cost, proposers must include for each element in the Work Plan outlined in Section I.3.b. above, the staff, hours, hourly rates

and the total cost. Include details generally associated with non-personnel costs as an additional cost section.

Since the City may desire to consider the proposer's experience, qualifications, statement of work, and other aspects of the RFP prior to the Cost Proposal, the Cost Proposal shall sealed in a separate envelope marked "Confidential: Cost Proposal".

Note: The City is exempt from the payment of excise, transportation and sales taxes imposed by the Federal Government and/or the State. Such taxes must not be included in prices.

5. Information Regarding: Failure to Complete Work, Default and Litigation.

Please respond to the following questions:

a. Have you ever failed to complete any work awarded to you? If so, where and why?
b. Have you ever defaulted on a contract? If so, where and why?
c. Is there any pending litigation which could affect your organization's ability to perform this agreement? If so, please describe.
d. Has your firm ever had a contract terminated for cause within the past five years? If yes, provide details.
e. Has your firm been named in a lawsuit related to errors and omissions within the past five years? If yes, provide details.
f. During the past seven years, has your firm ever filed for protection under the Federal bankruptcy laws? If yes, provide details.
g. Are there any other factors or information that could affect your firm's ability to provide the services being sought about which the City should be aware?

6. Exceptions and Alternatives. Proposers wishing to take any exceptions to any requirement in the RFP shall state and explain such exceptions. The City may accept proposals which take exception to any requirements in this RFP, or which offer any alternative to a requirement herein, as well as consider such exceptions and alternatives in evaluating responses. Any exception or alternative must be clearly delineated and cannot materially affect the substance of this Request for Proposals.

7. Additional Data. Any additional information which the proposer wishes to bring to the attention of the City that is relevant to this RFP.

J. Evaluation of Proposals; Selection Process

1. Evaluation Criteria

The following criteria are expected to be among those utilized in the selection process. They are presented as a guide for the proposer in understanding the City's requirements and expectations for this project and are not necessarily all inclusive or presented in order of importance.

a. Proposed statement of work. Emphasis will be on grasp of the issues involved, soundness of approach and the quality of the overall proposal.

b. Proposed cost schedule.

c. Experience, expertise, and capabilities of the proposer. Background, qualifications, and previous experience of personnel to be assigned to the project and their demonstrated competence, experience and expertise in the type of work to be performed. The type of experience, expertise, capabilities, and qualifications desired are outlined in Section B. - Qualifications of this RFP. The City may contact one or more of the organization references listed in Section I.2.b. of this RFP as part of assessing the experience, expertise and capabilities of the proposers or those selected as the finalist(s).

d. Time, Project and Cost Schedule**.** Emphasis will be on the proposer's record with completing tasks and producing the necessary products within required time frames and within budget.

2. Selection Process

The City of Waterbury may elect to have the proposals evaluated by a committee as part of making a selection. If deemed necessary, the City reserves the right to arrange for interviews/oral presentations as part of the selection process, which invitations for interviews may involve a short-listing of the proposals received.

K.Rights Reserved To The City

The City reserves the right to award in part, to reject any and all proposals in whole or in part for misrepresentation or if the proposer is in default of any prior City contract, or if the proposal limits or modifies any of the terms and conditions and/or specifications of the RFP. The City also reserves the right to waive technical defects, irregularities and omissions if, in its judgment, the best interest of the City will be served.

L. Federal, State and Local Employment Requirements

Contractors, if applicable, shall be obligated to fully comply with the attached Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects, i.e. City of Waterbury Ordinances Chapter 34 ("Good Jobs Ordinance"), Federal Davis- Bacon Act, Federal American Recovery and Reinvestment Act of 2009, and the Housing and Urban Development Section 3 Clause, all as further specified in the attached City of Waterbury Contract form. Also attached hereto, is a full copy of the aforesaid City of Waterbury Ordinance, commonly referred to as the "Good Jobs Ordinance".

M. State Set-Aside Requirements

The contractor who is selected to perform this municipal public works project, funded in whole or part by the State, must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session

Public Act 15-5. An Affirmative Action Plan must be filed with and approved by the Commission on Human Rights and Opportunities prior to the commencement of construction.

State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g, as amended. (25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses.) The contractor must demonstrate good faith effort to meet the 25% set-aside goals.

For municipal public works contracts, the contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities. Forms can be found at http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806.

N. State DAS Requirements for Construction Projects

If applicable, Proposers shall submit with their Proposals their DAS Contractor Prequalification Certificate along with a current Updated Bid/Proposal Statement. In addition, any named Subcontractor whose subcontract value is equal to or greater than $500,000 shall hold a current DAS Contractor Prequalification Certificate in the closest applicable Classification of the work that the Subcontractor will complete in the contract. The proposer must submit with their proposal, all applicable Subcontractor DAS Prequalification certificates. Any Proposal submitted without a copy of the DAS Prequalification Certificate and an Updated Bid/Proposal Statement for the proposal and DAS Prequalification Certificates for Subcontractors whose subcontract value is equal to or greater than $500,000 shall be invalid.

The Successful Proposer and each of its Subcontractors having subcontracts in value equal to or greater than $500,000 shall maintain and keep current their respective DAS Contractor Prequalification Certificates at all times during the term of the Contract and any warranty period set forth in the Contract Documents.

O. Bid Bond

Each Proposal submitted shall be accompanied by a Proposal Security (a Certified Check or Bid Bond) in the amount of **ten (10) percent** of the Total Proposal Price.

P. Performance/Payment Bonds

The Proposer to whom a contract is offered, must furnish to the City, if that contract has a total cost greater than $50,000.00, a 100 percent Performance Bond with a surety, and in a form, acceptable to the City. In the City's sole discretion, it may also require a 100 percent Payment Bond and/or other additional security with a surety, and in a form, acceptable to the City.

Five (5) Attachment A Documents

- ANNUAL STATEMENT OF FINANCIAL INTEREST
- DEBARMENT CERTIFICATION
- CITY OF WATERBURY DISCLOSURE OF OUTSTANDING OBLIGATIONS
- CORPORATE RESOLUTION
- LLC RESOLUTION

One (1) Attachment B Document

- SAMPLE CONTRACT

One (1) Attachment C Document

- ADDENDUM/CERTIFICATION/NOTICE OF ACCEPTANCE

One (1) Attachment D Document

- INSURANCE REQUIREMENTS

Two (2) Attachment E Documents

- GENERAL CONDITIONS
- SPECIAL CONDITIONS

One (1) Attachment F Document

- PROPOSAL FORM

One (1) Prevailing Wages Packet

- PREVAILING WAGE LAW POSTER
- SECTION 31-53b
- INFORMATION BULLETIN- 10-HOUR OSHA COURSE
- NOTICE FOR ALL MASON CONTRACTORS
- CT GENERAL STATUTE 31-55a
- CONTRACTOR'S WAGE CERTIFICATION FORM
- PAYROLL CERTIFICATION
- INFORMATION BULLETIN – OCCUPATIONAL CLASSIFICATIONS
- FOOTNOTES
- PREVAILING WAGES FOR THIS PROJECT

Attachment A Documents

- ANNUAL STATEMENT OF FINANCIAL INTEREST
- DEBARMENT CERTIFICATION
- CITY OF WATERBURY DISCLOSURE OF OUTSTANDING OBLIGATIONS
- CORPORATE RESOLUTION
- LLC RESOLUTION

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

I. Outstanding Purchase Orders of Contracts with the City

A. Contracts

No Contracts with the City ☐

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

B. Purchase Order(s).

No Purchase Order(s) with the City ☐

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

II. Financial Interest Disclosure

(Public Officials, Employees or Board and Commission Members with interest in Person or Entity Conducting Business with the City)

No Officials, Employees or Board and Commission Members with Financial Interest ☐

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc…)

Interest Held By:
Self ☐ Spouse ☐ Joint ☐ Child ☐

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc…)

Interest Held By:
Self ☐ Spouse ☐ Joint ☐ Child ☐

1. I certify that this Annual Statement of Financial Interests is a complete and accurate statement of those matter required to be disclosed by me pursuant to §39.061 of the Code of Ordinances.

2. I understand that if I fail to file an Annual Statement (or amendment thereto) or an inaccurate Statement I will be in violation with Chapter 39 of the Code of Ordinance and, thereby, subject to the remedies set forth in §§38.71 and 39.101 of said Code.

3. I understand that I must file with the City Clerk, within fifteen (15) days following any reportable occurrence, any amendments to the Annual Statement.

I have read and agree to the above certification.

_____
(Name of Company, if applicable)

_____ _____
Signature of Individual (or Authorized Signatory) Date

_____
Print or Type Name and Title (if applicable)

DELIVERED | By Mail ☐ Hand-Delivered ☐

City of Waterbury Certification
Regarding
Debarment, Suspension, Ineligibility and Exclusion

If the transaction is Federally funded, in whole or in part (including pass through grants to state and/or municipal government), this certification is required by the regulations implementing one or more Presidential Executive Orders. If this transaction is funded by the State of Connecticut, in whole or in part, this certification is required in accordance with one or more State of Connecticut general statutes.

1. By signing and submitting the attached proposal and/or this document, the prospective lower tier participant, vendor, or contractor is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant, vendor, or contractor knowingly rendered an erroneous certification, in addition to other remedies available to the Federal , State, or City government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant, vendor or contractor shall provide immediate written notice to the person to which the attached proposal and/or this document is submitted if at any time the prospective lower tier participant, vendor or contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction", "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principal", "proposal", and "voluntarily excluded", as used herein, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 and/or State of Connecticut statutes and regulations. You may contact the person to which this proposal and/or this document is submitted for assistance in obtaining a copy of the foregoing.
5. The prospective lower tier participant, vendor or contractor agrees by submitting the attached proposal and/or this document that, should the proposed covered transaction be entered into, it shall not knowingly enter into any covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant, vendor or contractor further agrees by submitting the attached proposal and/or this document that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion-Lower Tier Covered Transactions", without modification, in all covered transaction and in all solicitations for covered transactions.
7. A participant in a covered transaction may rely upon the certification of a prospective participant in a covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may but is not required to, check the Non-procurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required herein. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 herein, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal, State or Municipal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification

(1) The prospective recipient of monies hereby certifies, by submission of its attached proposal and/or by execution of this document, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, disqualified, or voluntarily excluded from bidding or participation in the proposed transaction by any Federal, State, or Municipal department or agency or by the statutes, regulations or ordinances of the foregoing departments and agencies.

(2) Where the prospective recipient of monies is unable to certify to any of the statements in this certification, such prospective participant shall attach a written explanation hereto.

Full Legal Name and address of Recipient, Vendor, or Contractor: _____
_____
_____.

Print Name and Title of Authorized Representative: _____

Signature of Authorized Representative: _____

Date: _____

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

For the purposes of this Disclosure of Outstanding Financial Obligations, the following definitions apply:

(a) "Contract" means any Public Contract as defined below.

(b) "Person" means one (1) or more individuals, partnerships, corporations, associations, or joint ventures.

(c) "Public Contract" means any agreement or formal commitment entered into by the city to expend funds in return for work, labor, services, supplies, equipment, materials or any combination of the foregoing, or any lease, lease by way of concession, concession agreement, permit, or per agreement whereby the city leases, grants or demises property belonging to the city, or otherwise grants a right of privilege to occupy or to use said property of the city.

(d) "City" means any official agency, board, authority, department office, or other subdivision of the City of Waterbury.

State of_____

SS.:_____

County of_____

_____, being first duly sworn, deposes and says that:

1. I am the ***owner, partner, officer, representative, agent or*** _____ of _____(Contractor's Name), the Contractor that has submitted the attached agreement.

2. I am fully informed respecting the preparation and contents of the attached Agreement and of all pertinent circumstances respecting such Agreement;

3. That as a person desiring to contract with the City (check all that apply):

____ The Contractor and each owner, partner, officer, representative, agent or affiliate of the Contractor has filed a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor are required to file a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, owes back taxes to the City of Waterbury

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, has any other outstanding obligations to the City of Waterbury

4. The following list is a list of the names of all persons affiliated with the business of the Contractor, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1				
2				
3				
4				

5. That as a person desiring to contract with the City:

(a) The Contractor or an owner, partner, officer, representative, agent or affiliate of the Contractor provides, or has provided, services or materials to the City within one (1) year prior to the date of this disclosure, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1				
2				
3				
4				

(b) The Contractor possesses an ownership interest in the following business organizations, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized) :

Organization Name	Address	Type of Ownership
1		
2		
3		
4		

(c) The following persons possess an ownership interest in the Contractor. If the Contractor is a corporation, list all of the officers of the corporation and the names of each stockholder whose shares exceed twenty-five

(25) percent of the outstanding stock, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	DOB	Stock %
1			
2			
3			
4			

(d) Of the following of the affiliates, individuals or business entities identified in this affidavit, list each that owns, owned, or within one (1) year prior to the date of this disclosure has owned, taxable property situated in the City of Waterbury, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Address	DOB
1				
2				
3				
4				

(e) If the Contractor conducts business under a trade name, the following additional information is required: the place where such entity is incorporated or is registered to conduct such business; and the address of its principal place of business, if none, state none:

TRADE NAME	PLACE OF INCORPORATION/REGISTRY	PRINCIPAL PLACE OF BUSINESS
1		
2		
3		
4		

I hereby certify that the statements set forth above are true and complete, and I understand that any incorrect information or omission of information from this affidavit may result in the immediate termination of the Contractor's agreement with the City of Waterbury.

For Partnership/Sole Proprietor

In presence of:

_____ _____
Witness Name of Partnership/Business

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

By: _____
Name of General Partner/ Sole Proprietor

_____
Address of Business

State of _____)

) SS

County of _____)

_____ being duly sworn,

Deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202_.

_____
(Notary Public)

My Commission Expires: _____

For Corporation

_____
Witness

_____
Name of Corporate Signatory

_____
Address of Business

Affix
Corporate
Seal

By:_____
Name of Authorized Corporate Officer

Its:_____
Title

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

State of _____)

) SS

County of _____)

_____ being duly sworn,

deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202__.

_____
(Notary Public)

My Commission Expires: _____

CORPORATE RESOLUTION

I, _____, hereby certify that I am the duly elected and acting Secretary of _____, a corporation organized and existing under the laws of the State of _____, do hereby certify that the following facts are true and were taken from the records of said corporation.

The following resolution was adopted at a meeting of the corporation duly held on the _____ day of _____, _____.

"It is hereby resolved that _____ is authorized to make, execute and approve, on behalf of this corporation, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the corporate seal of said _____ corporation this _____ day of _____, 202__.

_____
Secretary

TO BE SIGNED ON DATE OF CONTRACT EXECUTION

LIMITED LIABILTY COMPANY RESOLUTION

I, _____, hereby certify that I am the duly authorized and acting Member / Manager (circle one) of_____, a limited liability company organized and existing under the laws of the State of_____, do hereby certify that the following facts are true and were taken from the records of said LLC.

The following resolution was adopted at a meeting of the LLC duly held on the _____ day of _____, _____.

"It is hereby resolved that _____is authorized to make, execute and approve, on behalf of this LLC, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the company seal of said _____ , LLC this _____ day of _____, 202__.

_____
Manager/Member

.

TO BE SIGNED ON DATE OF CONTRACT EXECUTION

Attachment B Document

- SAMPLE CONTRACT

CONSTRUCTION CONTRACT
for

Bleacher and Bench Replacement at Two Schools

between

City of Waterbury

and

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THIS CONTRACT, effective on the date signed by the Mayor, is by and between the CITY OF WATERBURY, City Hall, 235 Grand Street, Waterbury, Connecticut (the "City") and _____located at _____ a State of ___duly registered _____(the "Contractor").

WHEREAS, the Contractor submitted a Proposal to the City in response to **Request for Proposal ("RFP") Number 7829 for Bleacher and Bench Replacement at Two Schools** ; and,

WHEREAS, the City accepted the Contractor's Proposal (as subsequently negotiated and revised) for **RFP Number 7829;** and,

WHEREAS, the City desires to obtain the Contractor's services for **Bleacher and Bench Replacement at Two Schools** pursuant to the terms set forth in this Contract (the "Project").

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all of the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with **(i)** any and all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and **(ii)** generally accepted professional standards.

1.1. The Project consists of **Bleacher and Bench Replacement at Two Schools * (Kennedy High School Pool, Wilby High School Pool and Wilby High School Locker**

Rooms) as detailed and described in the Proposal Documents in **Attachment A** and are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 **RFP Number 7829** (acknowledged by the Contractor as having been received and incorporated by reference);

1.1.2 **RFP Number 7829** Addendum #1, dated (attached hereto);

1.1.3 Contractor's Proposal, dated_____and consisting of __ pages, submitted in response to **RFP Number 7829** and Contractor's revised Price Proposal, dated _____ and consisting of __ pages (all attached hereto);

1.1.4 Annual Statement of Financial Interests; Disclosure and Affidavit Re: Outstanding Obligations to the City; Debarment Certification; Corporate Resolution, Non-Collusive Affidavit (incorporated by reference);

1.1.5 Certificates of Insurance (attached hereto);

1.1.6 Performance Bond and Payment Bond (attached hereto);

1.1.7 Special Conditions (Article 1 – Article 19 consisting of 6 pages (attached hereto);

1.1.8 General Conditions (Article 1 – Article 114) consisting of 36 pages (attached hereto);

1.1.9 State Wage Rate Documentation (attached hereto);

1.1.10 Any and all amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.11 All applicable Federal, State and local statutes, regulations, charter and ordinances (incorporated by reference), and

1.1.12 All permits (including, but not limited to, City of Waterbury Building permit(s)) and licenses (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall

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be effective and binding on the Contractor. In the event that any provision in the Contract Documents conflict with any other provision therein, the provision in the component part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically.

1.2.1 Federal laws and regulations
1.2.2 State, and local laws, regulations, charter and ordinances
1.2.3 Contract Amendment(s) and Change Orders
1.2.4 Contract
1.2.5 Contractor's Revised Price Proposal Form
1.2.6 Special Conditions
1.2.7 General Conditions

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Consultant shall provide to the City a copy of the Consultant's licenses, certifications, registrations, etc.

********** **IF WORKING IN/ON SCHOOL GROUNDS**********

2.3. Activities, Work, and Services Performed in Department of Education Facilities, on School Grounds, at Student Sporting Events, and/or where City Students Present. For all activities in school facilities and/or Department of Education facilities, the Contractor shall first be required to coordinate all on-site visits and activities with the appropriate Department/personnel in Education, or the

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designated person and shall obtain any necessary clearance, ID badges, etc.

2.4. Criminal Background Check and DCF Registry Check. The Contractor shall ensure, and represents to the City, that any employee who will be on school grounds/Department of Education Property/at Department of Education events and/or where City Students Present, that will or may have direct contact with a Student pursuant to this Agreement has stated, in writing, whether such person has ever been convicted of a crime or whether criminal charges were ever pending against such person. The Contractor shall further ensure, and represents to the City that any person who will have direct contact with a Student has submitted to a records check of the Department of Children and Families child abuse and neglect registry established pursuant to Conn. Gen. Stat. §17a-101k, as well as state and national criminal history records checks conducted in accordance with Conn. Gen. Stat. §29-17a, the federal National Child Protection Act of 1993, and the federal Volunteers for Children Act of 1998. The Contractor shall not permit any person with a disqualifying criminal history to have direct contact with a student.

2.5. Activities, Work, and Services Performed on other City Property (Non-Education facilities). For all activities involving non-Board of Education facilities and/or buildings, Contractor shall first be required to coordinate all on-site visits and activities with the appropriate City Department or its designee.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the Schedules and Attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibilities to examine and to be thoroughly familiar with the City's bid document, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

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3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume any and all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submittal of its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's proposal documents and other documents for **RFP Number 7829** (collectively "Proposal Documents");

3.1.7. it agrees that the Proposal Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8. it has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes; and

3.1.10 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections

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and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, state and federal health and safety regulations. Contractor shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall confirm in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense **(i)** adequate off-site storage space for equipment, materials, incidentals, etc., and **(ii)** all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times. This provision shall not excuse the Contractor from timely performance under the Contract.

3.5. Cleaning Up. The Contractor shall at all times keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity, unless the City gives prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform

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in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the Contractor shall be made only with the prior written consent of an authorized representative of the City's Using Agency.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. **Contractor's Employees.** The Contractor shall at all times enforce strict discipline and good order among its employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are **(i)** subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or **(ii)** unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed. The Contractor shall thereafter wait for written instructions from the City before proceeding with regard to such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, or necessary, or prudent for the performance of the Contractor's obligations under this Contract and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to

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mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions similar to those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment.

4. Responsibilities of the City and City Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract within **Ninety (90)** consecutive calendar days of the City's written Notice to Proceed and shall reach Final Completion within **One Hundred Twenty (120)** consecutive calendar days of the City's written Notice to Proceed ("Contract Time").

5.1. Within one (1) week of the City's issuance of its written notice to proceed, and prior to the commencement of any work on the Project site, the Contractor shall submit for the City's written approval a construction progress schedule. On a monthly basis, the Contractor shall deliver to the City a written status report

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setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **SEVEN HUNDRED FIFTY DOLLARS AND ZERO CENTS ($750.00)** per calendar day for each and every calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damages from any monies due the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire Section 5, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay

In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work,

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regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for satisfactory provision of all of the goods and services set forth in this Contract as follows in this Section 6. No claims for additional compensation will be considered for conditions made known to the Contractor prior to bidding. No claims for additional compensation will be considered on account of failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this Section 6, the fee payable to the Contractor shall not exceed **DOLLARS AND CENTS ($ TBD)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Proposal set forth in **Attachment A's** "Contractor's Proposal, dated and Contractor's revised Price Proposal, and consisting of __pages, which is summarized below:

i. (Bid Item 1)
ii. (Bid Item 2)
iii. (Bid Item 3)
iv. (Bid Item 4)
v. (Bid Item 5)
vi. (Bid Item 6)

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage five percent (5.0 %) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not does not include additional sums that the City may withhold due to the Contractor's failure to comply with provisions of this Contract.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc, all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

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6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Vendor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

6.4. Proposal Costs. All costs of the Contractor in preparing its bid for **RFP Number 7829** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final City payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all of the foregoing payment obligations have been fully completed.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

6.7. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

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6.8. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.9. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.9.1 submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment by the City's or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment can not be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide at the City's request, reasonable documentation to substantiate Contractor's Application for Payment.

6.9.2 Progress and Final Payments

The City will make progress payments on account of the Contract Price on the basis of the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be on the basis of the progress of the Scope of Services as determined by the City, according to the schedule of values provided for in the Contract Documents, and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i) three hundred sixty-five (365)** calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time period or date expressly stated elsewhere in this Contract or **Attachment A**.

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7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from any and all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees. The Contractor's foregoing warranty obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. City beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon the City's final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project work-site and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project work-site without securing the prior written consent of an authorized City Using Agency employee.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

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9.2. In any and all claims against the City, Board of Education or any of the City's boards, agents, employees or officers by the Contractor or any employee of the Contractor, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, the Board of Education, any of City's boards, agents, employees as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, agents, employees or officers as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** three hundred sixty-five (365) calendar days after the City delivers its written notice of its acceptance of the Project.

11. Contractor's Insurance.

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11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, at all times during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance:
$1,000,000.00 each Occurrence
$2,000,000.00 General Aggregate
$2,000,000.00 Products/Completed Operations Aggregate
Providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance:
$1,000,000.00 Combined Single Limit Each Accident
Any Auto, All Owned and Hired Autos
Providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

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11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employer Liability (EL):
EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance:
$1,000,000.00 each Occurrence
$1,000,000.00 Aggregate
Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: All Contractor's Insurance except Workers' Compensation and Professional Liability shall be endorsed to add the City of Waterbury and its Board of Education, as additional insured and provide waiver of subrogation on all policies except Builders Risk. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury and its Board of Education are listed as Additional Insured on a primary and non-contributory basis on all policies except Workers' Compensation and Professional Liability. All policies shall include a Waiver of Subrogation."** The City's Request for Proposal Number must be shown on the certificate of insurance to assure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy(ies).

11.8. If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this

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contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

11.9 Original, completed Certificates of Insurance must be presented to the City of Waterbury prior to contract issuance. Contractor agrees to provide replacement/renewal certificates at least thirty (30) calendar days prior to the expiration date of the policies. Should any of the above described policies be cancelled, limits reduced or coverage altered, thirty (30) calendar days written notice must be given to the City of Waterbury.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT, as supplemented in the Department of Labor Regulations (29 CFR, Part 3); DAVIS BACON ACT as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the HOUSING and COMMUNITY DEVELOPMENT ACT of 1974, as amended; TITLE 31 and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new

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construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn.Gen.Statute 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.2.2 The Contractor is aware of, and shall comply with, the provisions of both the Federal Davis-Bacon Act and the Federal American Recovery and Reinvestment Act of 2009, the provisions of both acts hereby incorporated by reference and made a part of this Contract. The Federal Davis-Bacon Act provides that Federal wage rate laws apply to certain federally funded contracts. The American Recovery and Reinvestment Act ("ARRA") provides that Federal wage rate laws apply to all ARRA funded contracts regardless of the contract's dollar value.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

12.4. Compliance with CONN. GEN. STAT. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5.

12.4.1 Definitions – For purposes of this paragraph:

i. "Small contractor" means any contractor, subcontractor, manufacturer, service company or nonprofit corporation (A) that maintains its principal place of business in the state, (B) that had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year prior to such application, and (C) that is independent. "Small contractor" does not include any person who is affiliated with another person if both persons considered together have a gross revenue exceeding fifteen million dollars.

ii. "Minority business enterprise" means any small contractor (A) fifty-one per cent or more of the capital stock, if any, or assets of which are owned by a person or persons who (i) exercise operational authority over the daily affairs of the enterprise, (ii) have the power to direct the management and

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policies and receive the beneficial interest of the enterprise, (iii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, and (iv) are members of a minority, as such term is defined in subsection (a) of section 32-9n, or are individuals with a disability, or (B) which is a nonprofit corporation in which fifty-one per cent or more of the persons who (i) exercise operational authority over the enterprise, (ii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, (iii) have the power to direct the management and policies of the enterprise, and (iv) are members of a minority, as defined in this subsection, or are individuals with a disability.

iii. "Municipal public works contract" means that portion of an agreement entered into on or after October 1, 2015, between any individual, Contractor or corporation and a municipality for the construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, which is financed in whole or in part by the state, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees but excluding any project of an alliance district, as defined in section 10-262u, as amended by this act, financed by state funding in an amount equal to fifty thousand dollars or less.

12.4.2 The Contractor and subcontractor shall comply with the specific requirements of the State of Connecticut Set Aside Program, CONN. GEN. STAT. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5, if the municipal public works contact awarded to the Contactor is funded in whole or in part by state funds.

12.4.3 The Contactor shall be subject to the following set-aside requirements if the municipal public works contact, is funded in whole or in part by the State of Connecticut, and is in excess of FIFTY THOUSAND DOLLARS ($50,000.00), for the construction, rehabilitation, conversion, extension, demolition, or repairing of a public building or highway, or other changes or improvements in real property.

12.4.4 Set-Aside requirements – Any contractor awarded a municipal public works contract, on the basis of competitive bidding procedures, shall comply with the following Set –Aside requirements:

i. set aside at least twenty-five per cent (25%) of the total value of the state's financial assistance for such contract for award to subcontractors who are small contractors, and

ii. of that portion to be set aside in accordance with Subparagraph i. of this subdivision, reserve a portion equivalent to twenty-five per cent (25%) of the total value of the contract or portion thereof to be set aside for awards to subcontractors who are minority business enterprises.

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12.4.5 Failure of the Contractor or subcontractor to comply with the State of Connecticut Set-Aside requirements shall be a material breach of this Contract.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as herein specified. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements, and will require the same of all subcontractors

13.3. Affirmative Action.

13.3.1. Pursuant to CONN. GEN. STAT. § 4a-60, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every quasi-public agency project contract and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression,

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intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, as amended by this act, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56, as amended by this act.

(b) If the contract is a public works contract, municipal public works contract or contract for a quasi-public agency project, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works or quasi-public agency project.

13.3.2. Pursuant to CONN. GEN. STAT. § 4a-60a, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

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(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the state of Connecticut, and that employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

14. Good Jobs Ordinance

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly-Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

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14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

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iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term "Good Faith Efforts" shall have the same meaning as it does in the Good Jobs Ordinance.

The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan-of-action shall include the anticipated number of job positions required for the Work. Not later than five (5) business day prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-action and other relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

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i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2 Liquidated Damages Applicable To Section 14.1

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay

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one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due the City, as liquidated damages, as a result of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated hereunder to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Housing and Urban Development Section 3 Clause. In the event this Contract is funded, in whole or in part, through Housing and Urban Development assistance, 24 C.F.R. §135.38 may apply and the Contractor shall then be required to comply with the following (referred to as the "Section 3 clause"):

15.1. The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. § 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted Projects covered by Section 3, shall, to the greatest extent feasible, be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

15.2. The parties to this Contract agree to comply with HUD's regulations in 24 C.F.R. part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

15.3. The Contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the Contractor's commitments under this Section 3 clause, and will

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post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

15.4. The Contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 C.F.R. part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 C.F.R. part 135. The Contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 C.F.R. part 135.

15.5. The Contractor will certify that any vacant employment positions, including training positions, that are filled **(i)** after the Contractor is selected but before the Contract is executed, and **(ii)** with persons other than those to whom the regulations of 24 C.F.R. part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 C.F.R. part 135.

15.6. Noncompliance with HUD's regulations in 24 C.F.R. part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

15.7. With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 450e) also applies to the work to be performed under this Contract. Section 7(b) requires that to the greatest extent feasible **(i)** preference and opportunities for training and employment shall be given to Indians, and **(ii)** preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this Contract that are subject to the provisions of Section 3 and section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving

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written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services actually performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation and disbursement of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City in the event that sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services

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and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. With regard to third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

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16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, any and all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City's Using Agency, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work

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so as to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing, made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract any time during the period of this Contract or at any time during the twelve month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor, and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

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25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition, or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period of time as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

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ii. To the extent that additional cost or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request**.**

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP Number 7829**, and **(ii)** the Contractor's response to **RFP Number 7829**. Said historical documents are attached hereto as part of **Attachment A.**

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28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party due to the fact that the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that its waives a trial by jury as to any and all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor:

City: Mike Konopka, School Inspector
Waterbury Public Schools
236 Grand Street
Waterbury, CT 06702

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With copy to:

City of Waterbury
Office of the Corporation Counsel
City Hall Municipal Building - 3rd Floor
235 Grand Street
Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether or not they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

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34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized

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Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10 The Contractor hereby acknowledges receipt of a copy of the Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM". For Chapter 39, click on "TITLE III: ADMINISTRATION", then click on "CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of any

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and all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1 Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2 Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3 Bidder or Proposer: A person, partnership, corporation or other business organization submitting a bid or proposal on the form for the Work contemplated.

35.4 City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5 Construction Supervisor: An employee of the City of Waterbury, or other City duly authorized person.

35.6 Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion (ii) Final Completion and any other identified Project Milestone.

35.7 Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8 Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized City representative's, written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9 Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

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35.10 Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11 Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.12 Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13 Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14 Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15 Substantial Completion: The time at which, in the opinion of the Project Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work mean Substantial Completion thereof.

35.16 Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17 Supplementary General Conditions (also known as Special Conditions): An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18 Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19 Using Agency: **City of Waterbury Department of Education.**

[Signature page follows]

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IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

CITY OF WATERBURY

By:_____
Neil M. O'Leary, Mayor

Date: _____

WITNESSES:

Sign:_____
Print name:

Sign:_____
Print name:

By:_____
Print name:
Its _____

Date: _____

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ATTACHMENT A

Attachment A shall consist of the following, which are attached hereto, are acknowledged by the Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

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Attachment C Document

- ADDENDUM/CERTIFICATION/NOTICE OF ACCEPTANCE

ATTACHMENT C

KEVIN MC CAFFERY
DIRECTOR OF PURCHASING
235 GRAND STREET, ROOM 103
WATERBURY, CT 06702

The undersigned declares that the only persons or parties interested in this Proposal as principals are as stated; that the Proposal is made without any collusion with other persons, firms, or corporations; that Proposer has carefully examined the entire Request for Proposal; that Proposer has informed itself fully in regard to all conditions pertaining to the Work and the place where it is to be performed; and that with this representation, the undersigned makes this Proposal. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Proposal and Form are a part.

The undersigned agrees and covenants that the Contract Time shall commence on delivery of the City of Waterbury's written notice to proceed, which shall occur after contract execution by both parties.

The undersigned acknowledges receipt of addenda numbered: (insert date)

1 _____ 4 _____

2 _____ 5 _____

3 _____ 6 _____

All Work for this Project shall be performed at the Proposal Prices as described in the Proposal Documents.

The undersigned hereby certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____
Social Security Number
or Federal Identification Number

_____
Signature of Individual or Corporate Name

_____
Corporate Officer
(if applicable)

City notice of acceptance should be mailed, telegraphed or delivered to the undersigned Proposer at the following address:

Name _____
By: _____
(Title)
Business Address: _____
(City, State, Zip Code)
_____
_____
Phone: _____
Email:_____
Date: _____

Note: If the Proposer is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

Attachment D Document

- INSURANCE REQUIREMENTS

Attachment D

Insurance Requirements

Contractor/Vendor shall agree to maintain in force at all times during the contract the following minimum coverages and shall name the City of Waterbury and the Waterbury Board of Education as Additional Insured on a primary and non-contributory basis to all policies, except Workers Compensation. All policies should also include a Waiver of Subrogation. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's rating of "A"VIII.

If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the reporting period for claims for the policy in effect during the contract for two (2) years from the completion date.

Original, completed Certificates of Insurance must be presented to the City of Waterbury and the Waterbury Board of Education prior to contract issuance. Contractor/Vendor agrees to provide replacement/renewal certificates at least 30 days prior to the expiration date of the policies. Should any of the above described policies be cancelled, limits reduced or coverage altered, 30 days written notice must be given to the City of Waterbury and the Waterbury Board of Education.

General Liability:	**$1,000,000 each Occurrence** **$2,000,000 General Aggregate** **$2,000,000 Products/ Completed Operations Aggregate**
Auto Liability:	**$1,000,000 Combined Single Limit each Accident** **Any Auto, All Owned and Hired Autos**
Workers Compensation:	**WC Statutory Limits** **Employer Liability (EL)** **$1,000,000 EL each Accident** **$1,000,000 EL Disease each Employee** **$1,000,000 EL Disease Policy Limits**
Excess/Umbrella Liability:	**$1,000,000 each Occurrence** **$1,000,000 Aggregate**

Wording for Additional Insured Endorsement and Waiver of Subrogation:

The City Waterbury and its Board of Education is listed as an Additional Insured on a primary and non-contributory basis on all policies except Workers Compensation and Professional Liability. All policies shall include a Waiver of Subrogation.

Attachment E Documents

- GENERAL CONDITIONS
- SPECIAL CONDITIONS

GENERAL CONDITIONS

INDEX TO GENERAL CONDITIONS

ARTICLE	TITLE	PAGE
1.	PLANS AND SPECIFICATIONS AT THE SITE	GC-1
2.	CONSTRUCTION PROGRESS SCHEDULE	GC-1
3.	ESTIMATED QUANTITIES	GC-2
4.	SCHEDULE OF VALUES; APPLICATION FOR PAYMENT	GC-2
5.	PARTIAL PAYMENTS	GC-2
6.	INSPECTION AND TESTS	GC-3
7.	UTILITIES	GC-3
8.	SEDIMENTATION AND EROSION CONTROL	GC-3
9.	PROTECTION OF ENVIRONMENTAL RESOURCES	GC-4
10.	ENVIRONMENTAL PROTECTION PLAN	GC-5
11.	TEMPORARY UTILITIES	GC-5
12.	ABBREVIATIONS	GC-5
13.	SUBSURFACE EXPLORATION	GC-7
14.	CONTRACT AND CONTRACT DOCUMENTS	GC-7
15.	SHOP DRAWINGS, CATALOG CUTS AND SAMPLES	GC-7
16.	CONTRACTOR'S TITLE TO MATERIALS	GC-8
17.	“OR EQUAL" CLAUSES	GC-8
18.	REPRESENTATIONS OF THE CONTRACTOR	GC-8
19.	PROTECTION OF WORK AND PROPERTY (EMERGENCY)	GC-9
20.	WEATHER CONDITIONS	GC-9
21.	SUBLETTING	GC-9
22.	SUBSTITUTE BOND	GC-10
23.	RIGHT TO WITHHOLD PAYMENTS	GC-10
24.	PAYMENTS BY CONTRACTOR	GC-10
25.	NOTICE OF WARNING	GC-10
26.	PROGRESS MEETINGS.	GC-11
27.	PERMITS	GC-11
28.	RIGHT TO USE THE WORK	GC-11
29.	PROVISIONS REQUIRED BY LAW	GC-11
30.	WAIVER	GC-11
31.	USE OF PREMISES AND REMOVAL OF DEBRIS	GC-11
32.	RIGHT OF WAY AND SUSPENSION OF WORK	GC-12
33.	CONSTRUCTION EQUIPMENT AND MACHINERY	GC-12

INDEX TO GENERAL CONDITIONS

ARTICLE	TITLE	PAGE
34.	GENERAL GUARANTEE	GC-14
35.	PROCEDURE IN CONSTRUCTION	GC-13
36.	APPRENTICES	GC-13
37.	CONTROL OF WORK	GC-13
38.	CITY'S CONTROL NOT LIMITED	GC-13
39.	AUTHORITY AND DUTIES OF INSPECTORS	GC-14
40.	INSPECTION AND CORRECTION OF WORK	GC-14
41.	CONTRACTOR'S OBLIGATIONS	GC-14
42.	TOILET ACCOMMODATIONS AND DRINKING WATER	GC-15
43.	SAFETY AND HEALTH REGULATIONS	GC-15
44.	OWNERSHIP OF DRAWINGS AND SPECIFICATIONS	GC-15
45.	RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES	GC-15
46.	LISTING OF EMPLOYMENT OPENINGS	GC-16
47.	SERVICE OF PROCESS	GC-16
48.	CITY OF WATERBURY ORDINANCE CHAPTER 34	GC-16
49.	WAGE RATES	GC-16
50.	SCHEDULE AND POSTING OF MINIMUM WAGE RATES	GC-16
51.	COMPUTATION OF WAGES AND OVERTIME COMPENSATION	GC-17
52.	WAGE UNDERPAYMENTS AND ADJUSTMENTS	GC-17
53.	CONFORMANCE OF WORK	GC-17
54.	DIMENSIONS AND SCHEDULES	GC-17
55.	PROTECTION FROM STORM	GC-17
56.	PROTECTION OF WORK AND MATERIALS	GC-17
57.	FURTHER SAFEGUARDS	GC-18
58.	FIRST AID TO INJURED	GC-18
59.	CONFORMANCE WITH DIRECTIONS	GC-18
60.	COMPETENT HELP TO BE EMPLOYED	GC-18
61.	STREETS AND SIDEWALKS TO BE KEPT OPEN	GC-18
62.	LIGHTS, BARRIERS, FENCES, WATCHMEN & INDEMNITY	GC-18
63.	WORK OUTSIDE REGULAR HOURS	GC-19
64.	BUS LINE INERFERENCE	GC-19
65.	COLD WEATHER WORK	GC-19
66.	BLASTING AND EXPLOSIVES	GC-20

INDEX TO GENERAL CONDITIONS

ARTICLE	TITLE	PAGE
67.	TUNNELING	GC-20
68.	RESERVED MATERIALS/EXCAVATED MATERIALS	GC-20
69.	OBSTRUCTIONS AND CROSSOVERS	GC-20
70.	DIRECTIONAL SIGNS AND LIGHTS	GC-21
71.	MAINTENANCE OF WORKPLACE	GC-21
72.	OPERATIONS AT SEVERAL POINTS	GC-21
73.	INTERFERENCE WITH EXISTING STRUCTURES	GC-21
74.	TURF, TOPSOIL AND OTHER REPLACEMENT ITEMS	GC-22
75.	MATERIALS	GC-22
76.	DEFECTIVE MATERIALS	GC-22
77.	INSPECTION AND TESTING OF FURNISHED MATERIALS.	GC-22
78.	SAMPLES AND ORDERING LISTS	GC-22
79.	SANITARY CONVENIENCES	GC-22
80.	FINISHING AND CLEANING UP	GC-22
81.	RIGHTS OF ACCESS	GC-23
82.	WORK BY OTHERS	GC-23
83.	WORK WITHIN THE LIMITS OF PRIVATE PROPERTY	GC-23
84.	LOADING	GC-24
85.	COMPLETION OF WORK	GC-24
86.	DUST AND SPILLAGE CONTROL	GC-24
87.	CARE OF THE WORK	GC-25
88.	EMERGENCY WORK	GC-25
89.	FIRE PREVENTION AND PROTECTION	GC-25
90.	PLANIMETER	GC-25
91.	SUPERINTENDENCE	GC-25
92.	CONTRACT ADMINISTRATION COSTS - OUTSIDE REGULAR HOURS	GC-25
93.	DAILY REPORTS	GC-26
94.	MATERIAL AND WORKMANSHIP	GC-26
95.	TEMPORARY WATER SUPPLY	GC-26
96.	FITTING AND COORDINATION OF WORK	GC-26
97.	ARCHEOLOGICAL FINDS	GC-26
98.	EXCAVATIONS NEAR UNDERGROUND UTILITIES	GC-27
99.	WATER QUALITY OF WELLS.	GC-27

INDEX TO GENERAL CONDITIONS

ARTICLE	TITLE	PAGE
100.	WORK IN STATE HIGHWAYS	GC-27
101.	EXISTING INSPECTION REPORTS	GC-27
102.	TEST REPORTS; CERTIFICATES OF COMPLIANCE AND SHIPPING LISTS	GC-28
103.	CLEANING FINISHED WORK	GC-28
104.	COMPLIANCE TO ACTS AND EXECUTIVE ORDERS	GC-28
105.	SEMI-FINAL INSPECTION	GC-28
106.	CITY'S CERTIFICATE OF SUBSTANCIAL COMPLETION	GC-29
107.	FINAL INSPECTION	GC-29
108.	FINAL ESTIMATE	GC-30
109.	SEMI-FINAL PAYMENT	GC-30
110.	LIMITED ACCEPTANCE OF WORK	GC-30
111.	FINAL COMPLETION/ CITY'S CERTIFICATE OF FINAL COMPLETION	GC-30
112.	FINAL PAYMENT/PROJECT ACCEPTANCE	GC-30
113.	ACCEPTANCE OF FINAL PAYMENT	GC-30
114.	10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE	GC-31

GENERAL CONDITIONS

INTRODUCTORY NOTE:

These General Conditions supplement the provisions and requirements of Contract and modify all Contract Documents which follow it numerically, as set forth in Section 1.2 of the Contract. The General Conditions may be amended, revised or supplemented by the Special Conditions which are project specific. The Contractor's attention is directed to the attached Special Conditions for any amendments, revisions or supplements to the General Conditions for this project. The terms used in these General Conditions which are defined in the Contract have the meanings assigned to them in said Contract.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project and all drawings, specifications and general provisions of the Contract apply to these General Conditions. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided for otherwise in the Contract Documents, all costs associated with any work/services required or necessary under the General Conditions shall be considered as included in the Contract Amount (also referred to as Total Compensation). No separate or additional payment will be made for this work and/or services.

ARTICLE 1. PLANS AND SPECIFICATIONS AT THE SITE / AS-BUILT DRAWINGS

1.01 The Contractor shall maintain at the Project site two (2) copies of all Plans, Specifications, Addenda, approved Shop Drawings, Change Orders and other Modifications, Schedules and Instructions, in good order. One copy is to be marked to record all changes made during construction. These shall be available at all times to the Project Engineer and the City or their authorized representatives. At the conclusion of construction, the Contractor is to turn one (1) corrected set of all documents over to the Project Engineer.

ARTICLE 2. CONSTRUCTION PROGRESS SCHEDULE

2.01 Within seven (7) consecutive calendar days of the written Notice to Proceed, and prior to commencement of any work on site, the Contractor shall prepare and submit for the approval of the City three (3) copies of a complete Construction Progress Schedule which shall be comprised of a critical path method network. (At the same time, the Contractor shall submit the Schedule of Values, Sedimentation and Erosion Control Measures, Water Control Plan and Environmental Protection Plan, as outlined in the various Articles of these General Conditions).

2.02 The critical path of the Project must be identified on the Construction Progress Schedule which shall provide a workable plan for monitoring the progress of all the elements of the Project, establish and clearly display the critical elements of the Work, on which each part or division of the Work is expected to be started and completed, forecast completion of the elements of the Project, and match the Contract duration in time. The Construction Progress Schedule shall also indicate the logic of the work for the major elements and components of work under the Contract, such as the planned mobilization of plant and equipment, sequences of operations, procurement of materials and equipment, duration of activities, type of relationship, lag time (if any), and such other information as it is necessary to present a clear statement of the intended activities.

2.03 The schedule shall indicate all subcontractors to be utilized on the Contract and the portions of the Contract that they will be performing. The Contractor shall evaluate the status of the Project at least monthly, comparing it to the original schedule, which shall be revised as required. The Contractor shall notify the Project Engineer immediately of any circumstances that may affect the current schedule.

2.04 The Contractor shall perform the work of this Contract to satisfy the Construction Progress Schedule as approved by the Project Engineer. However, the Project Engineer and City reserve the right to amend and alter the Construction Progress Schedule, as approved, at any time and in a manner which the Engineer deems to be in the best interests of the City.

2.05 The Contractor shall be required to execute his work in accordance with the Construction Progress Schedule as prepared and in accordance with any additional requirements specified herein and approved by the Project Engineer. The Construction Progress Schedule shall forecast the times for doing each portion of the work. The Contractor shall

arrange the work under this Contract to conform with the Construction Progress Schedule, as it may be revised by the Engineer from time to time, at no additional expense to the City.

2.06 The revised Construction Project Schedule shall take some or all of the following actions to demonstrate the manner in which an acceptable rate of progress will be regained, by the following methods:

i. Increase construction manpower in such quantities and crafts as shall substantially eliminate the backlog of work and meet the current Contract completion date.
ii. Increase the number of working hours per shift, the number of shifts per day, the number of work days per week, or the amount of construction equipment, or any combination of the foregoing
iii. Reschedule work items to achieve concurrent accomplishment of work activities.

2.07 Under no circumstances will the adding of equipment or construction forces, increasing the working hours, or employing any other method, manner, or procedure to return to the contractually required completion dates be a justification for additional compensation to the Contractor.

ARTICLE 3. ESTIMATED QUANTITIES

3.01 Any Estimated Quantities for the Project furnished by the City, including those provided on the Bid Form, are approximate only and are: a) for procurement related comparison purposes only, ~~and~~ b) given as a basis for the pricing and c) are not represented to be actual quantities for completion of the Work. Within the limits of available funds, the Contractor will be required to complete the Work at the unit prices provided in the Bid Form/or Price Proposal whether it involves quantities greater or lesser than the estimate. The Contractor will be compensated only for the actual quantity of authorized, and actually performed, and/or materials furnished.

ARTICLE 4. SCHEDULE OF VALUES; APPLICATION FOR PAYMENT

4.01 Within seven (7) consecutive calendar days after the Notice to Proceed, as a basis for estimating partial payments, the Contractor shall submit for the approval of the City a certified Schedule of Values, broken down into quantities and unit costs for the various parts of the work, divided as may be directed and aggregating the total sum of the Contract; and if required, he shall submit evidence supporting this schedule.

4.02 The Contractor's requisition for payment shall be submitted on forms supplied by the Contractor and approved by the City and shall be in such numbers of copies as may be designated by the City. Sample forms are included in the Bid Documents. Alternate payment application forms may be utilized provided they are approved by the City, in writing, prior to submission by the Contractor.

4.03 If the Project is funded by multiple funding sources, the Contractor may be required to submit separate requisitions for payment to each source, on the forms provided by each source and in accord with all requirements of each individual funding source.

4.04 For Lump Sum projects, the requirements for the Schedule of Values are further defined as follows: a) the Schedule of Values shall delineate the various tasks that comprise the lump sum items. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule, when accepted by Project Engineer, shall only be used as a basis for Contractor’s periodic payment applications. No payment will be made to Contractor until such Schedule has been submitted and accepted by Project Engineer, and b) the lump sum item shall be broken down sufficiently to provide a convenient and realistic means for determining the amount of work done during various stages of progress.

ARTICLE 5. PARTIAL PAYMENTS

5.01 The City will review the Contractor's monthly requisitions for Partial Payments to arrive at what is, in its opinion, a fair and just estimate of the materials suitably stored on the site and the amount of work performed on the Contract. At its discretion, the City may allow to be included in the monthly requisitions materials stored off the site. In the event the City allows the Contractor to include in its requisitions payments for materials stored off the site, the Contractor shall also submit any additional bonds and/or insurance certificates relating to off-site stored material, and follow such other procedures as may be required by the City.

5.02 In making such Partial Payments for the Project, retainage shall be held in the amount of 5% of the value of work completed to date. The Retainage does not include additional sums that the City may withhold due to the Contractors failure to comply with construction plans, specifications etc. deemed provisions of this contract.

5.03 Where prices are not broken down sufficiently in the Schedule of Values to accurately determine the value of work completed, Project Engineer will estimate the value of work completed and will deduct some amount so as to arrive at a conservative value which will allow City to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided by Contractor, Contractor agrees to accept Project Engineer's determinations.

ARTICLE 6. INSPECTION AND TESTS

6.01 All material and workmanship shall be subject to inspection, examination and testing by the City and/or Project Engineer (in addition to that required by the Specifications) any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction is carried on. Notice of the time of all tests to be made at the site shall be given to all interested parties.

6.02 Contractor must obtain the Engineer's approval of any sources of materials to be incorporated into the Project before beginning to use them for the Project.

6.03 If, at any time before final acceptance of the Project, the City and/or Project Engineer considers it necessary or advisable to examine any portion of the Project already completed by removing or testing out the same, the Contractor shall upon request furnish promptly all necessary facilities, labor and materials. If such work is found to be defective in any material respect because of a fault of the Contractor or any of its subcontractors, or if any work shall have been covered over without the approval or consent of the City (whether or not it is found to be defective), the Contractor shall be liable for testing costs and all costs of correction, including labor, material, services of required consultants, additional supervision and administrative costs.

6.04 Unless expressly provided for otherwise, for Projects that include material testing to ensure compliance with the Technical Specifications, the Contractor shall be responsible for all testing as required in the relevant sections of the Technical Specifications.

6.05 Without additional charge, the Contractor shall promptly furnish all reasonable facilities, labor and materials necessary to make tests safe and convenient. Special, full size and performance tests shall be as described in the Specifications.

ARTICLE 7. UTILITIES

7.01 The accuracy and completeness of the utility information shown on the Plans and/or otherwise provided by the City is not guaranteed. The Contractor shall make its own investigation of the extent and location of utilities and of the possibility of relocation work by the utility companies, and shall plan its operations accordingly. No claim for any delays, damage or extra work occasioned thereby will be allowed.

7.02 The Contractor shall allow others access to the Project for the purpose of placing, relocating or maintaining utilities, and he shall cooperate in every way in the performance of this Project.

7.03 The Contractor shall notify the utility owners well in advance of the time the Contractor proposes to perform any work which would endanger utility installations, and the Contractor shall cooperate with the utility owners in relocating and/or protecting such installations during construction operations.

7.04 No payment will be made to the Contractor for locating, protecting and making arrangements for relocating public utilities or for any delays caused thereby. The Contractor shall include all costs of this Project in other scheduled items of the Contract.

ARTICLE 8. SEDIMENTATION AND EROSION CONTROL

8.01 All watercourses shall be protected from sedimentation, both during and after construction. The Contractor shall

control erosion and sedimentation problems in accordance with Connecticut Guidelines for Soil Erosion and Sediment Control prepared by the Connecticut Council on Soil and Water Conservation, dated 2002, as amended.

8.02 The Contractor shall submit the Sedimentation and Erosion Control Plan for the approval of the Project Engineer within seven (7) consecutive calendar days after the Notice to Proceed.

8.03 The Contractor shall be responsible for providing silt fences, staked haybales and other temporary erosion control measures which may be required to properly complete this Project. No extra compensation will be allowed, due to water or precipitation levels fluctuation.

ARTICLE 9. PROTECTION OF ENVIRONMENTAL RESOURCES

9.01 The environmental resources within the Project boundaries and those affected outside the limits of permanent work under this Contract shall be protected during the entire period of this Contract. The Contractor shall confine its activities to areas defined by the Plans and Specifications. Environmental protection shall be as stated in the following subparagraphs:

A. Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the work area. The Contractor shall not remove, cut, deface, injure or destroy land resources including trees, shrubs, vines, grasses, top soil and land forms without special written permission from the property owner. No ropes, cables or guys shall be fastened or attached to any trees for anchorage unless specifically authorized in writing by the Project Engineer. Where such special emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

B. Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all work to be performed under the Contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to its personnel the purpose of marking and/or protection of all necessary objects.

C. Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the Plans to be preserved shall be clearly identified by marking, fencing or wrapping with boards, or any other approved techniques.

D. Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earth work shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in instances where the constructed feature obscures borrow areas, quarries and waste material areas, these areas shall not initially be cleared in total. Clearing of such areas shall progress in reasonably sized increments as needed to use the areas developed as approved by the City and/or Project Engineer.

E. Runoff from the construction site shall be controlled by the construction of diversion ditches, benches and berms to retard and divert runoff to protected drainage courses, and any measures required by area wide plans approved under Paragraph 208 of the Clean Water Act, as amended.

F. The Contractor shall construct or install all temporary erosion control features as indicated in the submitted Sedimentation and Erosion Control Plans, or directed by the City and/or Project Engineer. Temporary erosion control measures such as berms, dikes, drains, grassing and mulching shall be maintained until construction of the Project is completed.

G. The Contractor's field offices, staging areas, stockpile storage and temporary buildings shall be placed in areas designated on the submitted Plan. Temporary movement or relocation of the Contractor's facilities shall be made only on approval by the City and/or Project Engineer.

H. Borrow areas shall be managed to minimize erosion and to prevent sediment from entering nearby watercourses.

I. Spoil areas shall be managed and controlled to limit spoil areas and to prevent erosion of soil or sediment from entering nearby watercourses. Spoil areas shall be developed in accordance with the grading plan indicated on the Plans.

ARTICLE 10. ENVIRONMENTAL PROTECTION PLAN

10.01 Within seven (7) consecutive calendar days after the Notice to Proceed, and prior to commencement of any work on site, the Contractor shall submit an Environmental Protection Plan for the approval of the City in accordance with the provisions herein specified. The plan shall include but not be limited to the following:

A. A list of Federal, State and Local laws and regulations concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws and regulations.

B. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, vines, grasses and groundcover, landscape features, air and water quality, fish and wildlife, soil, historical, archeological and cultural resources.

C. Procedures to be implemented by the Contractor to provide the required environmental protection and to comply with applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes or failure to follow the procedures set out in accordance with the Environmental Protection Plan.

D. The location of the nearest suitable solid waste disposal area and a permit allowing the Contractor to use those facilities.

E. Drawing showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess' or spoil materials.

F. Environmental monitoring plans for the job site, including land, water, air and noise monitoring as necessary, and as required by the Project Engineer.

G. Environmental monitoring and management plans for the any endangered wildlife or plant species as determined by CT DEEP, City or Project Engineer.

H. Traffic control plan when necessary.

I. Methods of protecting surface and ground water during construction activities.

J. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. The plan should include measures for marking the limits of use areas.

ARTICLE 11. TEMPORARY UTILITIES

11.01 Unless expressly otherwise provided for in the Contract Documents the Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities of any nature whatsoever needed to complete the work. Unless otherwise provided for in the Bid Documents, all necessary temporary utilities shall be installed at the start of the Project.

ARTICLE 12. ABBREVIATIONS

12.01 Where one of the following abbreviations are used in the Contract Documents, it shall have the meaning set forth opposite each below:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute

AGA	American Gas Association
AIEE	American Institute of Electrical Project Engineers
AISC	American Institute of Steel Construction
API	American Petroleum Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWG	American (or Brown and Sharpe) Wire Gauge
AWWA	American Water Works Association
CONNDOT	Connecticut Department of Transportation
DEP	Department of Environmental Protection
EDR	Equivalent Direct Radiation
EPA	Environmental Protection Agency
FWQA	Federal Water Quality Administration
IBR	Institute of Radiator and Boiler Manufacturers
MCB	Master Car Builders
NBS	National Bureau of Standards
NEC	National Electrical Code (latest edition)
NEMA	National Electrical Manufacturers Association
NEWWA	New England Water Works Association
NFPA	National Fire Protection Agency
NPT	National Pipe Thread
SMACNA	Sheet Metal and Air Conditioning Association
OS&Y	Outside Screw and Yoke
STL.WG	United States Steel Wire, Washburn and Moen, American Steel And Wire Companies and Roebling Gauge
USS GAUGE	United States Standard Gauge
WOG	Water, Oil, Gas
WSP	Water Steam Pressure

"Federal Specification" A Federal specification issued by the Federal Supply Services Administration, Washington, D.C.

ARTICLE 13. SUBSURFACE EXPLORATION

13.01 Where applicable, and if provided by the City, boring logs, probes and related information contain data regarding subsurface conditions at the dates and location indicated. This information is shown for the convenience of the Contractor, but is not guaranteed to be correct or complete, and it is not warranted that it represents a true or approximately true picture of the actual subsurface conditions to be encountered.

ARTICLE 14. CONTRACT AND CONTRACT DOCUMENTS

14.01 Deleted.

14.02 The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. In the event that any provision in the Contract Documents conflict with any other provision therein, the priority of the documents shall be in accordance with Section 1.2 of the Contract.

ARTICLE 15. SHOP DRAWINGS, CATALOG CUTS AND SAMPLES

15.01 The Contractor shall promptly submit to the Project Engineer five copies of each submittal prepared in accordance with the approved schedule. After examination of such submittal by the Project Engineer and the return thereof, the Contractor shall make such corrections to the submittal as have been indicated and shall furnish the Project Engineer with five corrected copies. If requested by the Project Engineer, the Contractor must furnish additional copies. Regardless of corrections made on, or approvals given to, such submittal by the Project Engineer, the Contractor shall nevertheless be responsible for the accuracy of such submittal. The Contractor shall also be responsible for the submittal's conformity to the Submittal and Specifications, unless the Contractor notifies the Project Engineer in writing of any deviations at the time of submission of the submittal.

15.02 Submittal of all fabricated work shall be submitted to the Project Engineer and no work shall be fabricated unless it is done at the Contractor's own risk until approval has been given by the Project Engineer and City.

15.03 The Contractor shall submit all submittals on dates sufficiently in advance of requirements in order to enable the Project Engineer and City to properly review them. This period shall include time to correct, resubmit and recheck, if necessary, and no claim for delay will be granted to the Contractor because of the Contractor's failure in this respect. The Project Engineer and City will be given a minimum of fourteen (14) consecutive calendar days for the initial review of each submitted submittal.

15.04 All submitted submittals must bear the approval stamp of the Contractor and reference conformance to the applicable provisions of the Specifications as evidence that the Contractor has checked the drawings. Any drawings submitted without this stamp of approval will not be considered and will be returned to the Contractor for resubmission. If the submittals show variations from the requirements of the Contract Documents because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in the letter of submission to the Project Engineer. If the variation is acceptable to the Project Engineer and City, suitable action may be taken for proper adjustment. If not acceptable, the Contractor shall not be relieved from the responsibility for executing the work in accordance with the Contract Documents, although such submittals had been approved.

15.05 Where submittals are submitted by the Contractor that indicate a departure from the Contract Drawings which the Project Engineer deems to be a minor adjustment and in the City's interest and not involving a change in the Contract price or an extension in time, then the Project Engineer may approve the drawings. Such approval will contain, in substance the following:

> The modification shown on the attached drawings is approved in The interest of the City to effect an improvement for the project and is ordered with the understanding that it does not involve any change in the Contract price or time. The modification is generally subject to all Contract stipulations and covenants and it is without prejudice to any

and all rights of the City under the Contract.

The approval of submittals will be general and shall not relieve the Contractor from the responsibility for adherence to the Contract nor of the responsibility for any errors that may exist.

15.06 The Contractor agrees to hold the Project Engineer and the City harmless and to defend them against damage or claims for damages arising out of injury to others or to property of third parties which result from errors on shop or working drawings, whether or not they have been approved by the Project Engineer and/or the City.

15.07 Working Drawings. When required by the Contract or when ordered to do so by the City Representative, the Contractor shall prepare and submit 4 copies of the working drawings to the City Representative for review. These drawings shall be submitted sufficiently (at least 15 consecutive calendar days) in advance of the proposed use, to allow for their review, and any necessary revisions, without delay of the Project. No work covered by these working drawings shall be done until the drawings have been submitted to the City Representative for review and the City Representative's comments have been appropriately taken into account and implemented. The furnishing of the working drawings shall not serve to relieve the Contractor of any part of its responsibilities under the Contract.

ARTICLE 16. CONTRACTOR'S TITLE TO MATERIALS

16.01 No material, supplies or equipment for the work shall be purchased by the Contractor, or by any Subcontractor, subject to any chattel mortgage or under any conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies and equipment installed or incorporated in the work. The Contractor further warrants that, upon completion of all work, he will deliver the premises, together with all improvements and appurtenances constructed thereon, to the City free of any claims, liens, charges or encumbrances. The Contractor further warrants that neither the Contractor nor any person, firm or corporation furnishing any material, labor or equipment for any work covered by this Contract shall have a right to lien upon the premises or any improvement or appurtenance thereon.

ARTICLE 17. "OR EQUAL" CLAUSES

17.01 Unless otherwise provided for in the Bid Documents, the Contract will be on the basis of material and equipment described on the Bid Documents without consideration of possible substitute or "equal" items. However, subsequent to award of the Work, whenever a material or article required is specified or shown on the plans by using the name of a proprietary product or of a particular vendor or manufacturer, any materials or article which, in the sole discretion of the Project Engineer, is equal or superior to the specified item to material, may be considered an "equal." Requests for substitutions must be supported by evidence such as technical data, test results, or other pertinent information that demonstrate that the substitute offered is equal or better than the specification's requirements. Such items shall not be purchased or installed without the written approval of the Project Engineer. In all cases, only new materials shall be used for the work.

ARTICLE 18. REPRESENTATIONS OF THE CONTRACTOR

18.01 The Contractor represents and warrants:

(a) That he is financially solvent and that he is experienced and competent to perform the type of work or to furnish the plant, material or equipment to be performed or furnished by him; and

(b) That he is familiar with all Federal, State and municipal laws, ordinances, orders and regulations which may in any way affect the work of those employed therein, including but not limited to any special acts relating to the work or to the project of which it is a part; and

(c) That such permanent and temporary work required by the Contract Documents to be done can be satisfactorily constructed and be used for the purpose for which it is intended, and that such construction will not injure any person nor damage any property; and

(d) That he has carefully examined the drawings, specifications and addendum (or addenda) if any, and the site of the work, and that, from his own investigations, he has satisfied himself as to the nature, quality

and quantity of surface and subsurface materials likely to be encountered; of the character of equipment required for the work; of other facilities needed for the performance of the work; of the general and local conditions and of all other materials which in any way may affect the work and its performance; and

(e) That he is aware of the hazards involved in the work and the danger to life and property both evident and inherent and that he will conduct the work in a careful and safe manner without injury to persons or property; and that he can provide the necessary equipment, labor and materials to complete the contract work within the specified contract duration.

ARTICLE 19. PROTECTION OF WORK AND PROPERTY (EMERGENCY)

19.01 The Contractor shall at all times safely guard and protect the City's property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in the Contract or by the City or his duly authorized representatives.

19.02 In case of an emergency that threatens loss or injury of property and/or safety of life, the Contractor will be allowed to act in a diligent manner without previous instructions from the City. He shall notify the City immediately thereafter.

19.03 Where the Contractor has not taken action but has notified the City of an emergency threatening injury to persons or damage to the work or to any adjoining property, he shall act as instructed or as authorized by the City.

19.04 The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided elsewhere in the Contract Documents.

ARTICLE 20. WEATHER CONDITIONS

20.01 In case of temporary suspension of the work, or during inclement weather, or whenever the City shall direct, the Contractor shall carefully protect his work and materials against damage or injury from the weather. The Contractor shall cause all his subcontractors to provide the same protection for their portion of the work. If, in the opinion of the City, any work or material was damaged or injured by reason of failure on the part of the Contractor, or any of his subcontractors, so to protect his work, or otherwise damaged by the negligence of the Contractor or any of his subcontractors or their agents or servants, or is otherwise defective, such materials shall be removed and replaced at the expense of the Contractor.

20.02 For projects involving asphalt paving, all work shall be temporarily suspended, upon direction of the City, when the Contractor can no longer properly pave exposed areas in accordance with the plans and specifications during inclement weather or during winter months.

ARTICLE 21. SUBLETTING

21.01 The Contractor is not to assign, transfer or sublet the Contract in whole or in part to any other person or persons without written permission from the City. The Contractor cannot abridge the terms of the Contract in any way without written permission of the City. The Contractor must keep the Contract in his name and control until all work is completed and finally accepted by the City. The Contractor shall likewise not assign any of the money payable under this Contract. Approval by the City of the subletting of any part of the work shall not, under any circumstances, relieve the Contractor or his Surety of any liabilities or obligations under the terms of the Contract Documents.

21.02 The Contractor shall be as fully responsible to the City for the acts and omissions of his subcontractors, and of the persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. Should any subcontractor violate any of the terms of these specifications, the City may, at its option, require the Contractor to end and terminate such subcontract.

21.03 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind

subcontractors to the Contractor by the terms of the Contract and the General Conditions and other provisions of the Contract Documents. This language is to be applicable insofar as necessary to the work and is to give the Contractor the same power over as regards terminating any subcontract as the City may exercise over the Contractor under any provisions of the Contract Documents.

21.05 Nothing contained in this Contract shall create any contractual relation between the City and any subcontractor.

ARTICLE 22. SUBSTITUTE BOND

22.01 If, at any time, the Contractor's Surety or Sureties, or the carriers of other insurance herein specified to be written, become insolvent or, in a reasonable judgment of the City, become unsafe or unsound then, upon five days written notice from the City to the Contractor, the Contractor shall substitute such Performance and Labor and Material Bond or insurance with such other Surety or carrier in such form as shall be acceptable to the City. Any additional premium caused by such substitution shall be paid for by the Contractor. No further payments will be deemed due nor will be made until the new Surety or Sureties have furnished such an acceptable bond to the City.

ARTICLE 23. RIGHT TO WITHHOLD PAYMENTS

23.01 The City may withhold from the Contractor so much of any approved payments due as may in the judgment of the City be necessary to:

1. Assure the payment of any lien, stop notice or claim, filed with the City for work, labor, or materials done, performed or delivered and used in the prosecution of the work herein provided for (whether in strictly legal form or otherwise)
2. Protect the City from loss due to defective work not remedied or through any improper or defective machinery, implements or appliances used by the Contractor or for failure of the Contractor to fully comply with any requirements of the Contract
3. Protect the City from loss due to injury to persons or damage to work or property of other contractors, subcontractors or others caused by the act' or neglect of the Contactor or any subcontractors.

23.02 The City shall have the right, as agent for the Contractor, to apply any amounts so withheld in such manner as the City may deem proper to satisfy such claims or to secure such protection. Such applications of such money shall be deemed payments to the account of the Contractor.

23.02 Notwithstanding the above, the Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials furnished.

ARTICLE 24. PAYMENTS BY CONTRACTOR

24.01 The Contractor, in conformance with Section 49-41a of the Connecticut General Statutes, as revised, shall, within 30 consecutive calendar days after any given Contract payment to the Contractor by the City, pay any amounts due any subcontractor, whether for labor performed or materials.

ARTICLE 25. NOTICE OF WARNING

25.01 If the Contractor shall fail to make prompt payment to persons supplying labor or materials for the work; or refuse or fail to supply enough properly skilled workmen or proper materials; or refuse or fail to prosecute the work or any part thereof in accordance with the Contract Documents or with such diligence as will insure its completion within the period herein specified (or any duly authorized extension thereof); or fail to complete the work within said period; or refuse to regard laws ordinances, codes or instructions of the City then the City shall forward A Notice of Warning to the Contractor by registered mail at the address given in the Contract. In the event the Contractor fails to comply with said Notice of Warning within five (5) consecutive calendar days from receipt thereof, the City shall have the right to terminate the Contract.

ARTICLE 26. PROGRESS MEETINGS

26.01 Progress meetings will be held weekly at locations, dates and times selected by the City for the purpose of reviewing, scheduling and coordinating the Project's progress as well as other matters.

ARTICLE 27. PERMITS

27.01 The Contractor shall keep himself fully informed of all existing and current Municipal, State or Federal ordinances, regulations or laws in any way limiting or controlling the operations or actions of those engaged in the work or affecting the materials supplied to or by them. The Contractor shall at all times observe and comply with all such valid and binding ordinances, laws or regulations. The Contractor shall protect and indemnify the City and its representatives against any claims arising from, or based upon, any violation of the same.

ARTICLE 28. RIGHT TO USE THE WORK

28.01 The City may enter upon the use of the whole or of any portion of the work, which may be in condition to use, at any time before its final acceptance of the Project. Such use shall not constitute, or be evidence of, acceptance by the City or by the Project Engineer of the whole or any part of the material furnished or work performed under the Contract.

ARTICLE 29. PROVISIONS REQUIRED BY LAW

29.01 Each and every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein. If, through mistake or otherwise, any such provision is not inserted, then, upon application of either party, the Contract shall forthwith be physically amended to make such insertion.

29.02 If this Contract contains any unlawful provisions not an essential part of the general structure of the Contract, and which shall not appear to have been a controlling or material inducement in the making thereof, the same shall be deemed stricken from the Contract without affecting the binding force of the remainder.

ARTICLE 30. WAIVER

30.01 Neither the inspection by the City or Project Engineer or by any of their employees; nor any order, measurement or certificate by the Project Engineer; nor any order by the City for the payment of any money; nor any payment for or acceptance of the whole or any of the work by the Project Engineer for the City; nor any extension of time; nor any possession taken by the City or its employees shall operate as a waiver of any provision of this Contract or of any power herein reserved to the City. Nor shall such action waive any right to damages herein provided. Nor shall any waiver of any breach of the Contract constitute a waiver of any other or subsequent breach. Any remedy provided in this Contract shall be construed as cumulative - i.e. in addition to each and every other remedy herein provided.

ARTICLE 31. USE OF PREMISES AND REMOVAL OF DEBRIS

31.01 The Contractor expressly undertakes at his/her own expense:

1. To take every precaution against injuries to persons or damage to property.
2. To store apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of the work or the work of any other contractor.
3. To place upon the work or any portion thereof only such loads as are consistent with the safety of that portion of the work.
4. To frequently clean up all refuse, rubbish, scrap materials and debris caused by the Contractor's operations to the end that at all times the site of the work shall present a neat, orderly and work manlike appearance.
5. To remove all surplus material; falsework; temporary structures including foundations thereof; plant of any description and debris of any nature resulting from the Contractor's operations before final payment is made.
6. To put the site in a neat orderly condition, to remove all clean-up materials, to remove such materials from the construction site, and to deposit them in a refuse disposal site at his/her expense.

7. To effect all cutting, fitting or patching of work required to make the same conform to the Drawings and Specifications and, except with the consent of the City, not to cut or other wise alter the work of any other contractor.

ARTICLE 32. RIGHT-OF-WAY AND SUSPENSION OF WORK

32.01 Land and rights-of-way for the purposes of this Contract will be furnished by the City to the extent shown on the Drawings. The City will use diligence in acquiring said land and rights-of-way as speedily as possible. However, it is possible that not all land and rights-of-way will be obtained as herein contemplated before construction commences. In such case the Contractor shall begin the work upon such land and rights of-way as the City may have previously acquired. No claim for damages whatsoever will be allowed by reasons of the delay in obtaining the remaining lands and/or rights-of-way. Should the City be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of litigation or by reason of its inability to procure any lands or rights-of-way for the said work, the Contractor shall not be entitled to withdraw from the Contract because of these occurrences. In the event of any of the above occurrences, the time for completion of the work may be extended in the manner provided elsewhere in the Contract Documents.

ARTICLE 33. CONSTRUCTION EQUIPMENT AND MACHINERY

33.01 The Contractor shall furnish and maintain, at its own cost and risk, all tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and all other similar work or material necessary to insure speed, convenience and safety in the execution of its Contract. All such items shall be subject to approval of the City, upon the Project Engineer's recommendation, as to general stability, type and location, but the responsibility for proper design, strength and safety shall remain with the Contractor. All such items shall comply with OSHA regulations and all other applicable codes, statutes, rules and regulations.

33.02 The Contractor shall provide all drains, drainage, ditches and pumping apparatus (including power and attendance for same) that may be necessary to keep all excavations and sub-grade work free from water.

33.03 All machines, equipment, trucks and vehicles used in the prosecution of the work, or in connection therewith, shall be in proper working condition at all times. Only gasoline, electric or diesel engines shall be used for the power in operating equipment.

33.04 The Contractor shall be responsible for curtailing noise, smoke, fumes or other nuisances resulting from the operations. The. Contractor shall, upon written notification from the City or Project Engineer, make any repairs, replacements, adjustments or additions and furnish mufflers when necessary to' fulfill requirements. No oil tanks for fueling equipment shall be stored less than one hundred (100) feet from any watercourse.

33.05 All costs involved in complying with the stipulations outlined shall be included in the various prices bid in the proposal.

ARTICLE 34. CONTRACTOR'S GENERAL WARRANTY PERIOD

34.01 The Contractor's General Warranty Period shall commence on the date of the written notice of final acceptance of the Project by the City and during such time Contractor shall guarantee his work is free from faulty materials and workmanship.

34.02 Within the Contractor's General Warranty Period, any portion of the Work shall, in the opinion of the City, require repairing, replacing or rebuilding, the Contractor shall start such repairs within five (5) consecutive calendar days after receipt of notice from the City. If the Contractor shall fail to or neglect to start the repairs within five (5) consecutive calendar days, the City may employ such other person or persons as it may deem proper to make such repairs. The City will charge the Contractor the cost thereby incurred. Nothing herein provided shall limit the liability of the Contractor or Surety to the City for non-performance of the Contractor's obligations at any time.

34.03 The Payment and Performance Bonds, and Material Bond, if required, shall remain in full force and effect through the Contractor's General Warranty Period.

34.04 Deficiencies in the Work discovered after the date of the written notice of final acceptance of the Project by the City shall be deemed General Warranty Work. Such deficiencies shall be corrected by Contractor under this Article.

34.05 The Contractor shall remedy any defects due to faulty materials or workmanship within thirty (30) consecutive calendar days of receiving notice thereof by the City. Should the Contractor fail to correct the deficiency within thirty (30) consecutive calendar days, the City may perform the corrective work and Contractor shall be responsible for all reasonable costs incurred by City in performing such correction.

ARTICLE 35. PROCEDURE IN CONSTRUCTION

35.01 The Contractor shall start work and carry it on at such point or points and in such order of precedence and at times and seasons as may be determined by the City. The Contractor shall complete the various portions of the work in accordance with the schedule approved by the City.

35.02 A complete organization, complement of equipment and ample materials shall be on hand before actual work commences. The Contractor shall so arrange his/her organization, plant, equipment and materials so that construction operations will be carried on continuously. The Contractor will not be permitted to reduce the force of workers or remove any equipment from the work if such reduction or removal impairs the progress of the work.

35.03 In the event that the City awards more than one contract to the Contractor, the Contractor shall be required to prosecute the work on each contract simultaneously. The Contractor will be required to maintain a separate and independent organization and staff, labor forces and machinery on each contract in order to complete the work within the time set forth for the respective contracts.

ARTICLE 36. APPRENTICES

36.01 Apprentices shall be permitted to work only under a bonafide apprenticeship program registered either with the State Apprenticeship Council or with the Bureau of Apprenticeship, United States Department of Labor.

ARTICLE 37. CONTROL OF WORK

37.01 The Contractor shall abide by all orders, directions and requirements of the Project Engineer in the performance of the work.

37.02 In the event the Contractor is not personally present at the project site, he/she shall have a superintendent present at the site that possesses more than adequate communication skills. The superintendent must have proper knowledge of all applicable project requirements and conditions and must have authority to fully represent the Contractor with power to act and to be the recipient of orders and to obey all the instructions of the Project Engineer and/or the City. If proper provision for the carrying out of this stipulation is not made, then the Contractor shall be held responsible for the execution of such orders and instructions which the Project Engineer and/or City may deem necessary to issue to any employee regarding the work. The City or Project Engineer may order the work stopped until a duly authorized representative of the Contractor appears and receives instructions. No claims for damages or for an extension time in which to complete the work because of such delay will be allowed the Contractor.

37.03 In all cases, the Project Engineer shall determine classifications, quantities, quality, acceptability and fitness of the several kinds of work that are to be paid for under the Contract. The Project Engineer and/or City shall interpret the Plans and Specifications and any extra work orders and shall determine all questions in relation to said work and to the construction thereof.

37.04 The Contractor shall not employ any plant, equipment, material, methods or workers to which the City objects. The Contractor shall not remove any plant, materials, equipment or other facilities from the site of the work without the City's permission.

ARTICLE 38. CITY'S CONTROL NOT LIMITED

38.01 The enumeration in this Contract of particular instances in which the opinion, judgment, discretion or

determination of the City shall control, and in which work shall be performed to the City's satisfaction and approval or inspection, shall not imply that only matters similar to those enumerated shall be so governed. Without exception all the work shall be so governed and performed.

ARTICLE 39. AUTHORITY AND DUTIES OF INSPECTORS

39.01 Inspectors shall be authorized to inspect all work done and all materials furnished. Such inspection may extend to all parts of the work and to the preparation or manufacture of the materials to be used. In the case of any dispute arising between the Contractor and an Inspector as to materials furnished, or as to the manner of performing the work, the Inspector shall have the authority to reject material or to suspend the work until the question at issue can be referred to, and decided by, the City.

39.02 The Inspector shall not be authorized to revoke, enlarge, relax or release any requirements of these Specifications nor to approve or accept any of the provisions of the Contract Documents. The Inspector shall in no case act as a foreman or perform other duties for the Contractor. The Inspector shall not interfere with the management of the work by the Contractor. Any advice, which the Inspector may give the Contractor, shall not be construed as binding the City or the Project Engineer in any way. Such advice will not release the Contractor from the fulfillment of the terms of the Contract.

ARTICLE 40. INSPECTION AND CORRECTION OF WORK

40.01 All material furnished and work done will be inspected by the Project Engineer. The Project Engineer shall condemn any work or materials not in accordance with the Contract Documents. All condemned work and materials shall be removed and other work and materials furnished in accordance therewith. All materials rejected by the Project Engineer as being unfit for the particular clause in the Specifications to which they refer shall be removed from the site. Removal shall be within twenty-four (24) hours or shorter if the Project Engineer so directs. Should the Contractor refuse to remove the work and materials as ordered, then the Project Engineer may stop the Contractor from proceeding with the work. The City may supply workers and materials to remove the condemned work and materials at the expense of the Contractor.

40.02 Failure on the part of the Project Engineer, or any authorized Inspectors, to detect inferior work or materials, and to condemn the same, shall not be construed to imply an acceptance of such work or materials. Such failure shall not be construed as barring the City, at any subsequent time, from the recovery of such sum of money from the Contractor which may be required to construct or to build anew all portions of the work in which fraud was practiced, improper work executed or improper material furnished and built into the work. The Contractor shall furnish all necessary facilities should it be desirable at any time to make an examination of the work already completed.

40.03 If any work is found defective in any respect, the expense of the examination must be borne by the Contractor. If all work is found satisfactory, the expense of the examination will be paid for in the manner provided for elsewhere in the Contract Documents. If all work is found satisfactory, the expense of the examination will be paid for in the manner provided elsewhere in the Contract Documents.

40.04 If, in the opinion of the City, it is undesirable to reconstruct or correct any portion of the work injured or not performed in accordance with the Contract Documents, the Contractor's compensation hereunder shall be reduced by such amount as may be equitable under all circumstances.

ARTICLE 41. CONTRACTOR'S OBLIGATIONS

41.01 The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and material, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all work required by this Contract. All to be accomplished within the time specified; in accordance with the provisions of this Contract and Specifications; in accordance with the Plans and Drawings pertaining to this Contract; in accordance with any and all supplemental Plans and Specifications and in accordance with the directions of the City as given from time to time during the progress of the work. The Contractor shall furnish, erect, maintain and remove such construction plant and such temporary work as may be required. The Contractor alone shall be responsible for the safety, efficiency and adequacy of the plant, appliances and methods. The Contractor shall be responsible for any damage, which may result from their failure or from their improper construction, maintenance or operation. The Contractor shall

observe, comply with and be subject to all terms, conditions, requirements and limitations of the Contract and the Specifications. The Contractor shall do, carry on and complete the entire work to the satisfaction of the City.

41.02 The Contractor shall be solely responsible for all the work and shall provide all precautionary measures necessary for preventing injury to persons or damage to property. All injury or damage, of whatever nature, resulting from the work, or resulting to persons, from whatever cause, shall be the responsibility of, and shall be borne and sustained by, the Contractor. The Contractor shall hold the City and Project Engineer, or their agents, harmless and shall defend and indemnify the City and Project Engineer, or their agents, against damages, or claims for damages, due to injury to .persons or to property arising out of the execution of work and for damages to material furnished for the work; for infringement of inventions, patents and patent rights used in doing the work; for damages arising out of the use of any improper material, equipment or labor used in the work and for any act of omission by any subcontractors therein. The Contractor shall bear all losses including, but not limited to, losses sustained on account of the character, quality or quantity of any part or all of the work, or because the nature of the land in or on which the work is done being different from what may have been estimated or indicated, or on account of the weather, elements or other causes, except for acts beyond the reasonable control of the Contractor.

ARTICLE 42. TOILET ACCOMMODATIONS AND DRINKING WATER

42.01 The Contractor shall provide necessary sanitary toilet accommodations and drinking water for the workers. Separate facilities shall be provided for female workers.

ARTICLE 43. SAFETY AND HEALTH REGULATIONS

43.01 These documents, and the joint and several phase of construction hereby contemplated are to be governed at all times by applicable provisions of the Federal law(s), including, but not limited to, the latest amendments of the following:

1. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-956.
2. Part 1910 - Occupational Safety and Health Standards; Chapter XVII of Title 29, Code of Federal Regulations.
3. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

43.02 This project is subject to all of the Safety and Health Regulations (see 29 CFR 1926m as amended) as promulgated by the U. S. Department of Labor on June 24, 1974. The Contractor shall thoroughly familiarize him/herself with the requirements of these regulations.

ARTICLE 44. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

44.01 Subsequent to award of the contract, with the exception of the Contractor's executed set, all drawings and specifications are the property of the City. The City shall furnish one (1) paper and one electronic set, in PDF Format, of the construction drawings and specifications to the Contractor without charge. No additional sets will be furnished ~~ined~~ by the City. Such drawings and specifications are not to be used in other work.

ARTICLE 45. RESIDENTS' PREFERENCE IN WORK ON OTHER PUBLIC FACILITIES

45.01 Except to the extent prohibited by Federal or State statute, the Contractor shall comply with the provisions of Section 31-52a of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

Section 2(b) each contract for any such project covered by this section under the supervision of the State or any of its agents shall contain the following provision:

"In the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the State who are and, continuously for at least six months prior to the date hereof, have been residents of the State, and if no such person is available, then to residents of other states."

ARTICLE 46. LISTING OF EMPLOYMENT OPENING

46.01 This Contract is executed subject to the Governor's Executive Orders No. 3 and No. 17, which are hereby made a part of this agreement. The Governor's Executive Order No, 17 requires, inter alia, that all contractors and subcontractors shall list all employment openings with the office of the Connecticut State Employment Service in the area in which the work is to be performed or where the services are to be rendered. Failure of the Contractor to conform to the requirements of the Governor's Executive Orders No. 3 and No. 17, and any orders, rules, or regulations issued pursuant thereto, shall be a basis for termination of this agreement by the City.

ARTICLE 47. SERVICE OF PROCESS

47.01 The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoint(s) the Secretary of State of the State of Connecticut, and successors in office, agent for service of process. Such service, as arising out of, or because of, this Contract. Such appointment shall in effect throughout the life of this Contract and for a period of six (6) years thereafter.

ARTICLE 48. CITY OF WATERBURY ORDINANCE CHAPTER 34

48.01 For projects subject to the City's GOOD JOBS ORDINANCE (Code of Ordinances Chapter 34), the provisions thereof are in addition to any requirements of these General Conditions, and to any requirements of all funding sources for the Project, but only to the extent permitted by federal and state law.

ARTICLE 49. WAGE RATES

49.01 The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein, contracted to be done shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. The amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund (as defined in Section 31-53 of the Connecticut General Statutes) shall also be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the City of Waterbury. If the Contractor is not obligated by agreement to make such payment or contribution on behalf of such employees to any such welfare fund, the Contractor shall pay to each employee the amount of payment of contribution for his classification on each payday as part of his wages.

49.02 For Prevailing Wage Rate projects, the Contractor shall furnish to the Project Engineer certified copies of payrolls showing the names of its employees working on the Project, the specific days and hours and number of hours that each of them has spent in doing so, and the amount paid to each person for said work.

ARTICLE 50. SCHEDULE AND POSTING OF MINIMUM WAGE RATES

50.01 Where applicable, the Contractor, and every subcontractor, shall post a legible copy of the Minimum Wage Rates and Classifications included in the Contract Documents. This posting shall be in a prominent and accessible place at the site of the work (See ARTICLE 49). The schedule shall show all determined minimum wage rates for the various classes of laborers and mechanics to be engaged to work on the project. The schedule shall also show all deductions, if any, required by law to be made from wages actually earned by the laborers and mechanics so engaged.

50.02 The rates established by each schedule are the minimum and all employees shall be paid no less than the established rate for each trade or occupation. In the case of a conflict between schedules in anyone trade or occupation, the higher rate listed shall control and such higher rate shall be considered to be the minimum.

50.03 State: Where applicable, the minimum rates of wages and schedule of supplements to be provided for the various trades shall be in accordance with the Prevailing Wage rate Schedule included herein. The rate of wages and schedule of supplements for any trade not appearing or mentioned in this schedule shall be in accordance with the prevailing rates established for that particular trade by the Connecticut Department of Labor or by the Comptroller or other analogous officer of the City of Waterbury. Minimum wages required to be paid shall include supplements for hospital, surgical, medical or other benefits as determined by all applicable section of the General Statutes of the State of Connecticut. The Contractor shall file a Wage Certification Form with the Labor Department of the State of Connecticut prior to beginning work on the site.

50.04 If for any reason and at any time, the Federal Government, the State of Connecticut, or the City of Waterbury, shall in any way supplement, change or amend the Prevailing Wage Rates Schedule, then the Contractor or subcontractor shall follow such Schedule as supplemented, changed or amended. In no case shall the Contractor or subcontractor be entitled to any additions, compensations or extras because of any supplement, change, amendment or predetermination of the Prevailing Wage Rate Schedule.

50.05 Federal Wage Rates, where applicable, shall be applied in any case where they exceed the State of Connecticut Minimum Wage rates or in any case where a rate has not been established by the State.

ARTICLE 51. COMPUTATION OF WAGES AND OVERTIME COMPENSATION

51.01 The Contractor and each subcontractor shall comply with all applicable Federal, State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the project. The Contractor and all subcontractors shall also comply with all applicable Federal, State and local ordinances with respect to compensation for overtime hours worked by laborers and mechanics engaged in work on the project.

ARTICLE 52. WAGE UNDERPAYMENTS AND ADJUSTMENTS

52.01 In addition to any applicable Federal or State regulations, the City may, in the case of underpayment of wages to any worker on the project under this Contract by the Contractor or by any subcontractor, withhold an amount from payments due the Contractor. Said amount to be sufficient to pay such worker the difference between the wages required to be paid the worker under this Contract and the amount actually paid the worker for the total number of hours worked. The City will disburse such amount so withheld by it for, and on behalf of, the Contractor to the employee to whom the amount is due. Such monies withheld pursuant to this article will be in addition to percentages to be retained pursuant to other provisions of the Contract.

ARTICLE 53. CONFORMANCE OF WORK

53.01 The work, during its progress and at its completion, shall conform to the work as shown on the drawings and to the directions given by the Project Engineer from time to time. The work shall be subject to such modifications or additions as the Project Engineer may deem necessary during the execution of the work. In no case will any work be paid for which is performed in excess of such requirements. The work shall also be accomplished in accordance with the Specifications.

ARTICLE 54. DIMENSIONS AND SCHEDULES

54.01 The Contractor will be required to check all dimensions and quantities shown on the drawings or schedules given to him by the Project Engineer. The Contractor shall notify the Project Engineer of all errors therein which he may discover by examining and checking the same. The Contractor shall not take advantage of any error or omission in these specifications, drawings and schedules. The Project Engineer will furnish all instructions should such error or omission be discovered and the Contractor shall carry out such instructions as if originally specified.

ARTICLE 55. PROTECTION FROM STORM

55.01 Should storm warnings be issued, the Contractor shall take every practicable precaution to minimize danger to persons, to the work and to adjacent property. These precautions shall include closing all openings; removing all loose materials, tools and/or equipment from exposed locations; and removing or securing scaffolding and other temporary work.

55.02 The Contractor shall provide measures to prevent stormwater runoff from entering excavation areas.

ARTICLE 56. PROTECTION OF WORK AND MATERIALS

56.01 The Contractor shall assume full responsibility for the protection of the work and materials during the progress of construction, and until final acceptance of the Project by the City, against loss or damage by any cause or agency. The Contractor shall, at his own expense, provide efficient means for such protection.

ARTICLE 57. FURTHER SAFEGUARDS

57.01 In case the City or the Project Engineer shall at any time be dissatisfied with the means provided by the Contractor for any aforesaid protection of the work or of any other properties, the City or the Project Engineer may order additional measures and precautions for that purpose. The Contractor, at his own expense, shall immediately comply with such orders and carry them out.

ARTICLE 58. FIRST AID TO INJURED

58.01 The Contractor shall keep on site, ready for immediate use, all articles necessary for giving first aid to injured employees. He shall also provide arrangements for the immediate removal and hospital treatment of any injured employee who may require such treatment.

ARTICLE 59. CONFORMANCE WITH DIRECTIONS

59.01 The Project Engineer may make alterations in the lines, grades, forms, dimensions or materials to be used in the project, or any part thereof, either before or after the commencement of construction. If such alterations diminish the quantity included in any item of work to be done and paid for at a unit price, the Contractor shall have no claim for damages or for anticipated profits on the work thus dispensed with. If the changes increase the quantity included in any such item, such increase shall be paid for at the stipulated unit price.

ARTICLE 60. COMPETENT HELP TO BE EMPLOYED

60.1 The Contractor shall employ an experienced foreman, craftsmen and other workmen competent in the work in which they are to be engaged. All work shall be accomplished by able, skilled and competent personnel. If any person employed on the work by the Contractor shall appear to be incompetent or unreliable in any way, he shall be discharged immediately upon the request of the Project Engineer and shall not be again employed upon the work.

ARTICLE 61. STREETS AND SIDEWALKS TO BE KEPT OPEN

61.01 The Contractor shall keep the street and sidewalks in which he may be working open at all times to pedestrian and vehicular traffic. If, in the opinion of the City or the Project Engineer, the interest of abutters and the public requires it, the Contractor shall bridge or construct plank crossings over trenches at street crossings, roads or private ways. The Contractor shall conduct his work for this project in such manner as the City or the Project Engineer may direct from time to time. No sidewalk shall be obstructed where it is possible to avoid it. No additional payment shall be made to the Contractor for such work.

61.02 The Contractor shall provide all necessary fire crossings at principal intersections or ways usually traveled by fire apparatus. The Contractor shall make provision for the passage of fire apparatus to the work area, including along the line of pipeline installations.

61.03 All work shall be conducted in such a manner as to create minimum interference with existing businesses and commercial establishments. Such establishments shall be allowed to conduct business at all times during the construction.

61.04 The Contractor shall be responsible for taking all steps necessary to minimize dust emanating from the project and for keeping the streets free of the accumulation of sand and other similar materials.

ARTICLE 62. LIGHTS, BARRIERS, FENCES, WATCHMEN AND INDEMNITY

62.01 The Contractor shall put up and maintain such barriers, fences, lighting, and warning lights, danger warning signals and signs as will prevent accidents during the construction. The Contractor will protect the work and will insure the safety of the personnel and of the public at all times and places. The Contractor shall defend, indemnify and save harmless the City its agents in every respect from any injury or damage whatsoever caused by any act, omission or neglect of the Contractor or his subcontractors, or their servants or agents. Such indemnification shall also include any claims arising out of failure to erect and maintain sufficient railing or fencing as required by Section 13a-111 of the Connecticut General Statutes. The fact that the City may retain

control of the premises, or that the City, or its agents, may take action to erect or maintain railings or fencing shall not relieve the Contractor's obligations hereunder.

62.02 The Contractor shall furnish, maintain and use all necessary safety devices; follow all such safety practices in the prosecution of the work and shall adopt, follow and maintain such additional safety measures as, in the opinion of the Project Engineer, are conducive to safe operation by the Contractor. The Contractor shall cause his subcontractor(s) to also adopt, follow and maintain these measures. All of this shall be done at the Contractor's or subcontractor's own expense. The City shall have the right to order any or all work suspended where, in the opinion of the City, such work is not being carried on in a safe and proper manner or where persons or property are not being properly protected or safeguarded. Such work shall not be resumed until the City's requirements have been met and the City or Project Engineer has directed that work be resumed. Any work so suspended shall be at the Contractor's expense.

62.03 In addition to the above, when as is necessary or when required by the City and/or the Project Engineer, the Contractor shall post signs and shall employ watchmen or flagmen for the direction of the traffic at the site and for excluding unauthorized persons from the site at all times. The Contractor will not be paid additional compensation for this work.

62.04 At all times the Contractor shall be responsible for excluding all persons from land within easement areas and all persons not directly connected with the work or authorized by the City and/or the Project Engineer to be within the project limits.

ARTICLE 63. WORK OUTSIDE REGULAR HOURS

63.01 Night work or work on Saturdays, Sundays or legal holidays requiring the presence of the City, Project Engineer or an Inspector will not be permissible except in the case of emergency and then only upon approval of the Project Engineer. Should it be desired or required for by the City or Project Engineer to operate an organization for continuous night work, the lighting, safety and other facilities that are deemed necessary for performing such night work shall be provided by the Contractor. For night work on Saturdays, Sundays or legal holidays, if any be performed, the Contractor will receive no extra payment. Compensation for such work shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid.

ARTICLE 64. BUS LINE INTERFERENCE

64.01 Whenever it may be necessary to interfere with any bus lines, notice shall be given to the corporation or agency owning the same. A reasonable amount of time shall be given to said organization in order to rearrange their schedule(s) as may be necessary.

ARTICLE 65. COLD WEATHER WORK

65.01 The Project Engineer will determine when low temperature conditions are unfavorable for work and may order the work, or any portions of it, suspended whenever, in his opinion, the conditions are not such as will insure first class work.

65.02 All methods and materials used in the performance and for the protection of the work in cold weather shall be subject to the approval of the Project Engineer. The Contractor shall take the necessary precautions to protect the work from damage and to remove ice and frost from materials. The removal shall include all necessary heating and the additional removal of any resultant water. The Contractor shall also supply any required sand and/or coarse aggregate required to prevent slipping on ice.

65.03 Except for specific work for which the City has issued a Certificate of Partial Acceptance, the Contractor shall be responsible for maintaining the project roadways, sidewalks, ramps, driveway aprons and asphalt pathways from the time of contract signing until final acceptance of the Project by the City. This responsibility will include snow and ice removal, sanding and mechanical sweeping, and patching with materials approved by the Project Engineer for all roadways, sidewalks, ramps, driveway aprons and asphalt pathways, etc. within the project limits.

65.04 The Contractor shall not continue road excavation after bituminous concrete plants have shut down for the

winter. At that time, the Contractor shall request a "winter shutdown". The Contractor shall receive no extra payment for any labor, apparatus, tools or materials necessary to comply with the above requirements, but compensation shall be construed items of work as listed in the bid proposal/form.

ARTICLE 66. BLASTING AND EXPLOSIVES

66.01 No blasting shall be allowed without the Contractor's securing of a permit and permission from the office of the Waterbury Fire Marshall. The Marshall's office is located at 185 South Main Street, Garden Level, (1 Jefferson Square), Waterbury, CT 06702 Phone: (203) 597-3452. The Marshall's office must be advised between 7:00 AM and 10:30 AM of each day's blasting schedule.

66.02 Explosives for blasting shall be stored, handled and used in accordance with the laws, ordinances and regulations of the State of Connecticut; with all local regulations and with such other additional regulations as the City Representative may require. Blasting shall be conducted so as not to endanger persons or property. The Contractor shall be responsible for, and shall make good any damages of whatever nature caused by blasting or accidental explosions.

66.03 The Contractor shall also adhere to any additional conditions imposed by the Fire Marshall's office. Additionally, the Contractor shall have a pre-blast survey conducted of the adjacent area(s) at no cost to the City.

66.04 Steel or rubber matting shall be used at all blast sites where required by the Bureau of Fire Prevention. Any blast or shot involving more than 99 pounds of explosives must be monitored by the use of seismographs. All seismographs are at the expense of the Contractor. Wire and debris must be cleared from all areas.

66.05 The Contractor shall notify each utility with facilities in proximity to the site of such blasting operations, and any other individuals and entities that may be affected thereby of the Contractor's intention to use explosives; and such notice shall be given sufficiently in advance of any blasting to enable such affected parties to take steps to prevent such blasting from injuring persons or property. Such notice shall not relieve the Contractor of responsibility for damage resulting from its blasting operations.

66.06 Where blasting is required subsequent to commencement of construction, insurance, as required by the City’s Risk Manager shall be obtained by the Contractor, and approved by the City’s Risk Manager.

ARTICLE 67. TUNNELING

67.01 Tunneling will not be permitted without the express written consent of the City.

ARTICLE 68. RESERVED MATERIALS/EXCAVATED MATERIALS

68.01 Materials excavated from trenches and excavations and those used in the construction of the work shall be deposited in such a manner so that they not endanger persons or the work. Materials shall also be deposited in such a manner that free access may be had at any time to all hydrants and gates near the work. The materials shall be kept trimmed-up so to be of as little inconvenience as possible to public travel or to adjoining tenants. All excavated materials not approved for backfill and/or fill; all surplus material; all rock and all boulders resulting from excavations shall be removed and satisfactorily disposed of off the site by the Contractor at no additional cost to the City.

68.02 Any excavated material not used in the installation of contracted items shall be removed from the site and legally disposed of by the contractor.

ARTICLE 69. OBSTRUCTIONS AND CROSSOVERS

69.01 Whenever any trench or other excavation obstructs pedestrian and/or vehicular traffic in or to any public street, private driveway or property entrance or to private property, the Contractor shall employ such means as may be necessary to maintain pedestrian and vehicular traffic and access. The Contractor shall construct and maintain suitable plank crossings and bridges to carry essential traffic in or to the street, driveway or property in question as specified or as directed. These crossings shall be maintained for as long as it is not expedient to backfill the excavation or until such time as sufficient, supportive backfill may be placed. No additional payment will be

made for this work.

69.02 Movement of construction equipment and all other vehicles and loads over and adjacent to any slotted drain pipe shall be done at the Contractor's risk. Any pipe or backfill which becomes damaged or disturbed through any cause shall be replaced or repaired as directed by the City at the expense of the Contractor and at no cost to the State. Suitable temporary crossovers consisting of steel plate or other materials approved by the City shall be employed for a minimum of 7 consecutive calendar days following concrete backfill operations in all areas where vehicular traffic must be maintained or until such time as the pipe installation will withstand loading without damage. All concrete surfaces shall receive a protective coating. End cap installation shall be as recommended by the manufacturer.

ARTICLE 70. DIRECTIONAL SIGNS AND LIGHTS

70.01 Suitable signs, lights and such required items to direct traffic shall be furnished and maintained by the Contractor. No additional payment shall be made for this work.

ARTICLE 71. MAINTENANCE OF WORKPLACE

71.01 The Contractor must keep streets and premises free from unnecessary obstructions, debris and all other materials. The City or Project Engineer may, at any time, order all equipment, materials and surplus from excavations to be removed from the work area. Debris and all other materials lying outside of the working area shall be promptly removed. Should the Contractor fail to remove such material within 24 hours of notice to remove, the City or Project Engineer may cause any or all of said materials to be removed by others. The cost of this removal shall be deducted from any monies, which may be, or may become, due the Contractor under the Contract. In special cases, the City or Project Engineer may cause such materials to be removed without prior notice.

ARTICLE 72. OPERATIONS AT SEVERAL POINTS

72.01 The Contractor may carry on the work simultaneously at more than on point only if, in the opinion of the City or Project Engineer, such action is acceptable and is necessary to insure completion of the work within the specified time.

72.02 The Contractor‘s Construction Progress Schedule shall be adjusted to provide for work being simultaneously conducted at more than one point (location) at the site or sites.

ARTICLE 73. INTERFERENCE WITH EXISTING STRUCTURES

73.01 Whenever it may be necessary to cross or to interfere with existing culverts, drains, sewers, water pipes or fixtures, guard rails, fences, gas pipes or fixtures or other structures needing special care, due notice shall be given to the City or Project Engineer. Work involving these items shall be done according to the City’s or Project Engineer’s directions. Whenever required, all objects shall be strengthened to meet any additional stress that the work herein specified may impose upon it. Any damages that may occur shall be thoroughly repaired. If so directed by the City or Project Engineer, the location of any existing work shall be changed to meet the requirements of the proposed work, if necessary, to leave all in good working order. The entire work shall be the responsibility of the Contractor and the work shall be done at no additional expense to the City.

73.02 The Contractor shall be responsible for repairing all broken or damaged mains or utilities, property markers, monitoring wells, and other existing structures to remain, or outside the Limit of Work, during the progress of the Work. The Contractor shall repair and shall be responsible for all damages to existing utilities and structures with no additional expense to the City. The Contractor shall contact the proper utility or authority to correct or make any changes due to utility or other obstructions during the prosecution of the work, but the entire responsibility and expense shall be with the Contractor.

73.03 All damaged items of work or items required to be removed and replaced due to construction shall be replaced or repaired by the Contractor to the complete satisfaction of the City and/or utility at no additional expense to the City.

ARTICLE 74. TURF, TOPSOIL AND OTHER REPLACEMENT ITEMS

74.01 Where the construction runs through cultivated or sodded lands, the Contractor shall stockpile the turf and topsoil separately and replace the same after the excavation is filled. The Contractor shall leave the land as nearly as possible in its original condition. Trees, fences, walls, walks and other items must not be damaged.

ARTICLE 75. MATERIALS

75.01 All materials furnished and used in the completed work shall be new, of best quality, workmanship, and design and shall be recognized as standard in good construction practices. Whenever a specification number or reference is given, the subsequent amendments (if any) shall be included. The standards set forth in the selection of materials and supplies are intended to conform to those standards adopted by the City. Preference in manufacture shall be given to familiarize the Contractor with the requirements of the Project Engineer when the occasion or choice of materials or supplies so demands.

ARTICLE 76. DEFECTIVE MATERIALS

76.01 No materials shall be laid, installed or used which are known to be, or which may be found to be, in any way defective. Notice shall be given to the Project Engineer of any defective or imperfect material. Defective or unfit material found to have been laid, installed or used shall be removed and replaced by the Contractor with unobjectionable material. This removal and replacement shall be made without additional expense to the City.

ARTICLE 77. INSPECTION AND TESTING OF FURNISHED MATERIALS

77.01 Unless herein provided otherwise, all materials furnished by the Contractor are subject to thorough inspections and tests by the Project Engineer. Any materials condemned or rejected by the Project Engineer as not conforming to the specifications may be branded or otherwise marked. Branded or marked material shall be, on demand, at once removed by the Contractor to a satisfactory distance from the site. Removed materials shall not again be brought upon or near to the work.

ARTICLE 78. SAMPLES AND ORDERING LISTS

78.01 Unless herein provided otherwise, the Contractor shall submit samples of the various materials used on the contract as required by the specifications for testing purposes. All ordering lists shall be submitted by the Contractor to the Project Engineer for approval and must be approved before the ordering of the materials.

ARTICLE 79. SANITARY CONVENIENCES

79.01 Adequate sanitary conveniences, properly secluded from public observation, for the use of workmen on the premises shall be provided and maintained by the Contractor in accordance with the requirements of local and State health authorities. These conveniences shall be maintained in such manner and at such points as shall be approved and their use shall be strictly enforced. Sanitary waste shall be treated and disposed of in a manner satisfactory to, and as directed by, the City and/or the local and State health authorities. Under no circumstances shall sanitary waste be allowed to flow on the surface of the ground or in the work area.

79.02 The cost of sanitary conveniences and the maintenance of same will not be paid for separately, but compensation will be considered to be included in the prices stipulated for the items of work as listed in the bid form.

ARTICLE 80. FINISHING AND CLEANING UP

80.01 In completing any backfilling operation, the Contractor shall replace all surface material to the satisfaction of the City. The Contractor shall then immediately remove all surplus material, all tools, and other property belonging to him. The Contractor shall leave the entire street or surrounding area free and clean, in good order and at no additional expense to the City. Backfilling and removal of surplus materials shall follow closely upon the completion of the work. The Contractor shall exercise special care in keeping rights-of-way and private and

public lands, upon which work is being performed, clean and free of debris at all times. The Contractor will remove tools and other property belonging to him when they are not being used.

80.02 In case the Contractor shall fail or neglect to promptly remove all surplus materials, tools and other incidentals after backfilling, or shall neglect to do required paving promptly, the City or Project Engineer may, after 24 hours notice, cause the work to be done and the cost thereof shall be deducted form any monies then or thereafter due the Contractor.

ARTICLE 81. RIGHTS OF ACCESS

81.01 Nothing herein contained or shown on the drawings shall be construed as giving the Contractor exclusive occupancy of the work area involved. The City or any other Contractor employed by the City, the various utility companies, contractors or sub-contractors employed by Federal, state or local government agencies involved in the general project or upon public rights-of-way, may enter upon or cross the area of work or occupy portions of it as directed or permitted. When the territory of one contract is the convenient means of access to the other, each contractor shall arrange his work in such manner as to permit such access and to prevent unnecessary delay in the work as a whole. Said access rights shall also include all Federal and state agencies and their representatives that have an interest in said project.

ARTICLE 82. WORK BY OTHERS

82.01 The City reserves the right to do any other work which may connect with, or become a part of, or be adjacent to the work embraced by this Contract, at any time, by contract work or otherwise. The Contractor shall not interfere with, nor obstruct in any way, the work of such other persons as the City may employ. The Contractor shall execute his own work in such a manner as to aid in the execution of work by others as may be required. No excavations or backfilling will be permitted if other work by the City will be affected.

ARTICLE 83. WORK WITHIN THE LIMITS OF PRIVATE PROPERTY

83.01 Particular attention is hereby directed to the fact that some of the work included under this Contract may have to be done within the limits of properties that are publicly or privately owned. The City, where necessary has, or will have, secured the necessary easements to these properties for construction purposes. The Contractor will be permitted to utilize the areas of the City’s easements, subject to all of the conditions and requirements as they may affect the Contractor's operations. The Contractor shall conduct his operations and activities in the performance of the work with all such conditions and requirements as may be imposed by the City or Project Engineer.

83.02 All means and rights of ingress and egress to the work areas and all other areas required for work space, in addition to the City's easements, shall be the entire responsibility of the Contractor, All costs in connection therewith shall be considered to be included in the prices stipulated for the appropriate items of work as listed in the bid form.

83.03 The Contractor shall neither use nor occupy public or private lands outside the limits of the City's easements and rights-of-way unless written permission from the owner of the public or private lands have first been obtained. Copies of the written agreements shall be submitted to the Project Engineer prior to entering upon such lands. The Contractor shall be responsible for cooperating with, and for coordinating the prosecution of, the work of this Contract with the public and private property owner. Any abuse to the lands of the public and private property owner shall be immediately corrected by the Contractor, at the Contractor's expense, to the complete satisfaction of the property owner. The Contractor shall take such precautionary measure, as required by the City, to prevent further nuisances, interference or inconvenience to abutting property owners.

83.04 It shall be the Contractor's full responsibility to be familiar with the limitations imposed upon the work of construction within the various properties of public or private ownership and rights-of-way by existing occupancy or use. The Contractor will be required to make every effort to fully and satisfactorily protect trees, shrubs, lawns, gardens, fences, walks, driveways, structures and all and any other appurtenances of the property owners.

83.05 The Contractor shall provide adequate access to all walks, driveways, yards or structures: shall protect all work by the erection or placement of safety guards or barriers, lights and such other incidentals; and where required, shall construct temporary plank crossings or timbers to permit full use of private facilities at all times. All of these actions are to be performed at no additional expense to the City. All other applicable provisions for control of work within the areas of public travel set forth elsewhere herein shall also apply to work within the limits of private ownership.

83.06 The Contractor shall cooperate with the public and private property owners and shall also contact the City and Project Engineer for additional information regarding the requested (or required) length of time needed as a notice to be given to the public or private property owner before the Contractor enters their property to start the construction. In some cases, a certain time to start the work and a certain limited length of time may be required to complete the work on public and private property owners. Furthermore the contactor may be required to shutdown construction operations as necessary to prevent undo interference with the operation of private and public business within the project area.

83.07 Before proceeding with construction operations, the Contractor shall provide suitable and substantial gates or other approved forms of closing gap devices in every fence within the limits of the owner's easements through which the Contractor intends to move or pass equipment and materials. It is the responsibility of the Contractor to negotiate with the owner of each fence all of that owner's requirements, in addition to those specified above. It shall also be the responsibility of the Contractor to comply with all requirements as specified herein and as agreed to with the owner's in a manner satisfactory to the owner.

83.08 No separate payment will be made for the requirements specified under "WORK WITHIN THE LIMITS OF PRIVATE PROPERTY" and all cost in conjunction therewith shall be included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 84. LOADING

84.01 No part of the structures involved in this Contract shall be loaded during construction with a load greater than that calculated for the safety of the structure. Should any accidents or damage occur through any violation of this requirement, the Contractor will be held responsible. If necessary, the Contractor shall request, in writing, the allowable loading from the Project Engineer.

ARTICLE 85. COMPLETION OF WORK

85.01 In addition to the specified or described portions, all other work and all materials, equipment and labor of whatever description which are necessary or required to complete the work, or for carrying out the full intent of the drawings and specifications, as interpreted by the Project Engineer, shall be provided by the Contractor. Payment therefore shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid form.

ARTICLE 86. DUST AND SPILLAGE CONTROL

86.01 The Contractor shall exercise every precaution to prevent and to control dust arising out of all construction operations from becoming a nuisance. Water shall be provided and applied as required or as ordered by the Project Engineer for allaying dust conditions. Pavements adjoining excavations shall be kept swept and/or washed clean of excess excavated material wherever and whenever directed. Earth piles adjacent to excavations, earth stockpiles and surfaces of refilled excavations shall be kept moist at all times as directed. No extra payment will be made for providing the dust control measures and for conforming to the requirements specified above. Compensation therefor shall be considered included in the prices stipulated for the appropriate items of work as listed in the bid form.

86.02 The Contractor shall take appropriate measures to control the generation of dust from its activities. Water shall be provided and applied as required or as ordered by the Project Engineer for allaying dust conditions.

86.03 All vehicles utilized by the Contractor for delivery or removal of materials shall have appropriate covers to prevent spillage of material during transit.

ARTICLE 87. CARE OF THE WORK

87.01 The Contractor shall be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence concerning the prosecution of the work. The Contractor shall also be responsible for the proper care and protection of all material delivered and of all work performed until completion and final acceptance of the Project by the City, whether or not the same has been covered by partial payments authorized by the Project Engineer.

ARTICLE 88. EMERGENCY WORK

88.01 The Contractor shall file, with the City Engineer and the Project Engineer, if any, the name and telephone number of a person authorized by him who may be contacted regarding emergency work at the job site that may be required during non-working hours for reasons of public safety. This person shall be readily available and shall have full Authority to deal with any emergency that may occur.

ARTICLE 89. FIRE PREVENTION AND PROTECTION

89.01. All Federal laws (Occupational Safety and Health Act) and all state and municipal rules and regulations with respect to fire prevention, fire-resistant construction and fire protection shall be strictly adhered to by the Contractor. All work and facilities necessary therefore shall be provided and maintained by the Contractor in an approved manner.

89.02. All fire protection equipment (as per 89.01 above) shall be provided by the Contractor for the protection of the contract work including temporary work and adjacent property. Personnel experienced in the operation of the fire protection equipment and apparatus shall be available whenever work is in progress and at such other times as may be necessary for the safety of the public and of the work.

89.03. Open fires will not be permitted.

ARTICLE 90. PLANIMETER

90.01 For estimating quantities, where the computations of areas by analytic and geometric methods would be comparatively laborious, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas, as utilized by an engineer.

ARTICLE 91. SUPERINTENDENCE

91.01 During the entire duration of the project, the Contractor shall employ a competent superintendent in personal charge of the work. The superintendent shall be present during all phases of construction and shall have full authority to act for the Contractor. The superintendent shall be continued in this capaCity full time for this project unless (1) the person ceases to be on the Contractor's payroll or (2) the person proves to be unacceptable to the City or Project Engineer. Instructions given to the superintendent and/or supervisory subordinates shall be considered as given to the Contractor. A chain-of-command listing shall be submitted by the Contractor to the City and Project Engineer and shall be adhered to in the temporary absence of the superintendent.

ARTICLE 92. CONTRACT ADMINISTRATION COSTS - OUTSIDE REGULAR HOURS

92.01 The working schedule shall be confined to a five (5) day week ending on Friday. The working day shall be any eight-hour period beginning no earlier than 7:00 AM and ending no later than 7:00 PM. Whenever the Contractor elects to perform work on Saturdays, Sundays or legal holidays observed by the City or to work in excess of the normal working hours stated above, the Contractor shall pay to the City the extra cost incurred by the City due to the increased cost of contract administration. Payment shall include all cost of inspection and administration for such Saturday, Sunday or legal holiday work or for work in excess of the normal working day, which the City is obligated to incur and for the extra expense involved in overtime work resulting from the performance of work on these days.

92.02 No work outside regular hours or overtime work shall be planned or executed without the approval of the City.

ARTICLE 93. DAILY REPORTS

93.01 The Contractor shall submit daily activity reports on an approved form for the duration of the project. The report shall indicate all personnel currently employed on the work, including each trade and every sub-contractor; all equipment and whether that equipment was idle for the particular day; a general description of all work accomplished and any authorized extra work (time and material reports shall be submitted on separate forms).

ARTICLE 94. MATERIAL AND WORKMANSHIP

94.01 All materials and workmanship incorporated in the work covered by this Contract are to be of the highest grade of their respective kinds for the purpose intended. The Contractor shall furnish to the Project Engineer for approval the name of the manufacturer of machinery and mechanical or other equipment that the Contractor contemplates incorporating in the project together with their respective performance capacities and other pertinent information.

94.02 When required by the Specifications, or when called for by the City or Project Engineer, the Contractor shall furnish the required information for approval of all material that the Contractor contemplates incorporating in the work. Samples of material shall be submitted for approval to the Project Engineer when and as directed. Machinery, equipment and material installed or used without approval shall be at the risk of subsequent rejection.

ARTICLE 95. TEMPORARY WATER SUPPLY

95.01 In the event temporary water supply work is required, it shall be provided in accordance with the requirements of the Waterbury Water Bureau and all local and state health authorities. The Contractor shall provide and maintain facilities for an adequate supply of water suitable for use for construction purposes and for domestic use as required for the work of this Contract. The cost of all work, materials, equipment, appurtenances and accessories necessary for providing supplies of water at the site, including the cost of all water consumed, shall be borne by the Contractor.

95.02 Upon completion to the work of this Contract, and before final acceptance of the Project, the Contractor shall remove all temporary piping and appurtenant work used for the temporary water supply.

ARTICLE 96. FITTING AND COORDINATION OF WORK

96.01 The Contractor shall be responsible for the proper fitting of all work and for the coordination of operations of all trades, subcontractors or material suppliers engaged in the work. The Contractor shall be prepared to guarantee to each of his subcontractors the dimensions for which they may require for the fitting of their work to all surrounding work. The Contractor shall do, or shall cause his agents to do, all cutting, fitting, adjusting and patching necessary to make the several parts of the work come together satisfactorily and properly and to fit the work to receive, or to be received by, the work of other contractors.

ARTICLE 97. ARCHEOLOGICAL FINDS

97.01 During the life of this Contract, in the event that any articles such as "charcoal", "bone", "shell", "cultural objects", "fire-cracked stones", "stone flaking material." or any other such related items of historical significance are discovered on the project, the Contractor is required to notify:

(1) The City
(2) Project Engineer or Inspector

ARTICLE 98. EXCAVATIONS NEAR UNDERGROUND UTILITIES

98.01 In conformance with Section 16-345 of the Regulations of the Department of Public Utility Control, the Contractor shall not start any excavation and/or blasting of rock activity without first having ascertained the location of all such utilities in the area. The Contractor shall notify the Public Utilities Regulatory Authority (PURA) "CALL BEFORE YOU DIG" (Toll Free 1- 800-922-4455) at least two (2) full days in advance (excluding Saturday, Sunday and legal holidays), but no more than thirty (30) days before starting any such work. Such notice shall include the name, address and telephone number of the persons/agency performing the work, the date, location and type of excavation.

98.02 The PURA should immediately transmit such information to the utility companies whose facilities may be affected. Utility companies receiving notice should mark-up the locations of their facilities on the work site. If they have no facilities in the area, they shall so inform the Contractor. If the Contractor does not receive any information or marked-up locations on the work sites, the Contractor shall contact PURA again to verify that the utility companies have responded to the initial call. Under no circumstances will the Contractor be allowed to start any excavation and/or blasting work prior to obtaining all necessary information regarding the location of underground utilities at the site. It is the Contractor's responsibility to have all utilities marked on the work sites prior to starting the work.

ARTICLE 99. WATER QUALITY OF WELLS

99.01 The Contractor shall perform all tests required by the State Health Department on all water supply wells and reservoirs where directed by the City or Project Engineer before and after construction. All labor, materials and testing shall be paid by the Contractor at no cost to the City.

ARTICLE 100. WORK IN STATE HIGHWAYS

100.01 If any of the work under this Contract is in a state highway the Contractor shall obtain all required permits at his own expense. The Contractor shall perform the work in accordance with the terms and conditions stipulated by the Connecticut Department of Transportation (ConnDOT) and/or as required by ConnDOT inspectors. The Contractor must provide such bonds, security and insurance as may be required to obtain such permits.

100.02 In the event the City, or the City and the Contractor jointly, are required to obtain any permits, including detour permits, the Contractor shall be familiar with the conditions of the permits and shall be held responsible for compliance with all the requirements of the permits and all specifications attached thereto, as if the permits were held solely by the Contractor.

100.03 Whenever State inspectors, flagmen or other costs are incurred as a condition to obtaining permits, the Contractor shall be responsible for payment of these costs with no reimbursement from the City.

100.04 The Contractor shall conform to all ConnDOT requirements for materials and construction methods for all work within state highways. Sheeting or an adequate trench box may be required in all trenching operations to confine trench widths and to protect State facilities. Additional pavement replacement may be required to properly restore the roadway surface.

100.05 The cost of all labor, materials and equipment necessary to conform to CONNDOT requirements for work in, or adjacent to, state highways, including work not specifically stated in the Contract Plans and Specifications, shall be the sole responsibility of the Contractor and shall not be reimbursed by the City. Therefore, the Contractor is informed to evaluate all CONNDOT requirements for the project prior to submitting the Bid for the project and to include these costs in his bid prices.

ARTICLE 101. EXISTING INSPECTION REPORTS

101.01 Any existing inspection reports concerning the project which have been prepared by or for the City or Project Engineer will be made available for the Contractor's information.

ARTICLE 102. TEST REPORTS; CERTIFICATES OF COMPLIANCE AND SHIPPING LISTS

102.01 Except where expressly provided otherwise in the Contract Documents, the Contractor shall furnish to the Project Engineer the material manufacturer's notarized test reports and methods of testing by an approved independent laboratory in order to show compliance of all materials furnished with all specification requirements, the reports shall also contain manufacturer's notarized certificates of conformance stating that all materials furnished under these Specifications conform with all specification requirements; that each shipment of materials shall be accompanied by the manufacturer's notarized certificate of conformance and that a shipping list itemizing the amounts of each shipment shall accompany each shipment.

ARTICLE 103. CLEANING FINISHED WORK

103.01 After the work is completed, the sewers, manholes and structures shall be carefully cleaned free of dirt, broken masonry, mortar, construction and other debris and shall be left in first class condition, ready for use. All temporary or excess material shall be disposed of and the work left broom-clean to the satisfaction of the Project Engineer.

ARTICLE 104. COMPLIANCE TO ACTS AND EXECUTIVE ORDERS

104.01 If this Contract is federally assisted and the Contractor must comply with all applicable statutes, acts, executive orders and regulations, including without limitation:

(a) **TITLE VI, CIVIL RIGHTS ACT OF 1964** Provides that no person in the United States shall on the grounds of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity, receiving Federal financial assistance.

(b) **SECTION 3, HUD ACT OF 1968** Provides that, to the greatest extent feasible, opportunities for training and employment shall be given to lower income residents of HUD-assisted project areas, and that contracts for work in connection with such projects be awarded to business concerns which are located in, or are owned in substantial part by persons residing in the area of the project.

(c) **LABOR STANDARDS** Compliance with Davis Bacon Act, as amended (40 U.S.C. 267a-5) Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333) 13.0.

ARTICLE 105 SEMI-FINAL INSPECTION / SUBSTANTIAL COMPLETION

105.1 Contractor shall notify the Project Engineer when it believes the work (or a portion thereof) is Substantially Complete and shall file with the City a written, notarized "Contractor's Affidavit of Substantial Completion" and request a Semi-Final Inspection of the work.

105.2 Contractor, prior to requesting Semi-Final Inspection, shall complete and submit the following, listing known exceptions in its Affidavit of Substantial Completion:

i. Include supporting documentation for Substantial Completion as indicated in these Contract Documents.
ii. Advise City of outstanding permit closure requirements. Submit certificates of inspections conducted, reports, and other documentation required by local or state authorities.
iii. Where required, submit photographs, specific warranties, final certifications, and similar documents.
iv. Provide Partial Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers may be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.

105.3 Subsequent to City's receipt of Contractor's Affidavit of Substantial Completion, Project Engineer will either proceed with Semi-Final Inspection or advise Contractor of prerequisites not fulfilled.

105.4 Following Semi-Final Inspection, Project Engineer will either inform the City to prepare a Certificate of Substantial Completion, or advise Contractor of work that must be performed prior to issuance of said certificate, and repeat the inspection when requested and assured that the work has been substantially completed in accordance with the Contract

Documents.

105.5 Contractor's payment requisition coincident with, or first following the date claimed as Substantially Complete, shall be processed in the same manner as a partial payment requisition and shall show either 100% completion for the work claimed as Substantially Complete, and/or list incomplete items, value of incompletion, and reasons for being incomplete.

ARTICLE 106. CITY'S CERTIFICATE OF SUBSTANTIAL COMPLETION

106.1 For the portion of the work determined to be Substantially Complete, the City shall issue "City's Certificate of Substantial Completion" which shall establish the date of Substantial Completion by the Contractor.

106.2 Concurrently, the Project Engineer shall prepare a list (the "punchlist") of remaining items of work to be completed and/or deficiencies to be addressed.

106.3 Prior to Final Inspection, the Contractor shall address and complete all "punch list" items.

106.4 The City reserve the right to modify, amend and/or update the "punchlist," as it deems necessary.

ARTICLE 107. FINAL INSPECTION

107.1 Contractor shall notify the Project Engineer when it believes the Project is Finally Complete and shall file with the City a written, notarized "Contractor's Affidavit of Final Completion" and request a Final Inspection of the work by the Project Engineer.

107.2 Subsequent to receipt of Contractor's Affidavit of Final Completion, Project Engineer will either proceed with Final Inspection and/or advise Contractor of prerequisites not fulfilled.

107.3 At the time of submission of its Affidavit of Final Completion, Contractor, as required by the Contract Documents and/or required for completion of the Project as determined by the City, shall also provide and/or submit the following, listing known exceptions (if any), in its Affidavit of Final Completion:

i. Supporting documentation required by the Contract Documents not previously submitted and accepted.
ii. Discontinue and remove, as appropriate, temporary facilities and services, along with construction tools and facilities, and similar elements.
iii. Evidence of final, continuing insurance coverage complying with insurance requirements, including certificates of insurance for products and completed operations where required.
iv. Reports and forms required by Federal and/or State funding sources, as required thereby.
v. A copy of City's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by the Project Engineer.
vi. Any final documents requested by Project Engineer.
vii. If applicable, submit final liquidated damages settlement statement, acceptable to City.
viii. Photographs, specific warranties, final certifications, and similar documents.
ix. All required As-Builts, Record Drawings and Documents and Surveys, in number and formats specified.
x. Provide Final Waiver of Lien from each Subcontractor, supplier and the Contractor. All money due to Subcontractors and suppliers shall be withheld from payment to the Contractor until Waivers of Lien indicate no money owed.
xi.

ARTICLE 108. FINAL ESTIMATE

108.01 If the Work is determined Finally Complete, a Final Estimate shall be prepared showing the total due Contractor under the Contract less the retainage held by the City. This Final Estimate shall show the final estimate of quantities. Should this estimate of quantities show a decrease from the approximate estimate of quantities, then such variations will be computed at the unit prices bid and reflected in the Final Estimate by adding or deducting said amounts from the from the gross sum bid.

108.02 The Final Estimate shall reflect the final Contract Amount, all prior City payments to the Contractor, all adjusts to the Contract Amount, all retainage held by the City, any liquidated damage amounts, all unused amounts of any Owner Controlled Allowances and of all Cash Allowances, all adjustments for Alternates accepted/declined by the City and

final amount of any holdback(s) by the City.

108.03 All certificates of payments and estimates, upon which partial payments may have been made being merely estimates, shall be subject to correction in this Final Estimate.

ARTICLE 109. SEMI-FINAL PAYMENT

109.01 Based upon the amounts and qualities set forth in the Final Estimate, the Contractor shall submit its Semi-Final Payment Application requesting the total due under the Contract, less all retainage held by the City.

109.02 This Semi-Final Payment Application shall be certified as to its correctness by the Project Engineer and will be processed in the same manner as the partial payment requests.

ARTICLE 110. LIMITED ACCEPTANCE OF WORK

110.01 Limited Acceptance of Portion(s) of the Work shall be at City's sole discretion and shall be subsequent to issuance of City's Certificate of Substantial Completion for such work and shall relieve Contractor of responsibility for the physical aspects of said portion of the work; however such termination of responsibility for the physical aspects of the work in no way affects or diminishes any other contractual requirements governing the work so accepted, or the acceptance of the Project as whole.

ARTICLE 111. FINAL COMPLETION / CITY'S CERTIFICATE OF FINAL COMPLETION

111.01 Final Completion of the Project by the City shall occur when:

a. All deficiencies identified in its Affidavit of Final Completion have been corrected/addressed.
b. All Project work and services have been completed to the satisfaction of the City; and Semi-Final Payment has been made to the Contractor.
c. Contractor has submitted its Final Payment Application and Project Engineer has certified it as to correctness. Contractor's Final Payment Application shall be solely for release of all retainage held by the City.
d. Upon issuance to Contractor by City of City's Certificate of Final Completion.

111.02 Issuance of City's Certificate of Final Completion shall establish the date of Final Completion by the Contractor and shall be a prerequisite to Project Acceptance and Final Payment by the City.

ARTICLE 112 FINAL PAYMENT / PROJECT ACCEPTANCE

112.01 Subsequent to issuance of the City's Certificate of Final Completion, the City shall process Contractor's Final Payment Application, which shall be solely for release of all retainage held by the City.

112.02 Contractor's Final Payment Application shall be certified as to its correctness by the Project Engineer and shall be based on City's Certification of Contractor's Final Payment Application.

112.03 If a Certificate of Compliance is required by the Contract Documents, Final Payment shall not be released until such certificate has been issued and delivered to the City.

112.04 Subsequent to issuance of Final Payment to the Contractor, the City shall issue its written notice of its Acceptance of the Project to the Contractor.

ARTICLE 113. ACCEPTANCE OF FINAL PAYMENT

113.01 The acceptance by the Contractor, or by anyone claiming by or through the Contractor, of Final Payment shall constitute and operate as a release for the City from any and all claims of any liability to the Contractor for anything, theretofore done or furnished for or relating to or arising out of the work done thereunder, and for any prior act of neglect, default on the part of the City or any of its officers, agents, or employees unless the Contactor serves a detailed and verified statement of claim upon the City not later than forty (40) consecutive calendar days after mailing of such Final Payment. Such statement shall specify the items claimed. Should the

Contractor refuse to accept the Final Payment as tendered, it shall constitute a waiver of any right of interest thereon.

ARTICLE 114. 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

114.01 The Contractor, or any subcontractors working on the project, shall provide written proof that any and all employees working on the project jobsite have successfully completed the 10-Hour OSHA Construction Safety and Health Course.

END OF SECTION

SPECIAL CONDITIONS

INDEX TO SPECIAL CONDITIONS

ARTICLE	PAGE
1. SPECIAL NOTE	SC-1
2. PERMITS	SC-1
3. CONSTRUCTION STAKE OUT	SC-1
4. SITE RESTORATION	SC-1
5. CITY NOTIFICATION – BACKFILLING	SC-1
6. PUBLIC USE OF EXISTING PUBLIC FACILITIES	SC-1
7. ACCESS TO PRIVATE & PUBLIC PROPERTY	SC-2
8. WINTER SHUTDOWN	SC-2
9. CHANGES TO THE WORK	SC-2
10. LAYDOWN AREAS	SC-2
11. ADDENDUM TO GENERAL CONDITION ARTICLES 11 & 95	SC-3
12. ADDENDUM TO GENERAL CONDITION ARTICLE 1	SC-3
13. CITY DESIGN STANDARDS, SPECIFICATIONS AND DETAILS	SC-3
14. ADDENDUM TO GENERAL CONDITION ARTICLE 2	SC-3
15. ADDENDUM TO GENERAL CONDITION ARTICLE 8, 9, 10	SC-3
16. MOBILIZATION AND DEMOBILIZATION	SC-3
17. IMPROVEMENT LOCATION AND TOPOGRAPHICAL SURVEY	SC-3
18. ADDENDUM TO GENERAL CONDITION ARTICLE 93	SC-3
19. ADDENDUM TO GENERAL CONDITION ARTICLES 31	SC-4

ARTICLE 1. SPECIAL NOTE

These Special Conditions shall be subject to all requirements of the Contract, amend or supplement the General Conditions, and modify all Contract Documents which follow them numerically, as set forth in Section 1.2 of the Contract. The terms used in these Special Conditions which are defined in the Contract or General Conditions have the meanings assigned to them in said documents. All provisions of the General Conditions which are not so amended or supplemented remain in full force and effect.

This section applies equally and specifically to all contractors supplying labor and/or equipment and/or materials for this Project; and to all of the Contract Documents. All Contract Documents apply to this Section. Where items of the Contract are repeated, it is intended to call particular attention to or qualify them; it is not intended that any other parts of the Contract shall be assumed to be omitted if not repeated herein.

Unless expressly provided for otherwise, and regardless if not expressly stated in each Article herein, the costs associated with all work and/or services required under the Special Conditions shall be considered as included in the overall cost of the Contract items. No separate or additional payment will be made for this work and/or services.

ARTICLE 2. PERMITS

The Contractor shall obtain all applicable Federal, State and local permits and registrations necessary to complete the project at no additional cost to the City. The cost of obtaining and maintaining the permits shall be included in the Contract Amount.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations including building and fire safety codes relating to the performance of the Work.

ARTICLE 3. CONSTRUCTION STAKE OUT

Construction stake out is not required for this Project.

ARTICLE 4. SITE RESTORATION

The Contractor will blend the new work into the existing ground surface and replace any adjacent disturbed materials that may have been damaged or irregular do to construction and/or new installations.

ARTICLE 5. CITY NOTIFICATION - BACKFILLING

Before backfilling any excavated area and after an improvement has been installed the contractor shall notify the City when a backfill operation is to occur. A City representative will make one observation for each excavated area.

ARTICLE 6. PUBLIC USE OF EXISTING PUBLIC FACILITIES

The Contractor shall limit his work area to the site of the construction and its immediate vicinity. No equipment or construction activities are allowed on the existing public facilities, such as athletic fields without prior written approval by the City. No equipment or storage is allowed outside of the designated construction area without prior written approval by the City. The number and location(s) of storage containers shall be approved by the City.

ARTICLE 7. ACCESS TO PRIVATE & PUBLIC PROPERTY

Throughout the duration of Construction, the Contractor shall maintain access to all businesses, places of worship, schools and private residences, etc. in the project area. Particular attention is noted for funeral processions, wedding processions, and other similar activities.

Where required by the City, Contractor shall also conduct regular coordination meetings with Residents, Owners and Operators of businesses and other operations to coordinate active work periods.

Contractor shall also provide and place temporary ramps at driveways or other locations where, in the opinion of the City, there is a need to provide safe access until the permanent handwork is completed.

ARTICLE 8. WINTER SHUTDOWN

No 'winter shutdown' will be permitted for this Project.

Any 'winter shutdown' authorized under this Article shall not change the "Contract Time" for the project. Any extension of the Contract Time must be by formal amendment to the Contract in accordance with the provisions of the Procurement Ordinance of the City of Waterbury.

ARTICLE 9. CHANGES TO THE WORK

If the City authorizes changes to the work, the following shall apply:

The cost for changes to the work shall be either on a firm proposal agreed to by the City or based on a cost-plus-fee basis agreeable to the City. In the event the work is to be performed on a cost plus basis, the Contractor will perform, or cause to be performed by his subcontractors, such work at direct cost, plus the percentages set out below:

1. For work performed by the Contractor's own forces, direct cost plus Ten Percent (10 %).

2. For work performed by a subcontractor, the cost to the City shall be subcontractor cost to the Contractor, plus 5 %.

ARTICLE 10. LAYDOWN AREAS / MATERIAL STORAGE

A Laydown Area shall not impede traffic flow within the City streets. The Contractor may use these areas during construction and shall be required to restore any disturbed areas to a condition as good as or better than existing conditions.

Contractor shall also be required to clean up, restore, and make safe and usable all Laydown Areas as directed by the Engineer. This may include removing equipment, materials, tools, etc., from the any Laydown Area for a period to be determined by the City of Waterbury.

The City will not provide any staging area for Construction and/or Contractor operations. The Contractor shall provide its own staging/storage area. Lay down areas within the project's limits are allowed but require pre-approval from the City. In all cases, the Contractor shall be responsible for the protection of all materials, tools, etc. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public, adjacent property owners and tenants or the City.

The Contractor shall provide its own storage facilities and in all cases be responsible for the protection of all materials, tools, etc. The number and location(s) of storage containers shall be approved by the City. Materials received on site which are not immediately installed shall be carefully and securely stored. All materials used throughout work shall be neatly stacked so as not to obstruct the progress of the work or endanger the public or the City or City's employees or

tenants. All deliveries of material, equipment, etc., shall be made to the Contractor and accepted only by him/her and only during working hours. City personnel will not receive or accept any materials or equipment, etc. at any time.

ARTICLE 11. ADDENDUM TO GENERAL CONDITIONS 11 and 95

Reference is made to General Condition Articles 11 – Temporary Utilities, and 95 – Temporary Water Supply. The Contractor shall be responsible for determining and supplying at no cost to the City all temporary utilities needed to maintain utility service to all adjacent property owners/tenants.

ARTICLE 12. ADDENDUM TO GENERAL CONDITION 1

Reference is made to General Condition Article 1 – Plans and Specifications at the Site; Record Documents. Marked up drawings and/or As-Built drawings will not be required for this Project.

ARTICLE 13. CITY DESIGN STANDARDS, SPECIFICATIONS AND DETAILS

The Contractor shall comply with all City design standards, specifications and details. To the extent that Technical Specification or Drawings conflict with City design standards, specifications, or details, City design standards, specifications and details shall control.

ARTICLE 14. ADDENDUM TO GENERAL CONDITIONS 2

Reference is made to General Condition Article 2 – Construction Progress Schedule. Reference is made to General Condition Article 2 – Construction Progress Schedule. For this project, Contractor shall not be required to provide a Sedimentation and Erosion Control Plan, a Water Control Plan and/or Environmental Protection Plan as may be outlined or referenced in the various Articles of these General Conditions.

ARTICLE 15. ADDENDUM TO GENERAL CONDITIONS 8, 9 and 10

Reference is made to General Condition Article 8 – Sedimentation and Erosion Control, Article 9 – Protection of Environmental Resources and Article 10 - Environmental Protection Plan. The requirements of Articles 8, 9 and 10 shall not apply to this project; however, the Contractor shall responsible for any such requirements to the extent set forth in the Technical Specifications or elsewhere in the Contract Documents.

ARTICLE 16. MOBILIZATION AND DEMOBILIZATION

The costs of Mobilization and Demobilization for the project shall be included in the contract bid amount. No separate payment shall be made for Mobilization and/or Demobilization.

ARTICLE 17. IMPROVEMENT LOCATION AND TOPOGRAPHICAL SURVEY

Completion of an Improvement Location Survey is <u>not</u> required for this Project.

ARTICLE 18. ADDENDUM TO GENERAL CONDITIONS 93

In lieu of the daily reports required in Article 93 of the general conditions, the contractor shall provide said reports weekly.

ARTICLE 19. ADDENDUM TO GENERAL CONDITION 31

Reference is made to General Condition Article 31 – Use of Premises and Removal of Debris. During the progress of the work, the Contractor shall keep the construction areas in a neat condition, free from accumulations of waste materials and rubbish. Lunch papers, bottles, lumber cut-offs, drinking cups and like rubbish shall be removed from the site daily. No alcoholic beverages will be permitted at the construction site(s).

On or before the completion of the work and before acceptance and final payment shall be made, the Contractor shall clean and remove, from the site and adjacent property all surplus and discarded materials, rubbish, and temporary structures and restore, in an acceptable manner, all property and leave the whole area in a neat and presentable condition.

END OF SECTION

Attachment F Document

- PROPOSAL FORM

THE CITY OF WATERBURY

Bleacher and Bench Replacement at Two Schools
RFP #7829

PROPOSAL FORM

ATTACHMENT F

(Must be submitted as part of Proposal in a separate sealed envelope, marked "Confidential: Price Proposal.")

Date: _____

Kevin McCaffery
Director of Purchasing
City of Waterbury
235 Grand Street, Room 103
Waterbury, CT 06702

Sir:

Pursuant to and in compliance with your RFP, the Undersigned,

_____
(Print or Type Company/Corporate Name)

_____
(Print or Type Business Address)
_____

_____

_____

having carefully examined all the RFP Documents, together with all Addenda, as acknowledged on Attachment C, and having informed itself fully in regard to all conditions and related requirements pertaining to the performance of services required under this RFP; and that with this representation, the undersigned makes this Proposal, as follows:

THE CITY OF WATERBURY

Bleacher and Bench Replacement at Two Schools
RFP #7829

PROPOSAL FORM

ATTACHMENT F continued…

RFP 7829 BLEACHER AND BENCH REPLACEMENT AT TWO SCHOOLS			
Item	**Description**	**Amount (In Numbers)**	**Amount (In Words)**
1	**Demo and Removal of existing Kennedy Natatorium Bleachers**	**$**	
2	**Installation of new telescopic bleacher system Kennedy Natatorium**	**$**	
3	**Removal and Diposal of existing wood seating planks from concrete bases for bleachers at Wilby Natatorium**	**$**	
4	**Installation of new seating planks (PVC) at Wilby Natatorium**	**$**	
5	**Removal and Disposal of wooden seating planks from Wilby Locker rooms (2) benches**	**$**	
6	**Installation of new seating planks (PVC) in Wilby Locker rooms (2)**	**$**	
GRAND TOTAL (Proposal Items 1 through 6):			
In words:			**(In $)**

END OF ATTACHMENT F

Prevailing Wages Packet

- PREVAILING WAGE LAW POSTER
- SECTION 31-53b
- INFORMATION BULLETIN- 10-HOUR OSHA COURSE
- NOTICE FOR ALL MASON CONTRACTORS
- CT GENERAL STATUTE 31-55a
- CONTRACTOR'S WAGE CERTIFICATION FORM
- PAYROLL CERTIFICATION
- INFORMATION BULLETIN – OCCUPATIONAL CLASSIFICATIONS
- FOOTNOTES
- PREVAILING WAGES FOR THIS PROJECT

PREVAILING WAGE BID PACKAGE

- Prevailing Wage Law Poster (PDF, 97KB)
- Section 31-53b: Construction safety and Health Course. Proof of completion required for employees on public building projects.
  - Informational Bulletin - The 10-Hour OSHA Construction Safety and Health Course (PDF, 20KB)
- Notice For All Mason Contractors (PDF, 5KB)
- CT General Statute 31-55a
- Contractor's Wage Certification Form (PDF, 11KB)
- Payroll Certification - Public Works Projects
- Information Bulletin - Occupational Classifications
- Footnotes (Rev. 07/19) (PDF)

Opportunity ★ Guidance ★ Support

CONNECTICUT DEPARTMENT OF LABOR

THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Worker training requirements for public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (h) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 46 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268, and, on or after July 1, 2012, that any plumber or electrician subject to the continuing education requirements of section 20-334d, who has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration five or more years prior to the date such electrician or plumber begins work on such public works project, has completed a supplemental refresher training course of at least four hours in duration in construction safety and health taught by a federal Occupational Safety and Health Administration authorized trainer.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2012, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or, in the case of a supplemental refresher training course, shall include, but not be limited to, an update of revised Occupational Safety and Health Administration standards and a review of required construction hazards training, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety

and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project or, in the case of supplemental refresher training, a student course completion card issued by said Occupational Safety and Health Administration authorized trainer dated not earlier than five years prior to the date such electrician or plumber begins work on such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1; P.A. 10-47, S. 2; P.A. 11-63, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009; P.A. 10-47 made a technical change in Subsec. (a); P.A. 11-63 amended Subsec. (a) by adding provision re supplemental refresher training course for plumbers and electricians subject to Sec. 20-334d, amended Subsec. (c) by adding provisions re regulations and subject matter of refresher training course and refresher training course student completion cards, and made technical changes, effective July 1, 2011.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders -** operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9) -** operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

Sec. 31-55a. Annual adjustments to wage rates by contractors doing state work. Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

(P.A. 02-69, S. 1.)

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

Construction Manager at Risk/General Contractor/Prime Contractor

I,_____of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signed

Subscribed and sworn to before me this _____ day of _____,_____.

_____
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

12/9/2013 *IF REQUIRED
WWS-CP1

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such person is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

_____	_____	_____
(Signature)	(Title)	Submitted on (Date)

*****THIS IS A PUBLIC DOCUMENT*****
*****DO NOT INCLUDE SOCIAL SECURITY NUMBERS*****

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:
Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

*IF REQUIRED

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine *"job classification"* on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- ***ASBESTOS WORKERS***

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- ***ASBESTOS INSULATOR***

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- ***BOILERMAKERS***

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- ***BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS***

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- ***CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS***

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

• The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

• If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

• An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- ***ELECTRICIANS***

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- ***ELEVATOR CONSTRUCTORS***

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ***License required by Connecticut General Statutes: R-1,2,5,6.***

- ***FORK LIFT OPERATOR***

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- ***GLAZIERS***

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- ***IRONWORKERS***

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- ***INSULATOR***

• Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- ***LABORERS***

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- ***PAINTERS***

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- ***LEAD PAINT REMOVAL***

• Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

• Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- ***PLUMBERS AND PIPEFITTERS***

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- ***POWER EQUIPMENT OPERATORS***

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- ***ROOFERS***

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- ***SHEETMETAL WORKERS***

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- ***SPRINKLER FITTERS***

Installation, alteration, maintenance and repair of fire protection sprinkler systems. ***License required per Connecticut General Statutes: F-1,2,3,4.***

- ***TILE MARBLE AND TERRAZZO FINISHERS***

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ***License required, drivers only, per Connecticut General Statutes.***

For example:

• Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
• Hauling material off site is not covered provided they are not dumping it at a location outlined above.
• Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➢ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6790.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

⇨ Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

Minimum Rates and Classifications
for Building Construction

ID#: 23-50739

Connecticut Department of Labor
Wage and Workplace Standards

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: Project Town: Waterbury
State#: FAP#:
Project: Bleacher Replacement at Kennedy High School and Wilby High School

CLASSIFICATION	Hourly Rate	Benefits
1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**		
1c) Asbestos Worker/Heat and Frost Insulator	45.56	32.65
2) Boilermaker	45.21	29.05
3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	39.4	34.62 + a
3b) Tile Setter	37.1	30.52
3c) Tile and Stone Finishers	30.0	25.30
3d) Marble & Terrazzo Finishers	31.07	24.23
3e) Plasterer	42.77	29.63

As of: September 10, 2023

------LABORERS------

4) Group 1: General laborers, carpenter tenders, concrete specialists, wrecking laborers and fire watchers.	33.5	25.59
4) Group 1a: Acetylene Burners (Hours worked with a torch)	34.5	25.59
4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofer/mixer/nozzleman (Person running mixer and spraying fireproof only).	33.75	25.59
4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	34.0	25.59
4c) **Group 4: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license) (the pipelayer rate shall apply only to one or two employees of the total crew who primary task is to actually perform the mating of pipe sections) P6 and P7 rate is $26.80.	34.5	25.59
4d) Group 5: Air track operator, sand blaster and hydraulic drills.	34.25	25.59
4e) Group 6: Blasters, nuclear and toxic waste removal.	36.5	25.59
4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped).	36.5	25.59
4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew.	31.78	25.59
4h) Group 9: Top men on open air caisson, cylindrical work and boring crew.	31.24	25.59
4i) Group 10: Traffic Control Signalman	20.1	25.59

As of: September 10, 2023

4j) Group 11: Toxic Waste Removers A or B With PPE	36.5	25.59
5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	37.61	27.61
5a) Millwrights	38.02	28.41
6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	43.4	32.07+3% of gross wage
7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	61.42	37.335+a+b
-----LINE CONSTRUCTION----		
Groundman	26.5	6.5% + 9.00
Linemen/Cable Splicer	48.19	6.5% + 22.00
8) Glazier (Trade License required: FG-1,2)	41.18	24.55 + a
9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	42.37	40.02 + a
----OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone; Hoisting Engineer (2 drums or over). (Trade License Required)	52.78	27.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and Over	48.37	27.80 + a

As of: September 10, 2023

Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	52.41	27.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	51.51	27.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer)	48.0	27.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Finegrade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	47.1	27.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper); Goldhofer.	46.64	27.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Spreader, Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24 mandrel).	45.92	27.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	45.92	27.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	45.55	27.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under mandrel).	45.14	27.80 + a
Group 8: Mechanic; Grease Truck Operator; Hydroblaster; Barrier Mover; Power Stone Spreader; Welding; Work Boat Under 26 ft.; Transfer Machine; Rigger Foreman.	44.67	27.80 + a
Group 9: Front End Loader (under 3 cubic yards); Skid Steer Loader regardless of attachments; (Bobcat or Similar); Forklift, Power Chipper; Landscape Equipment (including Hydroseeder); Vacuum Excavation	44.14	27.80 + a

As of: September 10, 2023

Truck and Hydrovac Excavation Truck (27 HG pressure or greater).		
Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	41.69	27.80 + a
Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	41.69	27.80 + a
Group 12: Wellpoint Operator.	41.61	27.80 + a
Group 13: Compressor Battery Operator.	40.92	27.80 + a
Group 14: Elevator Operator; Tow Motor Operator (solid tire no rough terrain).	39.54	27.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	39.06	27.80 + a
Group 16: Maintenance Engineer.	38.28	27.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator; Portable Grout Plant Operator; Portable Water Filtration Plant Operator.	43.46	27.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (Minimum for any job requiring a CDL license); Rigger; Signalman.	40.54	27.80 + a
------PAINTERS (Including Drywall Finishing)------		
10a) Brush and Roller	37.62	24.55
10b) Taping Only/Drywall Finishing	38.37	24.55

As of: September 10, 2023

10c) Paperhanger and Red Label	38.12	24.55
10e) Blast and Spray	40.62	24.55
11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	48.28	35.50
12) Well Digger, Pile Testing Machine	37.26	24.05 + a
Roofer: Cole Tar Pitch	44.5	23.30 + a
Roofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	43.0	23.30 + a
15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	41.89	43.22
16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	48.28	35.50
------TRUCK DRIVERS------		
17a) 2 Axle, Helpers	32.16	30.51 + a
17b) 3 Axle, 2 Axle Ready Mix	32.27	30.51 + a
17c) 3 Axle Ready Mix	32.33	30.51 + a
17d) 4 Axle	32.39	30.51 + a
17e) 4 Axle Ready Mix	32.44	30.51 + a

As of: September 10, 2023

17f) Heavy Duty Trailer (40 Tons and Over)	34.66	30.51 + a
17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	32.44	30.51 + a
17h) Heavy Duty Trailer up to 40 tons	33.39	30.51 + a
17i) Snorkle Truck	32.54	30.51 + a
18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	47.55	32.27 + a
19) Theatrical Stage Journeyman	25.76	7.34

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.*

***Note: Hazardous waste premium $3.00 per hour over classified rate*

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

As of: September 10, 2023

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: September 10, 2023

As of: September 10, 2023

Revised 10/18/23

THE CITY OF WATERBURY

Bleacher and Bench Replacement at Two Schools
RFP #7829

PROPOSAL FORM

ATTACHMENT F continued…

RFP 7829 BLEACHER AND BENCH REPLACEMENT AT TWO SCHOOLS			
Item	**Description**	**Amount (In Numbers)**	**Amount (In Words)**
1	**Demo and Removal of existing Kennedy Natatorium Bleachers**	**$** 6,000.00	Six Thousand Dollars
2	**Installation of new telescopic bleacher system Kennedy Natatorium**	**$** 99,875.00	Ninety Nine Thousand Eight Hundred Seventy Five Dollars
3	**Removal and Diposal of existing wood seating planks from concrete bases for bleachers at Wilby Natatorium**	**$** 7,715.00	Seven Thousand Seven Hundred and Fifteen Dollars
4	**Installation of new seating planks (PVC) at Wilby Natatorium**	**$** 44,469.00	Forty Dour Thousand Four Hundred and Sixty Nine Dollars
5	**Removal and Disposal of wooden seating planks from Wilby Locker rooms (2) benches**	**$** 2,860.00	Two Thousand Eight Hundred and Sixty Dollars
6	**Installation of new seating planks (PVC) in Wilby Locker rooms (2)**	**$** 4,507.00	Four Thousand Five Hundred and Seven Dollars
GRAND TOTAL (Proposal Items 1 through 6):			
In words: One Hundred Sixty Five Thousand Four Hundred and Twenty Six Dollars			**(In $)** $165,426.00

Deduct to eliminate Friction Power on telescopic bleachers at Kennedy Natatorium: ($4,200.00)

John C Collins

END OF ATTACHMENT F

#13

WATERBURY
PUBLIC SCHOOLS

Nicholas J. Albini
Chief Operating Officer
(203) 346-2340
nalbini@waterbury·k12·ct·us

EXECUTIVE SUMMARY

DATE: November 24, 2023

TO: Honorable Board of Education Commissioners
Honorable Board of Aldermen Members

FROM: Nicholas J. Albini, Chief Operating Officer

RE: Construction Contract for HVAC Replacement at Crosby High School/Wallace Middle School Complex (RFP#7815) with Sarracco Mechanical Services, Inc.

The Education Department respectfully requests your review and approval of a construction contract for HVAC Replacement at Crosby High School and Wallace Middle School Complex in the total amount of $11,250,000 which includes a base amount of $11,113,500 and an owner-controlled contingency of $136,500 for work requested and approved by the Education Department under the scope. The contract was initiated under the Request for Proposal #7815 in which three responses were received with Sarracco Mechanical Services, Incorporated deemed the most qualified. This Agreement is subject to minor, non-substantive changes to be approved by the Office of the Corporation Counsel.

The project consists of complete replacement of HVAC equipment at the Bergin Complex (Crosby High School and Wallace Middle School), including controls, wiring, and chiller delivery coordination. The project is being funded through the American Rescue Plan Act/Elementary and Secondary Schools Emergency Relief funds (ARPA/ESSER). All services will be completed by December 31, 2024. Sarracco Mechanical Services, Incorporated has performed satisfactory in the past on City projects.

The Education Department will have a representative present at your upcoming meetings to answer any questions you may have regarding this matter. Thank you for your continued assistance on this matter.

c: Dave Heavener, Mike Konopka

Construction Contract for HVAC Replacement at Crosby High School and Wallace Middle School between City of Waterbury And Sarracco Mechanical Services, Inc.

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the **CITY OF WATERBURY**, City Hall, 235 Grand Street, Waterbury, Connecticut (the "City") and **SARRACCO MECHANICAL SERVICES, INC.**, located at 61 Mattatuck Height Road, Waterbury, Connecticut, a duly registered Connecticut corporation (the "Contractor").

WHEREAS the Contractor submitted a bid to the City in response to **Request for Proposal ("RFP") No. 7815** for HVAC replacement at Crosby High School and Wallace Middle School (the "Project"); and

WHEREAS the City accepted the Contractor's bid for **RFP No. 7815**; and

WHEREAS the City desires to obtain the Contractor's services for the Project pursuant to the terms set forth in this Contract.

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with (i) all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and (ii) generally accepted professional standards.

1.1. The Project consists of performing HVAC replacement for the system serving Crosby High School and Wallace Middle School at 300 Pierpont Road, respectively, in Waterbury, Connecticut, all as more particularly detailed and described in the Bid Documents in **Attachments A, B** (referred to in 1.1.5 below) and **C** (referred to in 5.1 below) are hereby made material provisions of this Contract. in **Attachment A** and which are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the

Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 City's **RFP No. 7815**, incorporated by reference;

1.1.2 Addendums 1 through 7 to **RFP No. 7815** (attached hereto);

1.1.3 Contractor's Price Proposal (revised), dated November 22, 2023, consisting of 2 pages (attached hereto);

1.1.4 Contractor's Response with associated attachments to **RFP No. 7815**, dated October 25, 2023, consisting of 86 pages (attached hereto);

1.1.5 All applicable Federal, State and local statutes, regulations charter and ordinances, including but not limited to the American Rescue Plan Act of 2021 ("**ARPA**"), Elementary and Secondary School Emergency Relief Supplemental Appropriations Act of 2021 signed into law December 27, 2020 ("**ESSER**") and/or American Rescue Plan Elementary and Secondary School Emergency Relief Fund signed into law March 11, 2021 ("**ESSER II**") are incorporated by reference, as well as **Attachment B**, titled **"CONSTRUCTION CONTRACTS - REQUIRED CONTRACT PROVISIONS – AMERICAN RESCUE PLAN ACT FUNDED PROJECTS, DATED JUNE 2021"** to the extent such provisions are applicable;

1.1.6 "City of Waterbury, Board of Education, **RFP No. 7815**, Scope of Services" (also referred to as "Technical Specifications"), which are part of the Site Map/Drawings identified in Section 1.1.7;

1.1.7 "Site Map" with List of Drawings prepared by Studio JAED, dated August 11, 2023, with project plans and specifications (see **Attachment A**, which contains the link to the Site Map);

1.1.8 State of Connecticut Prevailing Wage Schedule, dated August 23, 2023, and related information, consisting of 8 pages (attached hereto and as otherwise incorporated by reference);

1.1.9 Contractor's Certificate of Insurance (attached hereto, or otherwise incorporated by reference);

1.1.10 Contractor's Performance Bond (attached hereto, or otherwise incorporated by reference);

1.1.11 Contractor's Payment Bond (attached hereto, or otherwise incorporated by reference);

1.1.12 All amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.13 All applicable Federal, State and local statutes, regulations charter and ordinances (incorporated by reference); and

1.1.14 All applicable permits and licenses (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflict with any other provision therein, the provision in the component

part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically:

1.2.1 All applicable Federal, State, and local laws, regulations, charter and ordinances;
1.2.2 Amendment(s) and Change Orders;
1.2.3 This Contract;
1.2.4 Addendums to **RFP No. 7815**;
1.2.5 **RFP No. 7815** including City of Waterbury, Board of Education, **RFP No. 7815**, **Attachment A** "Scope of Services/Technical Specifications";
1.2.6 Contractor's Price Proposal;
1.2.7 Contractor's Response; and
1.2.8 Drawings.

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Consultant shall provide the City with a copy of the Consultant's licenses, certifications, registrations, etc.

2.3. ARPA/ESSER. The Contractor possesses the knowledge and understanding of **ARPA** and **ESSER** and recognizes this Project is subject to the rules, regulations and mandatory contract provisions required by it.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the schedules and attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibility to examine and to be thoroughly familiar with the City's bid document, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items, facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submittal of its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP No. 7815** (collectively, the "Bid Documents");

3.1.7. it agrees that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8. it has carefully studied all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes; and

3.1.10 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, state and federal health and safety regulations. Contractor shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall Contractor in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense (i) adequate off-site storage space for equipment, materials, incidentals, etc., and (ii) all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times; for example, a second shift from 3 p.m. to 11 p.m. may be possible. This provision shall not excuse the Contractor from timely performance under the Contract.

3.5. Cleaning Up. The Contractor shall always keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity unless the City gives prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the Contractor shall be made only with the prior written consent of an authorized representative of the City's Using Agency.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. Contractor's Employees. The Contractor shall always enforce strict discipline and good order among its employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are (i) subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or (ii) unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed; the Contractor shall thereafter wait for written instructions from the City before proceeding under such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout

work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, or necessary, or prudent for the performance of the Contractor's obligations under this Contract., and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions like those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment.

3.15. Activities, Work, and Services Performed in Department of Education Facilities, on School Grounds, at Student Sporting Events, and/or where City Students are Present. For all activities in school facilities and/or Department of Education facilities, the Contractor shall first be required to coordinate all on-site visits and activities with the appropriate Department/personnel in Education, or the designated person and shall obtain any necessary clearance, ID badges, etc. Contractor shall enter and exit all school facilities and Department of Educational facilities as designated as authorized by the appropriate Department/personnel in Education, or the designated person.

3.16. Criminal Background Check and DCF Registry Check. The Contractor shall comply with the requirements of C.G.S. 10-222 c (g) and shall ensure, and represents to the City, that any employee who will be on school grounds/Department of Education Property/at Department of Education events and/or where City students are present, that will or may have direct contact with a student's while providing services pursuant to this Agreement, has stated, in writing, whether such person has ever been convicted of a crime or whether criminal charges were ever pending against such person. The Contractor shall further ensure, and represents to the City, that any person who will have direct contact with a student has submitted to a records check of the

Department of Children and Families Child Abuse and Neglect Registry established pursuant to Conn. Gen. Stat. §17a-101k, as well as State and National criminal history records checks conducted in accordance with Conn. Gen. Stat. §29-17a, the Federal National Child Protection Act of 1993, and the Federal Volunteers for Children Act of 1998. The Contractor shall not permit any person with a disqualifying criminal history to have contact with a student. The contractor agrees the "direct contact" shall include the contractor and its employees providing services under this contract if said services are performed on school grounds/Department of Education Property/at Department of Education events and/or where City students are present.

4. Responsibilities of the City and City Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities; at the onset, KBE Building Corporation is so designated.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract **three hundred thirty-five (335) consecutive calendar days** from the City's issuance of a Notice to Proceed and shall reach Final Completion **on or before three hundred sixty-five (365) consecutive calendar days** from the City's issuance of a Notice to Proceed ("Contract Time").

5.1. Attached hereto as **Attachment C** is the Project's construction schedule. On a monthly basis, the Contractor shall deliver to the City a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages.

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor

further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **five hundred and 00/100 dollars ($500)** per consecutive calendar day for each calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damages from any monies due the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire Section 5, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for the satisfactory provision of all the goods and services set forth in this Contract as follows in this Section. No claims for additional compensation will be considered for conditions made known to the Contractor prior to bidding. No claims for additional compensation will be considered on account of the failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this Section 6, the fee payable to the Contractor shall not exceed **ELEVEN MILLION TWO HUNDRED FIFTY THOUSAND DOLLARS ($11,250,000)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Bid set forth in **Attachment A**, which is summarized below and inclusive of the required payment and performance bonds:

i. $11,113,500 (base payment); and
ii. $136,500 - **Owner Controlled Contingency As Governed By Section 6.1.1 Below**.

6.1.1 Owner Controlled Contingency. At the sole discretion and control of the City, the Contingency amount as set forth in Section 6.1(C) of this Contract shall be utilized for the payment to the Contractor for additional work not covered by this contract and requested and approved by the City in writing to be performed by the Contractor. The basis for payment for the additional work under the Contingency shall be separate and apart from the Base Payment set forth above. The Owner Controlled Contingency shall be the funding source for any City approved additional work and services not provided for in this Contract. Unless properly approved in writing by the City (see **Section 27**), Contractor shall not be entitled to any compensation from such contingency. The parties agree that a Change Order Form shall be utilized to set forth the additional services, cost of additional services and time for Contractor to provide said service.

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage of five percent (5%) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not include additional sums that the City may withhold due to the Contractor's failure to comply with the provisions of this Contract.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc, all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Vendor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP No. 7815** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final City payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all the foregoing payment obligations have been fully completed.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fees.

6.7. Attorney's Fees and Costs. The prevailing party in any litigation arising hereunder shall be entitled to attorney's fees and costs from the losing party.

6.8. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.9. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to

correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.10. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.10.1 Submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment by the City's or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment cannot be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide, at the City's request, reasonable documentation to substantiate Contractor's Application for Payment.

6.10.2 Progress and Final Payments

The City will make progress payments on account of the Contract Price based on the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be based on the progress of the Scope of Services as determined by the City, according to the schedule of values provided for in the Contract Documents and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents, subject to reasonable monetary holdback for punch list items.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i)** 365 calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees and assign same to the City and the City shall avail itself of same to the fullest extent provided by the terms thereof. The Contractor's foregoing warranty

obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. City beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon the City's final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project worksite and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project worksite without securing the prior written consent of an authorized City Using Agency employee.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, Board of Education or any of City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials by the Contractor or any employee of the Contractor ,

any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, the Board of Education, any of City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees and officials as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** 365 calendar days after the Final Completion Date referenced elsewhere in this Contract.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City and KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, always during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance: $1,000,000.00 per occurrence, **$2,000,000.00** aggregate and **$2,000,000.00** products and completed operations aggregate; providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance: **$1,000,000.00** combined single limit (CSL); providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employers' Liability:

EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance: Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances: **$5,000,000.00** each occurrence and **$5,000,000.00** aggregate.

11.4.5 Builder's Risk Insurance: coverage equaling the monetary value of the construction components of the Project, including the equipment stored at Contractor's place of business prior to installation. "All Risk" Builders Risk insurance (also know as "course of construction") coverage with limits equal to or better than the maximum possible loss of all equipment and materials of construction used or contemplated under this Contract, including all materials in transit and all materials in storage wherever stored and the value of all subsequent Contract changes. This insurance shall include the interests of the City, KBE Building Corporation, the Contractor and all subcontractors. If deemed necessary by the City's Risk Manager, this insurance shall also include coverage for the total value of the Project's constructed property and shall be valid until a certificate of occupancy is issued. Upon the issuance of said certificate, the City will assume responsibility for insuring said property.

11.4.6 Contractors Pollution Liability Insurance: $1,000,000.00 each claim and **$1,000,000.00** aggregate coverage. The foregoing per claim coverage plus appropriate aggregate coverage depending on the size of the job for contractor caused pollution events such as asbestos or lead abatement, but not limited to only these pollution causes of loss. There shall not be any exclusions under said policy for any hazardous materials, including asbestos and lead.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury and KBE Building Corporation shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: The Contractor's General, Automobile, Builder's Risk and Excess/Umbrella Liability Insurance policies shall be endorsed to add the City and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees_as an additional insured and provide waiver of subrogation on all policies except Builder's Risk and Pollution Liability. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury and its Board of Education, and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are listed as additional insured on all lines of coverage except Pollution Liability and waiver of subrogation applies to all lines of coverage except Pollution Liability and Builder's Risk as their interest may appear".** The City's Invitation to Bid Number must be shown on the certificate of insurance to assure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy(ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of than thirty (30) calendar days has been mailed to the City's Using Agency and a copy to the City's Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

11.8. No later than thirty (30) calendar days after Contractor receipt, the Contractor shall deliver to the City a copy of the Contractor's insurance policies and endorsements and riders.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: **EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT**, as supplemented in the Department of Labor Regulations (29 CFR, Part 3); **DAVIS BACON ACT** as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the **HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974**, as amended; **TITLE 31** and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn. Gen. Stat. 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.2.2 The Contractor is aware of, and shall comply with, the provisions of both the Federal Davis-Bacon Act and the Federal American Recovery and Reinvestment Act of 2009, the provisions of both acts hereby incorporated by reference and made a part of this Contract. The Federal Davis-Bacon Act provides that Federal wage rate laws apply to certain federally funded contracts. The American Recovery and Reinvestment Act ("ARRA") provides that Federal wage rate laws apply to all ARRA funded contracts regardless of the contract's dollar value.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

12.4. Compliance with CONN. GEN. STAT. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5.

12.4.1 Definitions – For purposes of this paragraph:

i. "Small contractor" means any contractor, subcontractor, manufacturer, service company or nonprofit corporation (A) that maintains its principal place of business in the state, (B) that had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year prior to such application, and (C) that is independent. "Small contractor" does not include any person who is affiliated with another person if both persons considered together have a gross revenue exceeding fifteen million dollars.

ii. "Minority business enterprise" means any small contractor (A) fifty-one per cent or more of the capital stock, if any, or assets of which are owned by a person or persons who (i) exercise operational authority over the daily affairs of the enterprise, (ii) have the power to direct the management and policies and receive the beneficial interest of the enterprise, (iii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, and (iv) are members of a minority, as such term is defined in subsection (a) of section 32-9n, or are individuals with a disability, or (B) which is a nonprofit corporation in which fifty-one per cent or more of the persons who (i) exercise operational authority over the enterprise, (ii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, (iii) have the power to direct the management and policies of the enterprise, and (iv) are members of a minority, as defined in this subsection, or are individuals with a disability.

iii. "Municipal public works contract" means that portion of an agreement entered into on or after October 1, 2015, between any individual, Contractor or corporation and a municipality for the construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, which is financed in whole or in part by the state, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees but excluding any project of an alliance district, as defined in section 10-262u, as amended by this act, financed by state funding in an amount equal to fifty thousand dollars or less.

12.4.2 The Contractor and subcontractor shall comply with the specific requirements of the State of Connecticut Set Aside Program, Conn. Gen. Stat. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5, if the municipal public works contact awarded to the Contactor is funded in whole or in part by state funds.

12.4.3 The Contactor shall be subject to the following set-aside requirements if the municipal public works contact, is funded in whole or in part by the State of

Connecticut and is more than **FIFTY THOUSAND DOLLARS ($50,000.00)**, for the construction, rehabilitation, conversion, extension, demolition, or repairing of a public building or highway, or other changes or improvements in real property.

12.4.4 Set-Aside requirements – Any contractor awarded a municipal public works contract, based on competitive bidding procedures, shall comply with the following Set –Aside requirements:

i. set aside at least twenty-five per cent (25%) of the total value of the state's financial assistance for such contract for award to subcontractors who are small contractors; and

ii. of that portion to be set aside in accordance with Subparagraph i. of this subdivision, reserve a portion equivalent to twenty-five per cent (25%) of the total value of the contract or portion thereof to be set aside for awards to subcontractors who are minority business enterprises.

12.4.5 Failure of the Contractor or subcontractor to comply with the State of Connecticut Set-Aside requirements shall be a material breach of this Contract.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as specified herein. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements, and will require the same of all subcontractors

13.3. Contractor Corrective Action.

13.3.1. Pursuant to Conn. Gen. Stat. § 4a-60, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every quasi-public agency project contract and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take corrective action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, as amended by this act, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the

employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56, as amended by this act.

(b) If the contract is a public works contract, municipal public works contract or contract for a quasi-public agency project, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works or quasi-public agency project.

13.3.2. Pursuant to Conn. Gen. Stat. § 4a-60a, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of Connecticut, and employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

14. Good Jobs Ordinance.

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific

requirements of "An Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance, and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as

its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term "Good Faith Efforts" shall have the same meaning as it does in the Good Jobs Ordinance.

The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan-of-action shall include the anticipated number of job positions required for the Work. Not later than five (5) business days prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-action and other relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the

Contractor shall ensure that all Subcontractor contracts and agreements expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2 Liquidated Damages Applicable To Section 14.1.

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five-day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due to the City, as liquidated damages, because of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated hereunder to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Place Holder.

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation and disbursement of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City if sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. Regarding third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third-party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, one or all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City's Using Agency, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control the activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing, made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any

such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract at any time during the period of this Contract or at any time during the twelve-month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional costs or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request.

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance:

(i) withdraw its change request; or, **(ii)** modify its change request, in which case the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP No. 7815** and **(ii)** the Contractor's Bid response to **RFP No. 7815**, dated October 25, 2023. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party because the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that it waives a trial by jury as to any and all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor:	Sarracco Mechanical Services, Inc. 61 Mattatuck Heights Road Waterbury, CT 06705
City:	City of Waterbury City Hall 235 Grand Street Waterbury, CT 06702
With a copy to:	Office of Corporation Counsel City Hall 235 Grand Street Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the

City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10 The Contractor hereby acknowledges receipt of a copy of the Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on **"TITLE III: ADMINISTRATION",** then click **on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM"**. For Chapter 39, click on **"TITLE III: ADMINISTRATION"**, then click on **"CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"**].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1 Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2 Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3 Bidder: A person, partnership, corporation or other business organization submitting a bid on the form for the Work contemplated.

35.4 City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5 Construction Supervisor: An employee of the City of Waterbury, or other City duly authorized person – initially KBE Building Corporation.

35.6 Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion, (ii) Final Completion.

35.7 Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8 Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized City representative's, written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9 Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.10 Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11 Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.12 Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13 Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14 Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15 Substantial Completion: The time at which, in the opinion of the Engineer, the Project (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Project (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Project mean Substantial Completion thereof.

35.16 Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17 Supplementary General Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18 Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19 Using Agency: School Inspector's Office, Department of Education.

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

_____

_____

CITY OF WATERBURY

By: _____
Neil M. O'Leary, Mayor

Date: _____

WITNESSES:

_____

_____

SARRACCO MECHANICAL SERVICES, INC.

By: _____
Jamie Sarracco, President

Date: _____

ATTACHMENT A

ATTACHMENT B

ATTACHMENT C

REQUEST FOR PROPOSAL NO. 7815
BY
THE CITY OF WATERBURY
DEPARTMENT OF EDUCATION
FOR
CROSBY HIGH SCHOOL AND WALLACE MIDDLE SCHOOL
HVAC EQUIPMENT REPLACEMENT

Pursuant to this request for proposal ('RFP"), the City of Waterbury, Department of Education (the "City" or "BOE"), is seeking proposals from third parties ("proposers" or "contractors") for the replacement of HVAC equipment for the schools listed below (the "Project") with the intention of entering into a contract for the furnishing of all labor, materials, tools, and equipment necessary to execute and properly finish the Project, as detailed and described herein:

- Crosby High School/Wallace Middle School

Please find the link to all pertinent documents (drawings and specifications for the work.):

Crosby High School & Wallace Middle School HVAC Replacement Bid Documents

A. Background and Intent

The City is seeking to engage and contract with a qualified contractor to provide all required labor, material and equipment necessary for HVAC replacement at Crosby High School/Wallace Middle School complex.

The BOE is the recipient of Secondary School Emergency Relief ("ESSER") funds being administered through the Connecticut State Department of Education. The BOE anticipates a portion of the ESSER funding will be appropriated by the Board of Education for the Project and the successful proposer must be familiar with the laws and regulations governing use of such funds.

8. Qualifications

Eligible proposers will be those contractors, consultants, businesses, and institutions that have the following qualifications:

1. Experience and expertise in regard to providing the types of, or similar services, as those set forth in the Scope of Services. Provide a minimum of three (3) examples of projects by which the proposer believes satisfies this qualification.
2 Experience on school construction projects of similar scope and technical requirements within the last five (5) years. Specifically, experience working with the CT Department of Administrative Services, Office of School Construction Grants and Review (OSCG&R) and a thorough understanding of policies and procedures with school construction grants.
3. A proven track record in providing these types of or similar services in the Connecticut municipal market and understanding of standards and requirements typical for such services.
4. Adequate staff/employees to perform/complete the work in a timely manner.

5. Knowledge of, and compliant with, all applicable federal and state laws and regulations governing the services to be provided under this RFP.
6. At the time of contract award has or will have sufficient capacity, facilities, equipment, labor, financial capability, and experience to provide all services required hereunder throughout the Contract Term, plus any extensions thereof, and to conduct all such services in a regulatory-compliant and reliable manner.
7. Provide a minimum of three (3) examples of projects by which the proposer believes satisfies the above qualifications.

C. Scope of Services

I. Scope of Project

1. **Project - Complete HVAC Replacement at Crosby High School/Wallace Middle School, as required by the contract documents, included but not limited to the following:**

   a. All General Requirements;
   b. All Asbestos Abatement;
   c. All Demolition;
   d. All Masonry;
   e. All Metals;
   f. All Thermal and Moisture Protection;
   g. All Openings;
   h. All Finishes;
   1. All Heating, Ventilation and Air Conditioning; and
   j. All Electrical.
2. Tracing of all control and power wiring for the existing control wiring and BAS control system and cut, cap and remove as required for new work.
3. Removal and legal disposal of all packing materials, crating and other materials used for delivery and installation.
4. Repair, clean, and turn over all impacted existing to remain areas to proper functioning condition
5. All warranty, close-out, commissioning, or maintenance of equipment as indicated in drawings and specifications.

D. Agreement Period

The agreement period for any contract or purchase order resulting from this RFP is anticipated to be one (1) year.

E. Insurance

The respondent shall provide insurance as set for in **Attachment D** provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-"Best's Rating and at least a Class V3 or better financial category as shown in the most current A.M.

Best Company rating.

F. General Information

1. The City is an Equal Opportunity and Affirmative Action employer and does not discriminate in its hiring, employment, or business practices. The City is committed to complying with the Americans with Disabilities Act of 1990 (ADA) and does not discriminate on the basis of disability in admission to, access to, or operation of its programs, services, or activities.

2 **There will be a <u>Mandatory Information Session</u> with respect to this RFP on September 12, 2023 at 10:00 am, starting at Crosby High School. ATTENDANCE AND ON-TIME SIGN-IN AT BOTH LOCATIONS OF THE INFORMATION SESSION IS MANDATORY. THOSE LATE/NOT ATTENDING WILL NOT BE ELIGIBLE TO SUBMIT A PROPOSAL.**

List of Schools:	
Crosby High School/Wallace Middle School	300 Pierpont Rd

3. Proposers must sign the items and any forms included in **<u>Attachment A</u>** - Contract Compliance Packet.

4. All questions and communications about this request for Proposal and submission requirements must be directed to the City of Waterbury ProcureWare website and must be received **by 2:00 pm on September 14, 2023.** Prospective proposers must limit their contact regarding this RFP to the Purchasing Director or such other person otherwise designated by the Purchasing Director. Responses to questions submitted by the above date or identified at any Information Session to be held in regard to this RFP, **along with any changes or amendments to this RFP,** will be available via the City of Waterbury ProcureWare website **by 2:00 pm on September 18, 2023.** It shall be the responsibility of the proposer to download this information. If you have any procedural questions in this regard, please call the Purchasing Director at (203) 574-6748.

G. Management

Any contract or purchase order resulting from this RFP will be managed by The City of Waterbury School Inspector's Office and KBE Building Corporation.

H. Conditions

All those submitting proposals must be willing to adhere to the following conditions and must positively state this in the proposal:

1. All proposals in response to this RFP are to be the sole property of the City. Proposers are encouraged **not** to include in their proposals any information which is proprietary. All materials associated with this procurement process are subject to the terms of state laws defining freedom of information and privacy and all rules, regulations and

interpretations resulting from those laws.

2 Any product, whether acceptable or unacceptable, developed under a contract awarded as a result of the RFP is to be the sole property of the City.

3. The City will ultimately determine the timing and sequence of events resulting from this RFP.

4. The proposer agrees that the proposal will remain valid for a period of **90 days** after the closing date for the submission and may be extended beyond that time by mutual agreement.

5. The City may amend the terms or cancel this RFP any time prior to the execution of a contract or purchase order for these services if the City deems it to be necessary, appropriate or otherwise in the best interests of the City. Failure to acknowledge receipt of amendments in accordance with the instructions contained in the amendments; may result in a proposal not being considered. At his option, the City's Director of Purchasing may provide all proposers with a limited opportunity to remedy any technical deficiencies identified by the City in their initial review of proposals.

6. The proposer must certify that the personnel identified in its response to this RFP will be the persons actually assigned to the Project. Any additions, deletions or changes in personnel from the proposal during the course of the agreement period must be approved by the City, with the exception of personnel who have terminated employment. Replacements for personnel who have terminated employment are subject to approval by the City. At its discretion, the City may require the removal and replacement of any of the proposer's personnel who do not perform adequately, regardless of whether they were previously approved by the City.

7. All subcontractors hired by the proposer awarded a contract or purchase order as a result of this RFP must have prior approval from the City prior to and during the agreement period.

8. Any costs and expenses incurred by proposers in preparing or submitting proposals are the sole responsibility of the proposer.

9. A proposer must be prepared to present evidence of experience, ability, financial standing, and any other information deemed necessary by the City to satisfactorily meet the requirements set forth or implied in the proposal.

10. No additions or changes to the original proposal will be allowed after submittal, except as may be allowed by the City, at its option, in accordance with Section G.5. of this RFP. While changes are not permitted, clarification of proposals may be required by the City at the proposer's sole cost and expense. The final price and scope of services of any contract or purchase order resulting from this RFP may be negotiated with responsible proposers.

11. The proposer may be required to give presentations to the extent necessary to satisfy

the City's requirements or needs. In some cases, proposers may have to give presentations or further explanations to any RFP selection committee established by the City.

12 The proposer represents and warrants that the proposal is not made in connection with any other proposer and is in all respects fair and without collusion or fraud. The proposer further represents and warrants that it did not participate in any part of the RFP development process, had no knowledge of the specific contents of the RFP prior to its issuance and that no agent, representative or employee of the City participated directly in the proposer's proposal preparation.

13. All responses to the RFP must conform to instructions. Failure to include any required signatures, provide the required number of copies, to meet deadlines, answer all questions, follow the requested format or fail to comply with any other requirements of this RFP may be considered appropriate cause for rejection of the response.

14. The proposer must accept the City's standard agreement language. **See Attachment 8.**

15. Any contract or purchase order resulting from this RFP process will represent the entire agreement between the proposer and the City and will supersede all prior negotiations, representations, or agreements, alleged or made, between the parties. The City shall assume no liability for payment of services under the terms of the contract or purchase order until the successful proposer is notified that the contract or purchase order has been accepted and approved by the City. Any contract resulting from this RFP may be amended only by means of a written instrument signed by the proposer and signed by the Mayor.

I. Proposal Requirements & Required Format

One original (clearly identified as such) and **five (5)** paper copies of the proposal, as well as a copy of the original proposal in pdf format on a CD or flash drive, must be received at the following address no later than **11:00 a.m. on September 25, 2023. Proposals received after that time shall not be considered.**

Mr. Kevin Mccaffery,
Director of Purchasing
City of Waterbury
235 Grand Street
Room 103
Waterbury, CT 06702

Proposals submitted must be bound, paginated, indexed and numbered consecutively. Proposers shall complete **Attachment C** addressed to Mr. McCaffery, which, in part, includes a statement by the proposer accepting all terms and conditions and requirements contained in the RFP, and which shall be signed by a duly authorized official of the organization submitting the proposal. In **Attachment C,** proposers shall also, as indicated

in **Attachment C,** identify the name of a contact person, along with their telephone number, email address, if applicable, and address, who can be contacted for the purpose of clarifying the information contained in their response to this RFP. In addition to any other information required in **Attachment C,** proposers shall provide their firm's authorization and a request to any persons, firm, or corporation to furnish any information requested by the City of Waterbury in the verification of the recitals included in its response to this RFP.

Proposals must set forth accurate and complete information for each of the items listed below. At the City's discretion, failure to do so could result in disqualification.

1. Proposer's Information: Please provide the following information:
   a. Firm Name;
   b. Permanent main office address;
   c. Date firm organized;
   d. Legal Form of ownership. If a corporation, indicate where incorporated.
   e. How many years have you been engaged in services you provide under your present name?; and
   f. Names, titles, reporting relationships, and background and experience of the principal members of your organization, including officers.

2. Experience, Expertise and Capabilities
   a. Philosophy Statement and Business Focus. A statement of the proposer's philosophy and approach in undertaking the services of the nature outlined in the RFP, as well as a description of its primary business focus.
   b. Summary of Relevant Experience. A listing of all projects that the proposer has completed within the last three (3) years must be provided, as well as all projects of a similar nature to those included in the Scope of Services in this RFP. The following information shall be provided for each organization listed under this subsection:

      - Organization name and the name, title, address and telephone number of a responsible contact person.
      - Nature of services provided and dates services started and actually completed. Please indicate, for each assignment, if it was completed within the original contract timeframe and budget. If not, please explain.
      - For each Project done for a municipality or other government agency, please indicate the gross cost of the agreement; and
      - Additionally, please list any contracts or purchase orders in the last three (3) years between the proposer and any agency of the City of Waterbury.

   c. Personnel Listing. A complete listing of the staff identified in the work plan by job classification, along with their resumes. Each resume shall include the individual's qualifications and experience in the subject area.
   d. Conflict of Interest. Disclose any current (within the last 3 years) business, financial, personal or other types of relationships which may pose a conflict of interest.

3. Statement of Qualifications and Work Plan

   a. Qualifications. Please describe your firm's qualifications, experience and capabilities as they pertain to each of the areas of qualifications listed, as well as those of the personnel to be assigned to this Project.
   b. Work Plan. Please describe the approach that would be generally followed in undertaking the Scope of Services in Section C above.
   c. Services Expected of the City. Identify the nature and scope of the services that would be generally required of the City in undertaking these projects.

4. Cost Schedule. Proposals shall include a single price for work to be performed in accordance with this RFP, inclusive of all personnel and non-personnel expenses. This price should encompass the entire Scope of Services in this RFP. The City reserves the right to negotiate costs, the scope of services, and key personnel based on provider proposals. In order for the City to evaluate the proposed cost, proposers must include each element in the Work Plan outlined in Section H.3.b. above, the staff, hours, hourly rates and the total cost. Include details generally associated with non-personnel costs as an additional cost section.

   Since the City may desire to consider the proposer's experience, qualifications, statement of work, and other aspects of the RFP prior to the Cost Proposal, the Cost Proposal shall be sealed in a separate envelope marked "Confidential: Cost Proposal".

   Note: The City is exempt from the payment of excise, transportation and sales taxes imposed by the Federal Government and/or the State. Such taxes must not be included in prices.

5. Information Regarding: Failure to Complete Work, Default and Litigation.

   Please respond to the following questions:

   a. Have you ever failed to complete any work awarded to you? If so, where and why?;
   b. Have you ever defaulted on a contract? If so, where and why?;
   c. Is there any pending litigation which could affect your organization's ability to perform this agreement? If so, please describe;
   d. Has your firm ever had a contract terminated for cause within the past five years? If yes, provide details;
   e. Has your firm been named in a lawsuit related to errors and omissions within the past five years? If yes, provide details;
   f. During the past seven years, has your firm ever filed for protection under the Federal bankruptcy laws? If yes, provide details; and
   g. Are there any other factors or information that could affect your firm's ability to provide the services being sought about which the City should be aware?

6. Exceptions and Alternatives. Proposers wishing to take any exceptions to any requirement in the RFP shall state and explain such exceptions. The City may accept proposals which take exception to any requirements in this RFP, or which offer any alternative to a requirement herein, as well as consider such exceptions and

alternatives in evaluating responses. Any exception or alternative must be clearly delineated and cannot materially affect the substance of this Request for Proposals.

7. Additional Data. Any additional information which the proposer wishes to bring to the attention of the City that is relevant to this RFP.

J. Evaluation of Proposals; Selection Process

1. Evaluation Criteria

The following criteria are expected to be among those utilized in the selection process. They are presented as a guide for the proposer in understanding the City's requirements and expectations for this Project and are not necessarily all inclusive or presented in order of importance.

a. Proposed statement of work. Emphasis will be on grasp of the issues involved, soundness of approach and the quality of the overall proposal.
b. Proposed cost schedule.
c. Experience, expertise, and capabilities of the proposer. Background, qualifications, and previous experience of personnel to be assigned to the Project and their demonstrated competence, experience and expertise in the type of work to be performed. The type of experience, expertise, capabilities, and qualifications desired are outlined in Section B. - Qualifications of this RFP. The City may contact one or more of the organization references listed in Section H.2.b. of this RFP as part of assessing the experience, expertise and capabilities of the proposers or those selected as the finalist(s).
d. Time, Project and Cost Schedule. Emphasis will be on the proposer's record with completing tasks and producing the necessary products within required time frames and within budget.

2. Selection Process

The City of Waterbury may elect to have the proposals evaluated by a committee as part of making a selection. If deemed necessary, the City reserves the right to arrange for interviews/oral presentations as part of the selection process, which invitations for interviews may involve a short-listing of the proposals received.

K. Rights Reserved To The City

The City reserves the right to award in part, to reject any and all proposals in whole or in part for any reason, including misrepresentation, or if the proposer is in default of any prior City contract, or if the proposal limits or modifies any of the terms and conditions and/or specifications of the RFP. The City also reserves the right to waive technical defects, irregularities and omissions if, in its judgment, the best interest of the City will be served.

L. Federal, State and Local Employment Requirements

Contractors shall be obligated to fully comply with the attached Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects, i.e., City of Waterbury Ordinances Chapter 34 ("Good Jobs Ordinance"), Federal Davis- Bacon Act, Federal American Recovery and Reinvestment Act of 2009, and the Housing and Urban Development Section 3 Clause, all as further specified in the attached City of Waterbury Contract form. Also attached hereto, is a full copy of the aforesaid City of Waterbury Ordinance, commonly referred to as the "Good Jobs Ordinance":

1. The City's Good Jobs Ordinance (Code of Ordinances Chapter 34) applies to this Project. Proposes attention is further directed to the aforesaid City of Waterbury Ordinance, commonly referred to as the "Good Jobs Ordinance," attached hereto as **Attachment 8-1** and

2. Wage rates for this Project are subject to the minimum wage rates as per State of Connecticut Labor Department "Prevailing Wage Rates" and Federal Davis-Bacon Act.

M. State Set-Aside Requirements - Not Applicable.

The contractor who is selected to perform this municipal public works project, funded in whole or part by the State, must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a- 60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5. An Affirmative Action Plan must be filed with and approved by the Commission on Human Rights and Opportunities prior to the commencement of construction.

State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g, as amended. (25% of the work with DAS-certified Small and Minority owned businesses, and 25% of that work with DAS-certified Minority, Women and/or Disabled owned businesses.) The contractor must demonstrate good faith effort to meet the 25% set-aside goals.

For municipal public works contracts, the contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities.

Forms can be found at:
**********.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806.

N. State DAS Requirements for Construction Projects - Not Applicable.

If applicable, proposers shall submit with their Proposals their DAS Contractor Prequalification Certificate along with a current Updated Bid/Proposal Statement. In addition, any named subcontractor whose subcontract value is equal to or greater than $500,000 shall hold a current DAS Contractor Prequalification Certificate in the closest applicable Classification of the work that the subcontractor will complete in the contract. The proposer must submit, with their proposal, all applicable Subcontractor DAS Prequalification certificates. Any Proposal submitted without a copy of the DAS Prequalification Certificate and an Updated Bid/Proposal

Statement for the proposal and DAS Prequalification Certificates for subcontractors whose subcontract value is equal to or greater than $500,000 shall be invalid.

The successful proposer and each of its subcontractors having subcontracts in value equal to or greater than $500,000 shall maintain and keep current their respective DAS Contractor Prequalification Certificates at all times during the term of the Contract and any warranty period set forth in the Contract Documents.

0. Bid Bond

Each proposal shall be submitted and be accompanied by a Proposal Security in the amount of ten (10) percent of the Total Proposal Price.

P. Performance/Payment Bonds

The proposer to whom a contract is offered must furnish to the City if that contract has a total cost greater than $50,000.00, a 100 percent Performance Bond with a surety, and in a form acceptable to the City. In the City's sole discretion, it may also require a 100 percent Payment Bond and/or other additional security with a surety and in a form acceptable to the City.

Q. ARPA/ESSER Required Contract Provisions

This Contract pertains to a project funded in whole or in part, under the American Rescue Plan Act, Pub. L. No. 117-2 (March 11, 2021) and/or under the Elementary and Secondary School Emergency Relief Supplemental Appropriations Act of 2021 signed into law December 27, 2020 (ESSER II Fund) and/or American Rescue Plan Elementary and Secondary School Emergency Relief Fund signed into law March 11, 2021. Contractor is required to comply with all applicable Federal statutes, executive orders, regulations, rules and interpretive guidance issued by the U.S. Treasury Department, U.S. Office of Management and Budget or any other Federal agency. This Contract is subject to 2 C.F.R. Part 180 0MB Guidelines to Agencies on Government Debarment and Suspension and the U.S. Treasury's implementing regulations set forth at 31 C.F.R. Part 19 Government Debarment and Suspension.

R. Prevailing Wages

Proposers are advised that prevailing wage rates apply to this Project. The minimum rates to be paid labor of the various classifications shall be in accordance with the prevailing rate of wages established by the U.S. Department of Labor and the Connecticut Department of Labor. Because of the application of both Federal and State wage laws to this Project, the contractor should be aware that the contractor will be obligated to certify payrolls and issue compliance statements in accordance with both federal and state procedural requirements. Furthermore, the contractor and all subcontractors shall be responsible for paying the higher of the applicable federal prevailing wages and the applicable State prevailing wages. Connecticut prevailing wages shall be paid if the prevailing wages applicable to the Work under Connecticut prevailing wage laws are equal to or greater than the prevailing wages applicable to the Work under Federal prevailing wage laws. Proposers' attention is directed to the attached wage rate schedules and documentation included in the RFP **(Attachment F).**

Five (5) Attachment A Documents

- ANNUAL STATEMENT OF FINANCIAL INTEREST
- DEBARMENT CERTIFICATION
- CITY OF WATERBURY DISCLOSURE OF OUTSTANDING OBLIGATIONS
- CORPORATE RESOLUTION
- LLC RESOLUTION

One (1) Attachment B Document

- SAMPLE CONTRACT
- AMERICAN RESCUE PLAN ACT FUNDED PROJECTS, DATED JUNE 2021

One (1) Attachment C Document

- ADDENDUM/CERTIFICATION/NOTICE OF ACCEPTANCE

One (1) Attachment D Document

- INSURANCE REQUIREMENTS

One (1) Attachment E Document

- PRICING SHEET

One (1) Attachment F Document

- PREVAILING WAGES

One (1) Attachment G Document

- GOOD JOBS ORDINANCE

ATTACHMENT A

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

I. Outstanding Purchase Orders of Contracts with the City

A. Contracts

No Contracts with the City ☐

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

(Service or Commodity Covered by Contract)

(Term of Contract)

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

B. Purchase Order(s).

No Purchase Order(s) with the City ☐

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

(Service or Commodity Covered by Purchase Order)

(Date of Purchase Order)

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 202__)
Persons or Entities Conducting Business with the City

II. Financial Interest Disclosure

(Public Officials, Employees or Board and Commission Members with interest in Person or Entity Conducting Business with the City)

No Officials, Employees or Board and Commission Members with Financial Interest ☐

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc…)

Interest Held By:
Self ☐ Spouse ☐ Joint ☐ Child ☐

(Name of Official)

(Position with City)

(Nature of Business Interest)
(e.g. Owner, Director etc…)

Interest Held By:
Self ☐ Spouse ☐ Joint ☐ Child ☐

1. I certify that this Annual Statement of Financial Interests is a complete and accurate statement of those matter required to be disclosed by me pursuant to §39.061 of the Code of Ordinances.

2. I understand that if I fail to file an Annual Statement (or amendment thereto) or an inaccurate Statement I will be in violation with Chapter 39 of the Code of Ordinance and, thereby, subject to the remedies set forth in §§38.71 and 39.101 of said Code.

3. I understand that I must file with the City Clerk, within fifteen (15) days following any reportable occurrence, any amendments to the Annual Statement.

I have read and agree to the above certification.

_____
(Name of Company, if applicable)

_____ _____
Signature of Individual (or Authorized Signatory) Date

_____
Print or Type Name and Title (if applicable)

DELIVERED | By Mail ☐ Hand-Delivered ☐

City of Waterbury Certification
Regarding
Debarment, Suspension, Ineligibility and Exclusion

If the transaction is Federally funded, in whole or in part (including pass through grants to state and/or municipal government), this certification is required by the regulations implementing one or more Presidential Executive Orders. If this transaction is funded by the State of Connecticut, in whole or in part, this certification is required in accordance with one or more State of Connecticut general statutes.

1. By signing and submitting the attached proposal and/or this document, the prospective lower tier participant, vendor, or contractor is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant, vendor, or contractor knowingly rendered an erroneous certification, in addition to other remedies available to the Federal , State, or City government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant, vendor or contractor shall provide immediate written notice to the person to which the attached proposal and/or this document is submitted if at any time the prospective lower tier participant, vendor or contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction", "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principal", "proposal", and "voluntarily excluded", as used herein, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 and/or State of Connecticut statutes and regulations. You may contact the person to which this proposal and/or this document is submitted for assistance in obtaining a copy of the foregoing.
5. The prospective lower tier participant, vendor or contractor agrees by submitting the attached proposal and/or this document that, should the proposed covered transaction be entered into, it shall not knowingly enter into any covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant, vendor or contractor further agrees by submitting the attached proposal and/or this document that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion-Lower Tier Covered Transactions", without modification, in all covered transaction and in all solicitations for covered transactions.
7. A participant in a covered transaction may rely upon the certification of a prospective participant in a covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may but is not required to, check the Non-procurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required herein. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 herein, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal, State or Municipal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification

(1) The prospective recipient of monies hereby certifies, by submission of its attached proposal and/or by execution of this document, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, disqualified, or voluntarily excluded from bidding or participation in the proposed transaction by any Federal, State, or Municipal department or agency or by the statutes, regulations or ordinances of the foregoing departments and agencies.

(2) Where the prospective recipient of monies is unable to certify to any of the statements in this certification, such prospective participant shall attach a written explanation hereto.

Full Legal Name and address of Recipient, Vendor, or Contractor: _____
_____
_____.

Print Name and Title of Authorized Representative: _____

Signature of Authorized Representative: _____

Date: _____

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

For the purposes of this Disclosure of Outstanding Financial Obligations, the following definitions apply:

(a) "Contract" means any Public Contract as defined below.

(b) "Person" means one (1) or more individuals, partnerships, corporations, associations, or joint ventures.

(c) "Public Contract" means any agreement or formal commitment entered into by the city to expend funds in return for work, labor, services, supplies, equipment, materials or any combination of the foregoing, or any lease, lease by way of concession, concession agreement, permit, or per agreement whereby the city leases, grants or demises property belonging to the city, or otherwise grants a right of privilege to occupy or to use said property of the city.

(d) "City" means any official agency, board, authority, department office, or other subdivision of the City of Waterbury.

State of_____

SS.:_____

County of_____

_____, being first duly sworn, deposes and says that:

1. I am the ***owner, partner, officer, representative, agent or*** _____ of _____(Contractor's Name), the Contractor that has submitted the attached agreement.

2. I am fully informed respecting the preparation and contents of the attached Agreement and of all pertinent circumstances respecting such Agreement;

3. That as a person desiring to contract with the City (check all that apply):

____ The Contractor and each owner, partner, officer, representative, agent or affiliate of the Contractor has filed a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor are required to file a list of taxable personal property with the City of Waterbury for the most recent grand list, as required by Conn. Gen. Stat. §12-42.

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, owes back taxes to the City of Waterbury

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

____ Neither the Contractor nor any owner, partner, officer, representative, agent or affiliate of the Contractor either directly or through a lease agreement, has any other outstanding obligations to the City of Waterbury

4. The following list is a list of the names of all persons affiliated with the business of the Contractor, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1				
2				
3				
4				

5. That as a person desiring to contract with the City:

(a) The Contractor or an owner, partner, officer, representative, agent or affiliate of the Contractor provides, or has provided, services or materials to the City within one (1) year prior to the date of this disclosure, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Service or Material	DOB
1				
2				
3				
4				

(b) The Contractor possesses an ownership interest in the following business organizations, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized) :

Organization Name	Address	Type of Ownership
1		
2		
3		
4		

(c) The following persons possess an ownership interest in the Contractor. If the Contractor is a corporation, list all of the officers of the corporation and the names of each stockholder whose shares exceed twenty-five

(25) percent of the outstanding stock, if none, state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	DOB	Stock %
1			
2			
3			
4			

(d) Of the following of the affiliates, individuals or business entities identified in this affidavit, list each that owns, owned, or within one (1) year prior to the date of this disclosure has owned, taxable property situated in the City of Waterbury, if none state none. Use additional sheet if necessary (Must be on company letterhead and notarized):

Name	Title	Affiliated Company (if none state NONE)	Address	DOB
1				
2				
3				
4				

(e) If the Contractor conducts business under a trade name, the following additional information is required: the place where such entity is incorporated or is registered to conduct such business; and the address of its principal place of business, if none, state none:

TRADE NAME	PLACE OF INCORPORATION/REGISTRY	PRINCIPAL PLACE OF BUSINESS
1		
2		
3		
4		

I hereby certify that the statements set forth above are true and complete, and I understand that any incorrect information or omission of information from this affidavit may result in the immediate termination of the Contractor's agreement with the City of Waterbury.

For Partnership/Sole Proprietor

In presence of:

_____ _____
Witness Name of Partnership/Business

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

By: _____
Name of General Partner/ Sole Proprietor

_____
Address of Business

State of _____)

) SS

County of _____)

_____ being duly sworn,

Deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202_.

_____
(Notary Public)

My Commission Expires: _____

For Corporation

_____
Witness

_____
Name of Corporate Signatory

_____
Address of Business

Affix
Corporate
Seal

By:_____
Name of Authorized Corporate Officer

Its:_____
Title

CITY OF WATERBURY
DISCLOSURE AND CERTIFICATION AFFIDAVIT REGARDING OUTSTANDING OBLIGATIONS TO THE CITY OF WATERBURY

State of _____)

) SS

County of _____)

_____ being duly sworn,

deposes and says that he/she is _____ of _____ and that he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 202__.

_____
(Notary Public)

My Commission Expires: _____

CORPORATE RESOLUTION

I, _____, hereby certify that I am the duly elected and acting Secretary of _____, a corporation organized and existing under the laws of the State of _____, do hereby certify that the following facts are true and were taken from the records of said corporation.

The following resolution was adopted at a meeting of the corporation duly held on the _____ day of _____, _____.

"It is hereby resolved that _____ is authorized to make, execute and approve, on behalf of this corporation, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the corporate seal of said _____ corporation this _____ day of _____, 202__.

_____
Secretary

TO BE SIGNED ON DATE OF CONTRACT EXECUTION

LIMITED LIABILTY COMPANY RESOLUTION

I, _____, hereby certify that I am the duly authorized and acting Member / Manager (circle one) of_____, a limited liability company organized and existing under the laws of the State of_____, do hereby certify that the following facts are true and were taken from the records of said LLC.

The following resolution was adopted at a meeting of the LLC duly held on the _____ day of _____, _____.

"It is hereby resolved that _____is authorized to make, execute and approve, on behalf of this LLC, any and all contracts or amendments thereof".

And I do further certify that the above resolution has not been in any way altered, amended, repealed and is now in full force and effect.

IN WITNESS WHEREOF, I hereunto set my hand and affix the company seal of said _____ , LLC this _____ day of _____, 202__.

_____
Manager/Member

.

TO BE SIGNED ON DATE OF CONTRACT EXECUTION

ATTACHMENT B

Construction Contract for HVAC Replacement at Crosby High School and Wallace Middle School between City of Waterbury and

_____

THIS CONTRACT, effective on the date signed by the Mayor, is by and between the **CITY OF WATERBURY**, City Hall, 235 Grand Street, Waterbury, Connecticut (the "City") and _____, located at _____, Connecticut, a duly registered Connecticut _____ (the "Contractor").

WHEREAS the Contractor submitted a bid to the City in response to **Request for Proposal ("RFP") No. 7815** for HVAC replacement at Crosby High School and Wallace Middle School (the "Project"); and

WHEREAS the City accepted the Contractor's bid for **RFP No. 7815**; and

WHEREAS the City desires to obtain the Contractor's services for the Project pursuant to the terms set forth in this Contract.

NOW THEREFORE, THE PARTIES AGREE AND COVENANT AS FOLLOWS:

1. Scope of Services. The Contractor shall furnish all the labor, services, equipment, materials, supplies, transportation, and incidentals necessary to complete the Project as specified in this agreement (also referred to herein as "Contract") and such shall be completed in a satisfactory manner, as reasonably determined by the City. All labor, services, equipment, materials, supplies, transportation, and incidentals shall comply with (i) all applicable local, state and federal laws, statutes, ordinances, rules and regulations, including without limitation all notice requirements thereunder, and (ii) generally accepted professional standards.

1.1. The Project consists of performing HVAC replacement for the system serving Crosby High School and Wallace Middle School at 300 Pierpont Road, respectively, in Waterbury, Connecticut, all as more particularly detailed and described in the Bid Documents in **Attachments A, B** (referred to in 1.1.5 below) and **C** (referred to in 5.1 below) are hereby made material provisions of this Contract. in **Attachment A** and which are hereby made material provisions of this Contract. **Attachment A** shall consist of the following, which are attached hereto, are acknowledged by the

Contractor as having been received, or otherwise hereby incorporated by reference as noted below, and all are made a part hereof:

1.1.1 City's **RFP No. 7815**, incorporated by reference;

1.1.2 Addendums __ and __ to **RFP No. 7815** (attached hereto);

1.1.3 Contractor's Price Proposal, dated _____, consisting of ___ page (attached hereto);

1.1.4 Contractor's Response with associated attachments to **RFP No. 7815**, dated _____ , consisting of ___ pages (attached hereto);

1.1.5 All applicable Federal, State and local statutes, regulations charter and ordinances, including but not limited to the American Rescue Plan Act of 2021 ("**ARPA**"), Elementary and Secondary School Emergency Relief Supplemental Appropriations Act of 2021 signed into law December 27, 2020 ("**ESSER**") and/or American Rescue Plan Elementary and Secondary School Emergency Relief Fund signed into law March 11, 2021 ("**ESSER II**") are incorporated by reference, as well as **Attachment B**, titled **"CONSTRUCTION CONTRACTS - REQUIRED CONTRACT PROVISIONS – AMERICAN RESCUE PLAN ACT FUNDED PROJECTS, DATED JUNE 2021"** to the extent such provisions are applicable;

1.1.6 "City of Waterbury, Board of Education, **RFP No. 7815**, Scope of Services" (also referred to as "Technical Specifications"), which are part of the Site Map/Drawings identified in Section 1.1.7;

1.1.7 "Site Map" with List of Drawings prepared by Studio JAED, dated August 11, 2023, with project plans and specifications (see **Attachment A**, which contains the link to the Site Map);

1.1.8 State of Connecticut Prevailing Wage Schedule, dated August 23, 2023, and related information, consisting of 8 pages (attached hereto and as otherwise incorporated by reference);

1.1.9 Contractor's Certificate of Insurance (attached hereto, or otherwise incorporated by reference);

1.1.10 Contractor's Performance Bond (attached hereto, or otherwise incorporated by reference);

1.1.11 Contractor's Payment Bond (attached hereto, or otherwise incorporated by reference);

1.1.12 All amendment(s) and Change Orders issued by the City after execution of Contract (incorporated by reference);

1.1.13 All applicable Federal, State and local statutes, regulations charter and ordinances (incorporated by reference); and

1.1.14 All applicable permits and licenses (incorporated by reference).

1.2. The entirety of **Attachment A** plus this executed instrument are together deemed the Contract Documents (hereinafter collectively referred to as "Contract Documents"). The City's record copy of the Contract Documents shall control and shall be effective and binding on the Contractor. If any provision in the Contract Documents conflict with any other provision therein, the provision in the component

part of the Contract Document first enumerated below shall govern over any other component part which follows it numerically:

1.2.1 All applicable Federal, State, and local laws, regulations, charter and ordinances;
1.2.2 Amendment(s) and Change Orders;
1.2.3 This Contract;
1.2.4 Addendums to **RFP No. 7815**;
1.2.5 **RFP No. 7815** including City of Waterbury, Board of Education, **RFP No. 7815**, **Attachment A** "Scope of Services/Technical Specifications";
1.2.6 Contractor's Price Proposal;
1.2.7 Contractor's Response; and
1.2.8 Drawings.

2. Representations Regarding Qualification and Accreditation. The Contractor represents that its employees are licensed to perform the scope of work set forth in this Contract. The Contractor further represents that its employees have the requisite skill, expertise and knowledge necessary to perform the scope of work required under the terms of this Contract, including any supplementary work and the City relies upon Contractor's representations.

2.1. Representations regarding Personnel. The Contractor represents that it has, or will secure at its own expense, all personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the City, unless use of City employees or of personnel having a contractual relationship with the City is approved in writing. As set forth above, all the services required hereunder shall be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state or local law to perform such services.

2.2. Representations regarding Qualifications. The Consultant hereby represents that, to the extent required by Federal, State and Local statutes, regulations, codes, ordinances, and policies, that the Consultant and/or its employees be licensed, certified, registered, or otherwise qualified, the Consultant and all employees providing services under this Contract, are in full compliance with those statutes, regulations and ordinances. Upon City request, the Consultant shall provide the City with a copy of the Consultant's licenses, certifications, registrations, etc.

2.3. ARPA/ESSER. The Contractor possesses the knowledge and understanding of **ARPA** and **ESSER** and recognizes this Project is subject to the rules, regulations and mandatory contract provisions required by it.

3. Responsibilities of the Contractor. The Contractor agrees to properly implement the services required in the manner herein provided. The Contractor shall, in addition to any other responsibilities set forth in this Contract and the schedules and attachments hereto, perform the following coincident with the performance of this Contract:

3.1. Due Diligence Obligation. The Contractor acknowledges its responsibility to examine and to be thoroughly familiar with the City's bid document, including, but not limited to the plans, specifications, drawings and any addenda thereto. The Contractor hereby warrants and represents that prior to the submission of its proposal during the bid process it reviewed or was afforded opportunity, by the City, to review all physical items, facilities, services and functions essential to the satisfactory performance of the services required ("Due Diligence") and thereby certifies that all such items, facilities, services and functions are included in this Contract and thereby warrants that:

3.1.1 it conducted or had opportunity to conduct all due diligence prior to the submission of its bid and, accordingly, any additional costs, services or products resulting from the failure of the Contractor to complete Due Diligence prior to submission of its bid proposal shall be borne by the Contractor. Furthermore, the Contractor had the opportunity during the bid process to ask questions it saw fit and to review the responses from the City;

3.1.2 its failure or omission to make investigation and verification of data shall, in no way, be cause for future claim of ignorance of such data or conditions nor shall such failure to investigate and verify be the basis for any claim whatsoever, monetary or otherwise;

3.1.3 it is solely responsible for resolving any issues resulting from its failure to conduct due diligence and it shall assume all resulting costs it incurs during the Project;

3.1.4 it was responsible for specifying any changes and disclosing any associated new costs prior to submittal of its bid. In the event the Contractor failed to disclose any such new cost prior to the submittal of its bid, the Contractor hereby covenants that it shall remain solely responsible for, and shall absorb, those non-disclosed costs;

3.1.5 it has familiarized itself with the nature and extent of the Contract Documents, Project, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Project;

3.1.6 it has given the City written notice of any conflict, error or discrepancy that the Contractor discovered in the City's bid documents and other documents for **RFP No. 7815** (collectively, the "Bid Documents");

3.1.7. it agrees that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Project;

3.1.8. it has carefully studied all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Scope of Services which were utilized in the preparation of the plans and specifications;

3.1.9 it has made or caused to be made examinations, investigations, measurements and tests and studies of any applicable reports and related data as it deems necessary for ensuring performance of the Scope of Services at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contracts; and certifies no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes; and

3.1.10 The Contractor shall not take advantage of any obvious error or apparent discrepancy in the Contract. Notice of any error or discrepancy discovered shall be given immediately in writing to the City, who shall make such corrections and interpretations as it may deem necessary for the completion of the Project in a satisfactory and acceptable manner.

3.2. Safety. Contractor shall perform all work in a safe manner in full compliance with local, state and federal health and safety regulations. Contractor shall immediately correct any dangerous condition caused by or resulting from its work. If it fails to correct, or to act diligently to correct, any condition which the City reasonably believes to be a hazard to persons or property, then immediately upon oral or written notice to any supervisory or similar personnel of Contractor, City may, but shall not be required to, correct same at Contractor's expense. City shall Contractor in writing any oral notice given within five (5) business days thereafter.

3.3. Storage. In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor's sole cost and expense (i) adequate off-site storage space for equipment, materials, incidentals, etc., and (ii) all associated delivery and transportation services. In either event, the Contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the City pursuant to Section 8 of this Contract.

3.4. Working Hours. To the extent the Contractor is required to be on City property to render the Contractor's services hereunder, the Contractor shall coordinate its schedule so that work on and at the Project site is performed during the hours of 8:00 a.m. to 4:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturday, Sunday and legal holidays unless more exactly specified elsewhere in this Contract or **Attachment A** or unless prior written permission is obtained from the City to work during other times; for example, a second shift from 3 p.m. to 11 p.m. may be possible. This provision shall not excuse the Contractor from timely performance under the Contract.

3.5. Cleaning Up. The Contractor shall always keep the Project site free from accumulation of waste materials or rubbish caused by Contractor's employees or subcontractors, and at the completion of the work shall remove all rubbish from and about the Project and all tools, scaffolding and surplus materials and shall leave the Project site "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor.

3.6. Publicity. Contractor agrees not to deliberately disclose the fact that the City has entered into or terminated this Contract or disclose any of the terms of the Contract or use the City's name in connection with any publicity unless the City gives prior written consent to such use of the City's name in each instance.

3.7. Standard of Performance. All Contractor labor, materials, supplies, components, equipment, reports, plans, specifications, drawings, deliverables, incidentals, etc., required to be furnished or delivered under this Contract shall conform in all respects with the requirements set forth in this Contract and shall meet or exceed those standards generally recognized in the Contractor's craft and trade in the State of Connecticut. City specified manufacturer and/or brand name substitution desired by the Contractor shall be made only with the prior written consent of an authorized representative of the City's Using Agency.

3.7.1 In carrying out the Project, the Contractor must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, nor with the normal routine of the institution or agency operating at the Project site.

3.8. Contractor's Employees. The Contractor shall always enforce strict discipline and good order among its employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove any Contractor employee expressly named, identified or required in this Contract.

3.9. Subsurface/Unknown Site Conditions. If Project site conditions are encountered which are (i) subsurface or otherwise concealed physical conditions or other conditions which differ materially from those indicated in the Contract Documents, or (ii) unknown conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent or common in construction activities of the character provided for in this Contract, then prompt notice by the observing party shall be given to the other party to this Contract before Project site conditions may be disturbed; the Contractor shall thereafter wait for written instructions from the City before proceeding under such conditions.

3.10. Surveys. All surveys required under this Contract shall be performed by a State of Connecticut duly licensed land surveyor. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall perform all layout

work, all field measurements and all construction staking required, necessary or prudent for the satisfactory prosecution of the Contractor's obligations under this Contract.

3.11. Permits and Licenses. Unless expressly stated to the contrary in Section 1 of this Contract and **Attachment A**, the Contractor shall secure and obtain all permits and all licenses required, or necessary, or prudent for the performance of the Contractor's obligations under this Contract., and for the City's occupancy, use, and operation of the Project.

3.12. Manufacturer's Directions. Where it is required in this Contract that materials, products, processes, equipment or the like be installed or applied in accord with manufacturer's directions, specifications or instructions, it shall be construed to mean that the said application or installation by the Contractor shall be in strict accord with printed instructions furnished by the manufacturer of the material concerned for use under conditions like those at the Project site. One (1) copy of such instructions shall be furnished to the City.

3.13. Review by the City. The Contractor shall permit the City and the City's duly authorized representatives and agents to review, at any time, all work performed under the terms of this Contract at any stage of the Project.

3.14. Records Maintenance. The Contractor shall maintain or cause to be maintained all records, books or other documents relative to charges, costs, expenses, fees, alleged breaches of the Contract, settlement of claims or any other matter pertaining to the Contractor's demand for payment.

3.15. Activities, Work, and Services Performed in Department of Education Facilities, on School Grounds, at Student Sporting Events, and/or where City Students are Present. For all activities in school facilities and/or Department of Education facilities, the Contractor shall first be required to coordinate all on-site visits and activities with the appropriate Department/personnel in Education, or the designated person and shall obtain any necessary clearance, ID badges, etc. Contractor shall enter and exit all school facilities and Department of Educational facilities as designated as authorized by the appropriate Department/personnel in Education, or the designated person.

3.16. Criminal Background Check and DCF Registry Check. The Contractor shall comply with the requirements of C.G.S. 10-222 c (g) and shall ensure, and represents to the City, that any employee who will be on school grounds/Department of Education Property/at Department of Education events and/or where City students are present, that will or may have direct contact with a student's while providing services pursuant to this Agreement, has stated, in writing, whether such person has ever been convicted of a crime or whether criminal charges were ever pending against such person. The Contractor shall further ensure, and represents to the City, that any person who will have direct contact with a student has submitted to a records check of the

Department of Children and Families Child Abuse and Neglect Registry established pursuant to Conn. Gen. Stat. §17a-101k, as well as State and National criminal history records checks conducted in accordance with Conn. Gen. Stat. §29-17a, the Federal National Child Protection Act of 1993, and the Federal Volunteers for Children Act of 1998. The Contractor shall not permit any person with a disqualifying criminal history to have contact with a student. The contractor agrees the "direct contact" shall include the contractor and its employees providing services under this contract if said services are performed on school grounds/Department of Education Property/at Department of Education events and/or where City students are present.

4. Responsibilities of the City and City Reservation of Rights. Upon the City's receipt of Contractor's written request for specific information, the City will provide the Contractor with existing documents, data and other materials the City agrees are necessary and appropriate to the services to be performed by the Contractor hereunder and the City will endeavor to secure, where feasible and where the City agrees it is necessary and appropriate, materials or information from other sources requested by the Contractor for the purpose of carrying out the services under this Contract.

4.1. The City may, in its sole discretion, designate person(s) to act as the City's Project Engineer(s) and/or Manager(s) and the City may, in its sole discretion, define such person(s) authority and responsibilities; at the onset, KBE Building Corporation is so designated.

4.2. The City reserves the right to **(i)** perform work related or unrelated to the Project with the City's own forces adjoining, adjacent to, or in the vicinity of, the Project site and/or **(ii)** let separate contracts related or unrelated to the Project for work and services adjoining, adjacent to, or in the vicinity of, the Project site. In such event, the Contractor shall afford all such parties reasonable opportunity for storage of materials and equipment and for the uninterrupted provision and delivery of such parties' work and/or services. The Contractor shall cooperate with such parties and in the case of a dispute, the decision of the City shall be complied with by all.

5. Contract Time. The Contractor shall Substantially Complete all work and services required under this Contract **three hundred thirty-five (335) consecutive calendar days** from the City's issuance of a Notice to Proceed and shall reach Final Completion **on or before three hundred sixty-five (365) consecutive calendar days** from the City's issuance of a Notice to Proceed ("Contract Time").

5.1. Attached hereto as **Attachment C** is the Project's construction schedule. On a monthly basis, the Contractor shall deliver to the City a written status report setting forth an analysis and critique of the Contractor's compliance with said schedule.

5.2. Delay Damages.

5.2.1 Time is and shall be of the essence for all Project Phase Completion Dates, Milestones, Substantial and Final Completion Date. The Contractor

further agrees that the Project shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between the Contractor and City, that the Phase Completion Dates, Milestones, Substantial and Final Completion Date are reasonable for the completion of the Project.

5.2.1.1 The Contractor shall pay to the City the sum of the greater of **five hundred and 00/100 dollars ($500)** per consecutive calendar day for each calendar day for which the Contractor is in default in completing the work beyond the Final Completion Date, Substantial Completion Date, Milestones and Phase Completion Dates, as set forth in Section 5, or the actual damages incurred by the City caused by the delay. The preceding sum is hereby agreed upon not as a penalty, but as delay damages for the delay that the City shall suffer due to such default.

5.2.1.2 The City shall have the right to recover all damages pursuant to any remedy at law or equity including but not limited to deducting the amount of any such damages from any monies due the Contractor under this Contract. The Contractor understands that if the entire Work or of any portion of the Work that the City has agreed to accept separately, if any, is not attained by the applicable completion dates as set forth in the entire Section 5, the City will suffer damages, which are difficult to specify accurately and ascertain. Delay damages based upon delay shall be assessed to compensate the City for all actual loss sustained by the delay, including, but not limited to, loss of use, increased cost of material or services to complete the project, loss of State funding, all other another actual expense, and all other damages allowed by law, including attorney's fees.

5.3 No Damage for Delay. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity damages, attorney's fees or other, similar remuneration. The City's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work, regardless of the extent or frequency of the City's exercise of these rights has been contemplated by the parties and shall not be construed as an exception.

6. Compensation. The City shall compensate the Contractor for the satisfactory provision of all the goods and services set forth in this Contract as follows in this Section. No claims for additional compensation will be considered for conditions made known to the Contractor prior to bidding. No claims for additional compensation will be considered on account of the failure of the Contractor to completely inform itself as required herein above.

6.1. Fee Schedule. Subject to retainage, limitations, etc. set forth below in this Section 6, the fee payable to the Contractor shall not exceed _____ **DOLLARS ($_____)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Bid set forth in **Attachment A**, which is summarized below and inclusive of the required payment and performance bonds:

i. $_____ (base payment); and
ii. $_____ **Owner Controlled Contingency As Governed By Section 6.1.1 Below – [TBD]**

6.1.1 Owner Controlled Contingency. At the sole discretion and control of the City, the Contingency amount as set forth in Section 6.1(C) of this Contract shall be utilized for the payment to the Contractor for additional work not covered by this contract and requested and approved by the City in writing to be performed by the Contractor. The basis for payment for the additional work under the Contingency shall be separate and apart from the Base Payment set forth above. The Owner Controlled Contingency shall be the funding source for any City approved additional work and services not provided for in this Contract. Unless properly approved in writing by the City (see **Section 27**), Contractor shall not be entitled to any compensation from such contingency. The parties agree that a Change Order Form shall be utilized to set forth the additional services, cost of additional services and time for Contractor to provide said service.

6.2. Retainage. At the City's sole discretion, it hereby reserves the right to withhold as retainage of five percent (5%) of any payment (or monetary sum otherwise required by law) owed to the Contractor to be withheld from payments to the Contractor otherwise payable to the Contractor until such time as the Contractor's work and services to be provided under this Contact are fully completed and accepted in writing by the City. The retainage does not include additional sums that the City may withhold due to the Contractor's failure to comply with the provisions of this Contract.

6.3. Limitation of Payment. Compensation to the Contractor is limited to those fees set forth in Section 6.1. of this Contract and is further limited to work **(i)** performed in fact, **(ii)** conforming with this Contract, and **(iii)** accepted in writing by a duly authorized City employee. Such compensation shall be paid by the City upon its review and approval of the Contractor's invoices for payment and review of the Contractor's work.

6.3.1 Funding. In the event this Contract is funded, in whole or in part, by Federal and/or State monies, grants, loans, etc, all City payment(s) shall fully comply with all relevant Federal and State statutes and regulations. In the event this Contract is 100% funded by Federal and/or State monies, grants, loans, etc., the aggregate sum of all City payments shall not exceed the aggregate sum of such funding.

6.3.2 The Contractor and its affiliates are hereby provided with notice that the City reserves the right, in the City's sole discretion, to offset, withhold, or otherwise reduce City payment(s) to the Contractor, in an amount equaling the sum or sums of money the Contractor and/or its affiliates is/are, or become delinquent or in arrears on, regarding the Vendor's and/or its affiliates real and personal property taxes and other payment obligations to the City.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP No. 7815** shall be solely borne by the Contractor and are not included in the compensation to be paid by the City to the Contractor under this Contract or any other agreement.

6.5. Payment for Services, Materials, Appliances, Employees. The Contractor shall be responsible to the City for the suitability of services, materials and equipment furnished to comply fully with the requirements set forth in this Contract. The Contractor shall promptly pay all employees as their pay falls due, shall pay promptly as they fall due all bills for subcontractors, materials, supplies and services going into the work, and all bills for insurance, bonds, Worker's Compensation coverage, Federal and State Unemployment Compensation, and Social Security charges applicable to this Project. Before final City payment is made, the Contractor shall furnish to the City a sworn, notarized, affidavit stating that all the foregoing payment obligations have been fully completed.

6.6. Liens. Neither the City's final payment nor any part of the retained percentage, if any, shall become due until the Contractor, if required by the City, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required, in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the City, to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the City may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fees.

6.7. Attorney's Fees and Costs. The prevailing party in any litigation arising hereunder shall be entitled to attorney's fees and costs from the losing party.

6.8. Contractor's Certificate of Completion. Upon the Contractor's **(i)** completion of all Project milestones, and **(ii)** Substantial Completion of the Project, and **(iii)** Final Completion of the Project, the Contractor shall, in each instance, file with the City a written, notarized affidavit setting forth the amount of Project work performed. The City reserves the right to verify or challenge by any reasonable means the accuracy of said affidavit.

6.9. Final Payment. All prior estimates and City payments, including those relating to extra or additional work, retainage(s), and holdback(s), shall be subject to

correction by this final payment which is throughout this Contract called "Final Payment". No payment, final or partial, shall act as a release to the Contractor or its surety from any Contractor obligation(s) under this Contract.

6.10. Clean Water Fund Project Requirements. In the event this Contract is funded in whole or in part, is reliant upon, or falls within the jurisdiction of the Clean Water Fund and its statutes, regulations and rules, the Contractor shall:

6.10.1 Submit Applications for Payment in accordance with the following:

The City must receive the Contractor's Application for Payment by the City's or its designee's, review and recommendation for payment, by the fifteenth calendar day of the month to receive payment within the next 50 days. If not received by the fifteenth calendar day of the month, payment cannot be made until 50 days after the fifteenth calendar day of the subsequent month. The Contractor shall provide, at the City's request, reasonable documentation to substantiate Contractor's Application for Payment.

6.10.2 Progress and Final Payments

The City will make progress payments on account of the Contract Price based on the Contractor's Applications for Payment, monthly during construction as provided below. All progress payments will be based on the progress of the Scope of Services as determined by the City, according to the schedule of values provided for in the Contract Documents and approved by the City. Prior to Substantial Completion, progress payments will be limited to an amount equal to 95 percent of the value of the Scope of Services completed. Upon Substantial Completion, the City will pay the amount as specified in the Contract Documents, subject to reasonable monetary holdback for punch list items.

7. Warranty of the Contractor. The Contractor warrants to the City that all materials, supplies, components, equipment, etc. furnished under this Contract shall be new and of good quality, except as otherwise expressly stated and permitted by the City elsewhere in this Contract. The Contractor warrants that none of its work shall be defective. The Contractor shall be liable to repair and install and/or replace without charge any service, component, equipment or part thereof which is defective or does not conform with this Contract within the greater of **(i)** 365 calendar days after the City delivers its written notice of its acceptance of the Project and statement therein establishing the final completion date, or **(ii)** that time or date expressly stated elsewhere in this Contract or **Attachment A**.

7.1. The Contractor further warrants that all materials, supplies, services, components, equipment, reports, plans, drawings, deliverables, incidentals, etc., shall be free from all defects caused by faulty design, faulty material or poor workmanship. The Contractor shall supply to the City copies of any written manufacturer's warranties and guarantees and assign same to the City and the City shall avail itself of same to the fullest extent provided by the terms thereof. The Contractor's foregoing warranty

obligations are in addition to, and not a limitation of, all manufacturer's warranties and guarantees, and any other remedy stated in this contract or otherwise available to the City under applicable law.

8. Passing of Title and Risk of Loss.

8.1. City beneficial use of Project equipment, materials, site-work, etc. prior to the Contractor's final completion of the Project or prior to the City's final payment for the Project shall neither act to vest title in the City nor act to transfer risk of loss from the Contractor to the City. Said title and risk shall pass to the City upon the City's final payment for the Project.

8.2. Contractor and its insurer shall assume the risks of loss or damage to the equipment up to and including the date title passes, except that City shall be responsible for loss or damage caused by City's gross negligence.

8.3. After Project equipment, materials, etc. are delivered to the Project worksite and become operable or functional, the Contractor shall not thereafter remove any such equipment, materials, etc. from the Project worksite without securing the prior written consent of an authorized City Using Agency employee.

9. Indemnification.

9.1. The Contractor shall indemnify, defend, and hold harmless the City, City's Boards, and Board of Education, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, officials and employees from and against all claims, suits, damages, losses, judgments, costs and expenses including attorney's fees arising out of or resulting from the delivery of the labor, services, equipment, materials, reports, plans, specifications, design, drawings, deliverables, incidentals, etc. provided that any such claims, suits, damages, losses, judgments, costs or expenses **(i)** are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from, **(ii)** are alleged to be caused in whole or in part by any willful, intentional, negligent, or reckless act or omission of the Contractor, its employees, any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; **(iii)** enforcement action or any claim for breach of the Contractor 's duties hereunder or **(iv)** claim for intangible loss(es) including but not limited to business losses, lost profits or revenue, regardless of whether or not it is caused in part by a party indemnified hereunder.

9.2. In any and all claims against the City, Board of Education or any of City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials by the Contractor or any employee of the Contractor ,

any subcontractor or consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 9 above, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, disability benefit acts or other employee benefit acts.

9.3. The Contractor understands and agrees that any insurance required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, defend, keep and hold harmless the City, the Board of Education, any of City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees and officials as provided in this Contract.

9.4. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this Contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City and the City's boards, KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, officers, directors, shareholders, commissions, agents, employees or officials as provided herein.

9.5. Royalties and Patents. The Contractor shall, for all time, secure to the City the free and undisputed right to the use of any and all patented articles and methods used in the work and shall defend at Contractor's own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the Contractor shall pay such awards and hold the City harmless in connection with any patent suits that may arise as a result of installations made by the Contractor and as to any award made thereunder.

9.6. In the event this Contract and/or the Contractor's, or its subcontractor, work and services provisioned hereunder is/are subject to the provisions of any Federal or State statute or regulations, or the City Charter or City Ordinance, the Contractor shall indemnify, defend and hold harmless the City from any fine, penalty or other amounts imposed on the City under said statutes, regulations, Charter or Ordinances, if caused by Contractor, or its subcontractor, omission or commission.

10. Contract Bonds. The Contractor shall furnish to the City, prior to the execution of this Contract by the City, both a performance bond and a payment bond, each bond written for a penal sum equaling the Section 6 "Total Compensation" amount in a form and with a surety acceptable to the City. The bonds shall continue in effect for the greater of **(i)** the warranty period set forth in Section 7 of this Contract, or **(ii)** 365 calendar days after the Final Completion Date referenced elsewhere in this Contract.

11. Contractor's Insurance.

11.1. The Contractor shall not commence work under this Contract until all insurance required under this Section 11 has been obtained by the Contractor and such insurance has been approved by the City. The Contractor shall not allow any subcontractor to commence work on any subcontract until all insurance required of any such subcontractor has been so obtained and approved by the City. Insurance shall be provided by insurers, satisfactory to the City and authorized to do business in the State of Connecticut, an "A-" Best's Rating and at least a Class V3 or better financial size category as shown in the most current A.M. Best Company ratings.

11.2. At no additional cost to the City, the Contractor shall purchase and maintain the insurance coverages set forth below which shall protect the City and KBE Building Corporation and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees from claims which may arise out of or result from the Contractor's obligation under this Contract, whether such obligations are the Contractor's or subcontractor or person or entity directly or indirectly employed by said Contractor or subcontractor, or by any person or entity for whose acts said Contractor or subcontractor may be liable.

11.3. Each insurance policy shall state that the insurance company shall agree to investigate and defend the insured against all claims for damages, even if groundless. If any insurance required herein is to be issued or renewed on a claims made form as opposed to an occurrence form, the retroactive date for coverage shall be no later than the commencement date of this Contract and shall provide that in the event of cancellation or non-renewal, the discovery period for insurance claims ("Tail Coverage") shall be available for at least 60 months.

11.4. The following policies with stated limits shall be maintained, in full force and effect, always during which the services are to be performed by the Contractor:

11.4.1 General Liability Insurance: $1,000,000.00 per occurrence, **$2,000,000.00** aggregate and **$2,000,000.00** products and completed operations aggregate; providing coverage to protect the City for all damages arising out of bodily injuries, sickness to or death of all persons in any one accident or occurrence and for all damages arising out of destruction of property in any one accident or occurrence.

11.4.2 Automobile Liability Insurance: **$1,000,000.00** combined single limit (CSL); providing coverage to protect the City with respect to claims for damage for bodily injury and or property damage arising out of ownership, maintenance, operation, use or loading and unloading of any auto including hired & non-owned autos.

11.4.3 Workers' Compensation: Statutory Limits within the State of Connecticut: Employers' Liability:

EL Each Accident **$1,000,000.00**
EL Disease Each Employee **$1,000,000.00**
EL Disease Policy Limit **$1,000,000.00**

Contractor shall comply with all State of Connecticut statutes as it relates to workers' compensation.

11.4.4 Excess/Umbrella Liability Insurance: Excess or Umbrella insurance coverage that follows form or sits over General Liability, Automobile Liability and Workers Compensation insurances: **$5,000,000.00** each occurrence and **$5,000,000.00** aggregate.

11.4.5 Builder's Risk Insurance: coverage equaling the monetary value of the construction components of the Project, including the equipment stored at Contractor's place of business prior to installation. "All Risk" Builders Risk insurance (also know as "course of construction") coverage with limits equal to or better than the maximum possible loss of all equipment and materials of construction used or contemplated under this Contract, including all materials in transit and all materials in storage wherever stored and the value of all subsequent Contract changes. This insurance shall include the interests of the City, KBE Building Corporation, the Contractor and all subcontractors. If deemed necessary by the City's Risk Manager, this insurance shall also include coverage for the total value of the Project's constructed property and shall be valid until a certificate of occupancy is issued. Upon the issuance of said certificate, the City will assume responsibility for insuring said property.

11.4.6 Contractors Pollution Liability Insurance: $1,000,000.00 each claim and **$1,000,000.00** aggregate coverage. The foregoing per claim coverage plus appropriate aggregate coverage depending on the size of the job for contractor caused pollution events such as asbestos or lead abatement, but not limited to only these pollution causes of loss. There shall not be any exclusions under said policy for any hazardous materials, including asbestos and lead.

11.5. Failure to Maintain Insurance: In the event the Contractor fails to maintain the minimum required coverage as set forth herein, the City may at its option purchase same, and offset the Contractor's invoices for the cost of said insurance.

11.6. Cancellation: The City of Waterbury and KBE Building Corporation shall receive written notice of cancellation from the Contractor at least thirty (30) calendar days prior to the date of actual cancellation, regardless of the reason for such cancellation.

11.7. Certificates of Insurance: The Contractor's General, Automobile, Builder's Risk and Excess/Umbrella Liability Insurance policies shall be endorsed to add the City and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees_as an additional insured and provide waiver of subrogation on all policies except Builder's Risk and Pollution Liability. The insurance afforded the additional insured shall be primary and non-contributory insurance and the coverage and limits provided under the Contractor's policies shall not be reduced or prorated by the existence of any other insurance applicable to any loss the additional insured may have suffered. Prior to the execution of this Contract by the City, the Contractor shall furnish to the City, subject to City approval, certificate(s) of insurance and Additional Insured Endorsement and Waiver of Subrogation Endorsement verifying the above coverages, including the naming of the City of Waterbury, as follows: **"The City of Waterbury and its Board of Education, and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employees are listed as additional insured on all lines of coverage except Pollution Liability and waiver of subrogation applies to all lines of coverage except Pollution Liability and Builder's Risk as their interest may appear".** The City's Invitation to Bid Number must be shown on the certificate of insurance to assure correct filing. The Contractor must supply replacement/renewal certificates at least 30 days prior to the expiration of the policy(ies). Said certificates shall contain a provision that coverage afforded under the policies shall not be cancelled or reduced for any reasons unless notice of than thirty (30) calendar days has been mailed to the City's Using Agency and a copy to the City's Office of Corporation Counsel, 235 Grand Street, Waterbury, CT 06702.

11.8. No later than thirty (30) calendar days after Contractor receipt, the Contractor shall deliver to the City a copy of the Contractor's insurance policies and endorsements and riders.

12. Conformance with Federal, State and Other Jurisdictional Requirements. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with all applicable statutes, acts, ordinances, guidelines, resolutions, orders, judgments, decrees, injunctions, rules, and regulations of all government authorities applicable to performance by the Contractor of services hereunder, including those having jurisdiction over its registration and licensing to perform services hereunder; including, but not limited to, the following: **EQUAL EMPLOYMENT OPPORTUNUTY; COPELAND ANTI-KICKBACK ACT**, as supplemented in the Department of Labor Regulations (29 CFR, Part 3); **DAVIS BACON ACT** as supplemented by Department of Labor Regulations (29 CFR Part 5); Section 103 and 107 of the Contract Work Hours and Safety Standards Act, as supplemented by the Department of Labor Regulations (29 CFR Part 5); the **HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974**, as amended; **TITLE 31** and Section 12-430(7) of the State of Connecticut General Statutes. All applicable sections of the City Charter and Code of Ordinances are incorporated by reference made a part hereof.

12.1. Taxes-Federal, State and Local. The City is exempt from Federal Excise and Transportation, State and Local Sales and Use Taxes, including without limitation, taxes that would otherwise be imposed upon the Contractor for transactions required or necessitated hereunder between it and its subcontractors, suppliers, etc. The Contractor remains liable, however, for any applicable tax obligations it incurs. Moreover, the Contractor represents that the bid and pricing contained in this Contract do not include the amount payable for said taxes.

12.2. Labor and Wages-Federal and State. The Contractor and its subcontractors shall conform to Federal and State of Connecticut labor laws, and all other laws, ordinances, and legal requirements affecting the work in Connecticut.

12.2.1 The Contractor is aware of, and shall comply with, the provisions of Title 31, §53 of the Connecticut General Statutes, latest revision (the "Act"), concerning the payment of minimum wages for work on public facilities. The provisions of the Act are hereby incorporated by reference and made a part of this Contract. The Act provides that the Connecticut prevailing wage law applies to certain remodeling, refurbishing, alteration, repair and new construction. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in Conn. Gen. Stat. 31-53(i), shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

12.2.2 The Contractor is aware of, and shall comply with, the provisions of both the Federal Davis-Bacon Act and the Federal American Recovery and Reinvestment Act of 2009, the provisions of both acts hereby incorporated by reference and made a part of this Contract. The Federal Davis-Bacon Act provides that Federal wage rate laws apply to certain federally funded contracts. The American Recovery and Reinvestment Act ("ARRA") provides that Federal wage rate laws apply to all ARRA funded contracts regardless of the contract's dollar value.

12.3. Compliance with Chapters 34, 38, and 39 of the Code of Ordinances of the City. By executing this Contract, the Contractor represents and warrants that, at all pertinent and relevant times to the Contract, it has been, is and will continue to be in full compliance with the provisions of Chapters 34, 38, and 39 of the Code of Ordinances of the City and well as any other relevant provisions of the Charter and the Code of Ordinances.

12.4. Compliance with CONN. GEN. STAT. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5.

12.4.1 Definitions – For purposes of this paragraph:

i. "Small contractor" means any contractor, subcontractor, manufacturer, service company or nonprofit corporation (A) that maintains its principal place of business in the state, (B) that had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year prior to such application, and (C) that is independent. "Small contractor" does not include any person who is affiliated with another person if both persons considered together have a gross revenue exceeding fifteen million dollars.

ii. "Minority business enterprise" means any small contractor (A) fifty-one per cent or more of the capital stock, if any, or assets of which are owned by a person or persons who (i) exercise operational authority over the daily affairs of the enterprise, (ii) have the power to direct the management and policies and receive the beneficial interest of the enterprise, (iii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, and (iv) are members of a minority, as such term is defined in subsection (a) of section 32-9n, or are individuals with a disability, or (B) which is a nonprofit corporation in which fifty-one per cent or more of the persons who (i) exercise operational authority over the enterprise, (ii) possess managerial and technical competence and experience directly related to the principal business activities of the enterprise, (iii) have the power to direct the management and policies of the enterprise, and (iv) are members of a minority, as defined in this subsection, or are individuals with a disability.

iii. "Municipal public works contract" means that portion of an agreement entered into on or after October 1, 2015, between any individual, Contractor or corporation and a municipality for the construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, which is financed in whole or in part by the state, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees but excluding any project of an alliance district, as defined in section 10-262u, as amended by this act, financed by state funding in an amount equal to fifty thousand dollars or less.

12.4.2 The Contractor and subcontractor shall comply with the specific requirements of the State of Connecticut Set Aside Program, Conn. Gen. Stat. § 4a-60g, as amended by June 2015 Special Session Public Act 15-5, if the municipal public works contact awarded to the Contactor is funded in whole or in part by state funds.

12.4.3 The Contactor shall be subject to the following set-aside requirements if the municipal public works contact, is funded in whole or in part by the State of

Connecticut and is more than **FIFTY THOUSAND DOLLARS ($50,000.00)**, for the construction, rehabilitation, conversion, extension, demolition, or repairing of a public building or highway, or other changes or improvements in real property.

12.4.4 Set-Aside requirements – Any contractor awarded a municipal public works contract, based on competitive bidding procedures, shall comply with the following Set –Aside requirements:

i. set aside at least twenty-five per cent (25%) of the total value of the state's financial assistance for such contract for award to subcontractors who are small contractors; and

ii. of that portion to be set aside in accordance with Subparagraph i. of this subdivision, reserve a portion equivalent to twenty-five per cent (25%) of the total value of the contract or portion thereof to be set aside for awards to subcontractors who are minority business enterprises.

12.4.5 Failure of the Contractor or subcontractor to comply with the State of Connecticut Set-Aside requirements shall be a material breach of this Contract.

13. Discriminatory Practices. In performing this Contract, the Contractor shall not discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, sex, age, religious creed, disability, national origin or ancestry, marital status, family status, prior psychiatric treatment, health care, military status or source of income or because of a handicap that is unrelated to the employee's or the applicant's ability to perform the duties of a particular job or position. Subcontracts with each subcontractor shall contain a provision requiring non-discrimination in employment as specified herein. This covenant is required pursuant to §93.04 of the Code of Ordinances of the City and any breach thereof may be regarded as a material breach of this Contract. Said provisions with subcontractors shall require conformity and compliance with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements.

13.1. Discrimination Because of Certain Labor Matters. No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because such person has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or related to the labor standards applicable hereunder to its employer.

13.2. Equal Opportunity. In its execution of the performance of this Contract, the Contractor shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, national origin or citizenship status, age or handicap. The Contractor agrees to comply with all local, state and federal laws, rules and regulations and Executive orders pertaining to discrimination and equal opportunity requirements, and will require the same of all subcontractors

13.3. Contractor Corrective Action.

13.3.1. Pursuant to Conn. Gen. Stat. § 4a-60, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every quasi-public agency project contract and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take corrective action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, as amended by this act, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the

employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56, as amended by this act.

(b) If the contract is a public works contract, municipal public works contract or contract for a quasi-public agency project, the contractor agrees and warrants that he or she will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works or quasi-public agency project.

13.3.2. Pursuant to Conn. Gen. Stat. § 4a-60a, as amended by June 2015 Special Session Public Act 15-5, the following are required for every Municipal Public Works Contract:

(a) Every contract to which an awarding agency is a party, every contract for a quasi-public agency project and every municipal public works contract shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of Connecticut, and employees are treated when employed without regard to their sexual orientation;

(2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and

(4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

14. Good Jobs Ordinance

14.1. Conformance With An Ordinance Concerning The Hiring Of Waterbury Residents On Certain Publicly Funded Construction Projects.

14.1.1 The Contractors and its Subcontractors shall comply with the specific requirements of "An Ordinance Concerning the Hiring of Waterbury Residents

on Certain Publicly Funded Construction Projects" (the "Good Jobs Ordinance"), as may be amended from time to time and as set forth in Chapter 34 of the Code of Ordinances of the City. While the principal provisions of the ordinance are summarized as set forth in paragraphs C-H below, the Contractor does hereby acknowledge that it has reviewed a copy of the Good Jobs Ordinance and that it has read the Ordinance and that Contractor is familiar with the obligations imposed on the Contractor and each Subcontractor by the Good Jobs Ordinance.

14.1.2 Failure of the Contractor or its Subcontractors to comply with the Good Jobs Ordinance shall be a material breach of this Agreement.

14.1.3 This paragraph shall apply to a Covered Project, as that term is defined in the Good Jobs Ordinance, in the City with a value of $500,000.00 or greater and only to the extent permitted by federal and state law.

14.1.4 Definitions. For purposes of this paragraph:

i. "Administrator" shall be defined as it is in the Good Jobs Ordinance.

ii. "Apprentice" shall be defined as it is in the Good Jobs Ordinance.

iii. "Basic Skilled Worker" shall be defined as it is in the Good Jobs Ordinance.

iv. "Contractor" shall be defined as it is in the Good Jobs Ordinance.

v. "Covered Project" shall be defined as it is in the Good Jobs Ordinance.

vi. "Hiring Goal" shall be defined as it is in the Good Jobs Ordinance.

vii. "Resident" shall be defined as it is in the Good Jobs Ordinance.

viii. "Subcontractor" shall be defined as it is in the Good Jobs Ordinance and shall include the Contractor's direct subcontractor providing construction work and all lower tiered (level) providers of construction work.

14.1.5 Hiring Goals. If this Agreement requires the Contractor to perform work on a Covered Project, the Contractor and each Subcontractor shall have as its hiring goals:

i. at least thirty percent (30%) of its total worker hours performed by City Residents, and

ii. at least twenty-five percent (25%) of construction trade jobs shall go to Apprentices and/or Basic Skilled Workers, and

iii. at least seventy percent (70%) of all "new hires" (as that term is defined in the Good Jobs Ordinance) shall be "economically disadvantaged" individuals (as that term is defined in the Good Jobs Ordinance), and

iv. a minimum of five percent (5%) of the construction workforce labor hours will be local resident, minority artisans, and

v. a minimum of five percent (5%) of the construction workforce labor hours will be women, and

vi. a minimum of ten percent (10%) of the total work hours shall be allocated for minorities, or

vii. as may otherwise be required by any superseding Federal or State employment discrimination prohibition laws.

14.1.6 Good Faith Efforts. The Contractor and each Subcontractor shall engage in Good Faith Efforts to comply with the Hiring Goals. For the purposes of this paragraph, the term "Good Faith Efforts" shall have the same meaning as it does in the Good Jobs Ordinance.

The Contractor and each Subcontractor shall individually implement Good Faith efforts to satisfy the Hiring Goals.

14.1.7 Action Plan and Pre-Construction Meeting. Not later than fourteen (14) business days prior to the scheduled commencement date for construction, the Contractor shall submit a written plan-of-action to the City and to the Administrator of the Good Jobs Ordinance defining how the Contractor, and each Subcontractor, shall implement Good Faith Efforts to fulfill the Hiring Goals. Each plan-of-action shall include the anticipated number of job positions required for the Work. Not later than five (5) business days prior to the commencement date of construction, the Contractor must attend a mandatory "pre-construction" meeting with the City to review all plans-of-action and other relevant materials. No construction work shall proceed absent this pre-construction meeting.

14.1.8 Other Contractor Obligations. In addition to the foregoing, the Contractor shall ensure that all Subcontractor contracts and agreements

expressly set forth and state as binding obligations therein, subject to appropriate party name change, the above Hiring Goals and Good Faith Efforts. The Contractor shall be accountable for, and liable to the City for, Contractor and each Subcontractor compliance with Hiring Goals and Good Faith efforts.

i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered Project and provide the Administrator with the number of job positions to be created by the project by trade and the qualifications by job tile.

ii. The Contractor shall be required to produce Contractor and Subcontractor documentation that may be required under the provisions of the Good Jobs Ordinance or that the City or the Administrator reasonably believes will assist the City or the Administrator with their evaluation of Hiring Goals and Good Faith Efforts.

iii. The Contractor shall deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period. Moreover, the Contractor shall require each Subcontractor to create weekly certified payroll records.

iv. The Contractor's and each Subcontractor's payroll records shall include the person-hours, the residential address, race, gender, hiring date, and apprentice (job) classification of all personnel employed under this Agreement and all Contracts and Sub-Contracts thereunder. The Contractor and each Subcontractor shall mark their respective final payroll period records as being final and be signed by an authorized officer or employee.

14.2 Liquidated Damages Applicable To Section 14.1

14.2.1 If the City finds that the Contractor, or a Subcontractor, has failed to achieve Hiring Goals during any five (5) day work period (Monday through Friday), the City shall:

i. issue a written notice to the Contractor specifying the matters constituting such failure and the time period within which Good Faith Efforts documentation must be delivered to the City for its evaluation.

ii. if the Good Faith documentation is not provided or, if provided, it fails to demonstrate compliance with Good Faith Efforts, the Contractor shall, for each failure by the Contractor or a Subcontractor to achieve the Hiring Goals during a full five-day work period, pay to the City one thousand dollars ($1,000.00) as liquidated damages.

14.2.2 If the City finds that the Contractor, or a Subcontractor, has failed to

deliver weekly certified payroll records to the City within five (5) working days of the end of each payroll period the Contractor shall, as liquidated damages pay one thousand dollars ($1,000.00) to the City for each week of ongoing violation.

14.2.3 The City shall provide the Contractor with an invoice identifying all sums due to the City, as liquidated damages, because of the Contractor or a Subcontractor's failure to comply with the Good Jobs Ordinance as set forth above.

14.2.4 No portion of any invoice submitted by a Contractor that is subject to liquidated damages shall be paid by the City until such time as all liquidated damages relating to that invoice have been paid to the City.

14.2.5 The foregoing liquidated damages provisions shall be expressly set forth, subject to appropriate party name adjustments, as material provisions in all Contracts that the Contractor has with Subcontractors and the Contractor is obligated hereunder to enforce compliance in such Contracts with Subcontractors.

14.2.6 Any payment of liquidated damages hereunder shall not preclude a later claim, nor any later finding of a breach, or any payment of additional damages related to such later claim.

15. Place Holder.

16. Termination.

16.1. Termination of Contract for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by either **(i)** giving written notice to the Contractor of a date certain by which Contractor shall, to the written satisfaction of the City, cure after which and without further action by any party, such termination shall automatically become effective and binding, or **(ii)** giving written notice to the Contractor specifying the effective date of such termination at least five (5) business days before the effective date of such termination.

16.1.1 In the event of a termination, all finished or unfinished documents, data, studies, reports, plans, specifications, drawings, supplies, services, etc. prepared by the Contractor under this Contract shall, at the option of the City, become the City's property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed for such.

16.1.2 Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of

this Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

16.2. Termination for Convenience of the City. The City may terminate this Contract at any time for the convenience of the City, by a notice in writing from the City to the Contractor. If this Contract is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services performed bear to the total services of the Contractor covered by this Contract, less payments of compensation previously made.

16.3. Termination for Non-Appropriation or Lack of Funding. The Contractor acknowledges that the City is a municipal corporation and that this Contract is subject to the appropriation and disbursement of funds by the City sufficient for this Contract for each budget year in which this Contract is in effect. The Contractor therefore agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City if sufficient funds to provide for City payment(s) under this Contract is not appropriated, not authorized, or not made available, or such funding has been reduced. In the event this Contract is subject, in whole or in part, to the appropriation and disbursement of Federal and/or State funds and those Federal and/or State funds are not appropriated or are not disbursed to the City, the Contractor hereby agrees that the City shall have the right to terminate this Contract in whole or in part without penalty to the City.

16.3.1 Effects of Non-Appropriation. If funds to enable the City to effect continued payment under this Contract are not appropriated, authorized or otherwise made available by law, the City shall have the right to terminate this Contract without penalty at the end of the last period for which funds have been appropriated, authorized or otherwise made available by law by giving written notice of termination to the Contractor.

16.3.2 Effects of Reduced Levels of Funding. If funding is reduced by law, or funds to pay the Contractor for the agreed to level of the products, services and functions to be provided by the Contractor under this Contract are not appropriated, authorized or otherwise made available by law, the City may, upon seven (7) business days written notice to the Contractor, reduce the level of the products, services or functions in such manner and for such periods of time as the City may elect. The charges payable under this Contract shall be equitably adjusted to reflect such reduced level of products, services or functions and the parties shall be afforded the rights set forth in this Contract.

16.3.3 No Payment for Lost Profits. In no event shall the City be obligated to pay or otherwise compensate the Contractor for any lost or expected future profits.

16.4. Rights Upon Termination.

16.4.1 Termination for Cause. In the event the City terminates this Contract for cause, the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to, perpetual use of any proprietary rights in and to the products and deliverables delivered to, in possession of and properly invoiced and paid for by (except to the extent such invoiced amount is disputed) the City. Regarding third party products, the Contractor shall transfer all licenses which it is permitted to transfer in accordance with the applicable third-party license. The City shall have no financial obligation to compensate the Contractor for such terminated products unless payment is otherwise approved by the City prior to such termination. The Contractor shall be liable for costs incurred by the City, including but not limited to reasonable attorney fees and all court awarded fees and costs incurred in terminating this Contract in whole or in part.

16.4.2 Termination for Lack of Funding or Convenience. In the event of termination by the City for lack of funding or convenience, the City shall pay the Contractor for all labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc.(including any holdbacks) installed and delivered to the City as of the Termination Date and the Contractor shall relinquish to the City any applicable interest, title and ownership including, but not limited to perpetual use of any proprietary rights in and to said labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. delivered to, in possession of and paid for by the City (except to the extent any invoiced amount is disputed). The Contractor shall be required to exercise commercially reasonable efforts to mitigate damages. In the event of a termination for Lack of Funding or Convenience the City and the Contractor may negotiate a mutually acceptable payment to the Contractor for reasonable demobilization expenses. Said demobilization expenses, if any, shall be handled in accordance with the provision of this Contract pertaining to changes in the Project.

16.4.3 Assumption of Subcontracts. In the event of termination, the City shall have the right to assume, at its option, one or all subcontracts for products, services and functions provided exclusively under this Contract.

16.4.4 Delivery of Documents. In the event of termination, **(i)** the Contractor shall promptly deliver to the City, in a manner reasonably specified by the City, all documents and other tangible items furnished by, or owned, leased, or licensed by, the City, and **(ii)** the City shall pay the Contractor for all services performed and deliverables completed and accepted (pro-rated for deliverables partially completed) prior to the effective date of the termination (except to the extent any invoice amount is disputed).

17. Force Majeure. Contractor shall not be held responsible for delays nor be subject to liquidated damages when such delays are caused by conditions beyond its control, including without limitation:

17.1. Acts of God, fire, explosion, epidemic, cyclone, flood, war, strikes, revolution, civil commotion, or acts of public enemies; and

17.2. Change of law and order, proclamation, regulation, ordinance, or governmental requirement.

Upon cessation of work for reason of force majeure delays, Contractor shall use its best efforts to meet the schedule set forth in Section 5 of this Contract.

18. Subcontracting. The Contractor shall not, without the prior written approval of the City's Using Agency, subcontract, in whole or in part, any of the Contractor's services. Any subcontractor so approved shall be required to secure and maintain insurance coverage equal to or better than that required of the Contractor and shall name the City as an additional insured party and said subcontractors shall deliver to the City a certificate of insurance evidencing such coverages. All subcontractors shall comply with all federal, state and local, laws, regulations and ordinances but such requirement shall not relieve the Contractor from its requirement that all services provided hereunder shall comply with all Federal, State and local, laws, regulations and ordinances.

18.1. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by the Contractor.

18.2. The Contractor is responsible for and shall control the activities of its subcontractors, and the subcontractors shall consult and cooperate with one another and other contractors working on the Project site. Each subcontractor shall furnish all necessary information to other subcontractors and shall lay out and install its own work to avoid any delays or interferences with the work of another. Any cost for changes, cutting and/or repairing, made necessary by failure to observe the above requirements shall be borne by the Contractor or subcontractor responsible for such failure or neglect.

18.3. The Contractor shall not, without the prior written approval of the City's Using Agency, substitute, terminate, replace or otherwise remove a subcontractor.

19. Assignability. The Contractor shall not assign any interest in this Contract and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the City; provided, however, that claims for money due or to become due the Contractor from the City under this Contract may be assigned to a bank, trust, company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

20. Audit. The City reserves the right to audit the Contractor's books of account in relation to this Contract at any time during the period of this Contract or at any time during the twelve-month period immediately following the closing or termination of this Contract. In the event the City elects to make such an audit, the Contractor shall immediately make available to the City all records pertaining to this Contract, including, but not limited to, payroll records, bank statements and canceled checks.

21. Interest of City Officials. No member of the governing bodies of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, shall have any personal interest, direct or indirect, in this Contract.

22. Interest of Contractor. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in the Project or any parcel of land therein or any other interest which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed.

23. Entire Contract. This Contract shall constitute the complete and exclusive statement of the contract between the parties as it relates to this transaction and supersedes all previous agreements and understandings, whether written or oral, relating to such subject matter. Any amendment to this Contract must be in writing and agreed to and executed by the City and the Contractor and must comply with the City's Charter and Code of Ordinances.

24. Independent Contractor Relationship. The relationship between the City and the Contractor is that of client and independent contractor. No agent, employee, or servant of the Contractor shall be deemed to be an employee, agent or servant of the City. The Contractor shall be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

25. Severability. Whenever possible, each provision of this Contract shall be interpreted in such a manner as to be effective and valid under applicable law. If any provision of this Contract, however, is held to be prohibited or invalid under applicable law, such provision shall be deemed restated to reflect the original intentions of the parties, as nearly as possible in accordance with applicable law, and if capable of substantial performance, the remaining provisions of this Contract shall be enforced as if this Contract was entered into without an invalid provision. If the ruling and/or controlling principle of law or equity leading to the ruling is subsequently overruled, modified or amended by legislation, judicial or administrative action, then the provision(s) in question as originally set forth in this Contract shall be deemed valid and enforceable to the maximum extent permitted by the new controlling principal of law or equity.

26. Survival. Any provisions of this Contract that impose continuing obligations on the parties shall survive the expiration or termination of this Contract for any reason.

27. Changes in the Project: Change Orders.

27.1. Requests for Change Orders. The City reserves the right on its own volition or based upon a proposal for a Change Order submitted in written form with a thorough explanation by the Contractor, to request from time to time any changes to the requirements and specifications of this Contract and the products to be provided and the functions and services to be performed by the Contractor under this Contract. Such changes must be authorized by the City. The City will not approve of any change orders, deletions, additions, or additional work items to the Scope of Services or any change in the terms and conditions of this Contract except by means of a City authorized amended Scope of Services, applicable and restricted to those items set forth in §1, above, or Change Order issued as set forth in this section, except in the event of an emergency endangering life or property.

27.2. Procedures.

27.2.1 The Contractor's Response to a Change Request.

i. Within thirty (30) calendar days after receipt of a request by the City for any such change or such other period as the Parties may mutually agree to in writing, the Contractor shall submit to the City a proposal describing any changes in Contract Milestones or Contract completion dates, products, functions, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The Contractor's proposal shall describe, in detail, the basis for the proposed price adjustment, including the charges for any products required to implement the change request.

ii. To the extent that additional costs or cost savings result from a change in required products, the Contractor shall obtain any additional products and provide them to the City at a negotiated price acceptable to the City and the Contractor. Similarly, if the change request is expected to result in a reduction in products required to perform the services, the Contractor's charges shall be reduced by the cost savings resulting from the products eliminated by the change request.

27.2.2 City's Acceptance of Change Request. If the City accepts the Contractor's proposal, the City shall issue a change order referencing the Contractor's proposal and both parties shall sign the change order. The Contractor shall not implement any change request until the City has issued a valid, properly executed, change order.

27.2.3 City's Rejection of Change Request. If the City does not accept the Contractor's proposal, the City may within two weeks of such non-acceptance: **(i)** withdraw its change request; or, **(ii)** modify its change request, in which case

the procedures set forth above shall apply to the Contractor's response to the modified change request.

27.3. City Discretion. The City may, in its sole discretion, approve the proposed Change Order and shall forward same for additional signatures under the following conditions: **(i)** If it conforms to provisions of applicable laws, and **(ii)** if it is consistent with this Contract, and **(iii)** if the time of performance of this Contract will not be unreasonably delayed, **(iv)** the Final Completion date is not changed, **(v)** if the Change Order requires a change to the Final Completion date, such change has been authorized by an approved, executed, written Amendment to this Contract, and **(vii)** if the Change Order requires an increase in the price of the Contract, the City **(1)** has sufficient funds, and **(2)** if a budget transfer is required to cover the cost of the proposed Change Order, such transfer has secured the written approval of the Board of Aldermen and other required regulatory agencies.

27.4. Change Orders Governed by the Provisions of this Contract. All work performed under a Change Order is governed by the provisions of this Contract.

28. Conflicts or Disputes. This Contract represents the concurrence between the City and the Contractor and governs all disputes between them. In the instance of a conflict or dispute over issues not specifically referenced within the Contract, the following documents shall be used as historical documents, without regard to the order of precedence, to resolve such conflicts or disputes, as follows: **(i)** the City's **RFP No. 7815** and **(ii)** the Contractor's Bid response to **RFP No. 7815**, dated _____. Said historical documents are attached hereto as part of **Attachment A.**

28.1. Procedure. This procedure supersedes all statements to the contrary occurring either in proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

28.2. Presumption. This Contract or any section thereof shall not be construed against any party because the Contract or any section thereof was drafted by such party.

29. Disputes; Legal Proceedings; Waiver of Trial by Jury and Continued Performance. The Contractor agrees that it waives a trial by jury as to any and all claims, causes of action or disputes arising out of this Contract or services to be provided pursuant to this Contract. Notwithstanding any such claim, dispute or legal action, the Contractor shall continue to perform services under this Contract in a timely manner, unless otherwise directed by the City.

30. Binding Contract. The City and the Contractor each bind themselves, and their successors, assigns and legal representatives to the other party to this Contract and to the successors, assigns and legal representatives of such other party with respect to all covenants of this Contract.

31. Waiver. Any waiver of the terms and conditions of this Contract by either of the parties hereto shall not be construed to be a waiver of any other term or condition of this Contract.

32. Governing Laws. This Contract, its terms and conditions and any claims arising there from shall be governed by the laws of the State of Connecticut.

33. Notice. Except as otherwise specifically prohibited in this Contract, whenever under this Contract approvals, authorizations, determinations, notices, satisfactions or waivers are required or permitted, such items shall be effective and valid only when given in writing signed by a duly authorized officer of the City or the Contractor, and delivered in hand or sent by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor:

City: City of Waterbury
City Hall
235 Grand Street
Waterbury, CT 06702

With a copy to: Office of Corporation Counsel
City Hall
235 Grand Street
Waterbury, CT 06702

34. City Code of Ordinances, Ethics and Conflict of Interest Code, Provisions. The Person (the term "Person" shall herein be as defined in Section 38 of the City's Code of Ordinances) supplying the labor, services, equipment, materials, reports, plans, specifications, drawings, deliverables, incidentals, etc. under this Contract shall comply with all applicable Federal, State and Municipal statutes, regulations, charters, ordinances, rules, etc, whether they are expressly stated in this Contract, including but not limited to the following:

34.1. It shall be a material breach of this Contract, and, except as may be permitted by regulations or rulings of the City of Waterbury Board of Ethics it shall be a violation of the City's Code of Ordinances, for any Public Official, City Employee or Member of a Board or Commission who is participating directly or indirectly in the procurement process as set forth in the City's Code of Ordinances, including those participating in exempt transactions, to become or be the employee of any person contracting with the governmental body by whom the Official, Employee, or Board or Commission member is employed or is a member.

34.2. It shall be a material breach of this Contract, and it shall be a violation of the City's Code of Ordinances for any Person to offer, give, or agree to give any current or former Public Official, Employee or Member of a Board or Commission, or for such current or former Public Official, Employee or Member of a Board or Commission to solicit, demand, accept or agree to accept from another Person, a gratuity or an offer of employment in connection with any: decision; approval; disapproval; recommendation; preparation of any part of a program requirement or a requisition; influencing the content of any specification or procurement standard; or rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a Contract or Purchase Order, or to any solicitation or proposal therefore.

34.3. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for any payment, Gratuity, or offer of employment to be made as an inducement for the award of a subcontract or order, by or on behalf of a subcontractor, the prime Contractor or higher tier subcontractor or any Person associated therewith, under a Contract or Purchase Order to the City.

34.4. The value of anything transferred or received in violation of the City's Charter, Code of Ordinances, and/or regulations promulgated there under, by any Person subject to said Charter and/or Ordinances may be recovered by the City.

34.5. Upon a showing that a subcontractor made a kickback to the City, a prime Contractor or a higher tier subcontractor in connection with the award of a subcontract or order there under, it shall be conclusively presumed that the amount thereof was included in the price of the subcontract or order and ultimately borne by the City and will be recoverable hereunder from the recipient. In addition, said value may also be recovered from the subcontractor making such kickbacks. Recovery from one offending party shall not preclude recovery from other offending parties.

34.6. It shall be a material breach of this Contract and it shall be a violation of the City's Code of Ordinances for a Person to be retained, or to retain a Person, to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee; and every Person, before being awarded a City Contract, shall deliver to the City, on a City authored form, a representation that such Person has not retained anyone in violation of this subsection 34.6, the failure to deliver said form being a material breach of this Contract and a violation of the City's Code of Ordinances. Note, however, this subsection 34.6 shall not apply to full-time Employees who, as a condition of their employment, may be entitled to bonuses or other fees in accordance with their employment relationship.

34.7. The Person hereby expressly represents that he/she/it has complied with those sections of the City's Code of Ordinances requiring that said Person has **(i)** delivered to the City an affidavit, on a City authored form, stating that the Person and its affiliates have no delinquent taxes or other financial obligations owned to the City; **(ii)** filed the

City authored financial disclosure statement form as set forth in the City's Code of Ordinances regarding disclosure of financial interests; **(iii)** delivered to the City a written acknowledgement, on a City authored form, evidencing receipt of a copy of the "Ethics and Conflict of Interest" ordinance for the City of Waterbury and hereby expressly represents that said Person is in full compliance with the entirety of said Code of Ordinances; and **(iv)** filed a current list of all taxable personal and real property as required by the State of Connecticut General Statutes. Any violation of this subsection 34.7 shall be deemed a material breach of this Contract and shall be a violation of the City's Code of Ordinances.

34.8. The definitions set forth in the City's Code of Ordinances shall be the primary source for interpretation of the forgoing subsections 34.1-34.7.

34.9. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, all relevant provisions of the City's Charter and all relevant provisions of the City's Code of Ordinances, including without limitation Chapters 93, titled "Discriminatory Practices", Chapter 38 titled "Centralized Procurement System", and Chapter 39 titled "Ethics and Conflict of Interest", of said Code as may be amended from time to time.

34.10 The Contractor hereby acknowledges receipt of a copy of the Chapters 38 and 39 of City's Ordinance regarding Procurement, Ethics, and Conflicts of Interest and has familiarized itself with said Code and hereby agrees to adhere to said Code. The text of Chapters 38 and 39 of said Code may be obtained from the Office of the City Clerk of the City and on the internet at the City Clerk's web site: *http://www.waterburyct.org/content/458/539/default.aspx* [click link titled "The City of Waterbury Code of Ordinances *Passed 8/24/2009*". For Chapter 38, click on **"TITLE III: ADMINISTRATION",** then click **on "CHAPTER 38: CENTRALIZED PROCUREMENT SYSTEM"**. For Chapter 39, click on **"TITLE III: ADMINISTRATION"**, then click on **"CHAPTER 39: ETHICS AND CONFLICTS OF INTEREST"**].

34.11. The Contractor is hereby charged with the requirement that it shall have knowledge of, and shall fully comply with, the City's Ordinance Sections 34.15 through 34.99 entitled, "Ordinance Concerning the Hiring of Waterbury Residents on Certain Publicly Funded Construction Projects," and the State of Connecticut Legislature's Special Act No. 01-1.

34.12. Every Person who conducts business with, contracts, with or provides commodities or services to the City, is charged with notice of the extent of the powers and authority, and the limitations thereon, of the Public Officials and Employees of the City, as set forth in the charter of the City, the Code of Ordinances and any Regulations or Policies pertaining thereto. In particular, and without implying any limitation as to its applicability, it applies to all Persons who participate in the procedures pertaining to the Centralized Procurement System as set forth in Chapter 38, and the Ethics and Conflict of Interest provisions set forth in Chapter 39 of the Code of Ordinances.

34.13. INTEREST OF CITY OFFICIALS. No member of the governing body of the City, and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the carrying out of the project, to which this agreement pertains, shall have any personal interest, direct or indirect, in this agreement.

34.14. PROHIBITION AGAINST CONTINGENCY FEES. The Contractor hereby represents that it has not retained anyone to solicit or secure a contract with the City upon an agreement or understanding for a commission, percentage, brokerage or contingency fee.

34.15. FREEDOM OF INFORMATION ACT NOTICE. Pursuant to State statute, in the event the total compensation payable to the Contractor set forth in Section 6 of this Contract is greater than $2,500,000.00, the City is entitled to receive a copy of all Contractor records and files related to the performance of this Contract and those records and files are subject to the Freedom of Information Act ("the Act") and may be disclosed by the City pursuant to the Act.

35. Definitions. Whenever the following, words, terms, etc. appear in this Contract, the intent and meaning shall be as follows:

35.1 Additional Work: Work required by the City that involves a substantial addition to, deduction from or modification of the Contract Documents.

35.2 Bid or Proposal: The form on which the bidder is to submit a bid for the Work contemplated.

35.3 Bidder: A person, partnership, corporation or other business organization submitting a bid on the form for the Work contemplated.

35.4 City: The City of Waterbury, acting directly or through specifically authorized personnel.

35.5 Construction Supervisor: An employee of the City of Waterbury, or other City duly authorized person – initially KBE Building Corporation.

35.6 Contract Time: The number of days as stated in the Contract to: (i) achieve Substantial Completion, (ii) Final Completion.

35.7 Equal: The recognized equivalent in substance and function; considering quality, workmanship, economy of operation, durability and suitability for purposes intended, and not constituting a change in the Work specified. Whenever the words "equal" or "equals" or words of like import are used, it shall be understood they mean "equal" in the opinion of the City.

35.8 Final Completion: The time at which the Project has progressed to the point where, in the opinion of the City, the Project is complete such that it is ready for final payment as evidenced by the City's, or its duly authorized City representative's, written recommendation of final payment. The terms "finally complete" and "finally completed" as applied to the Project refer to Final Completion.

35.9 Notice to Proceed: A letter from the City which shall state the date of execution of the Contract and specifically advise the Contractor to begin work on the Contract.

35.10 Plans: All drawings or reproductions of drawings pertaining to the construction of the work contemplated and its appurtenances.

35.11 Project Engineer or Manager: An employee of the City or a person, partnership, corporation or other business organization under contract with the City, commissioned to perform construction administration and inspection duties during construction.

35.12 Shop Drawings: Drawings, diagrams, schedules, performance charts, brochures and other materials prepared by the Contractor or subcontractors, manufacturers or distributors which illustrate some portion of the work.

35.13 Specifications or Technical Specifications: The description, provisions and other requirements pertaining to the materials, methods and manner of performing the Project.

35.14 Subcontractor: A person, partnership, corporation or other business organization supplying labor and/or materials for work at the site of the Project to and under agreement with the Contractor.

35.15 Substantial Completion: The time at which, in the opinion of the Engineer, the Project (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Project (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Project mean Substantial Completion thereof.

35.16 Substitution: A replacement of specified material, device or equipment which is sufficiently different in substance, function, quality or workmanship to become the subject of a Change Order.

35.17 Supplementary General Conditions: An extension to the terms, conditions, and provisions set forth in this document as additional, material, provisions of this Contract.

35.18 Work: All plant, labor, materials, services, supplies, equipment and other facilities and items necessary for, or incidental to, the completion of the terms of the Contract.

35.19 Using Agency: School Inspector's Office, Department of Education.

IN WITNESS WHEREOF, the parties hereto execute this Contract on the dates signed below.

WITNESSES:

_____

_____

CITY OF WATERBURY

By:_____
Neil M. O'Leary, Mayor

Date: _____

WITNESSES:

_____

_____

_____

By:_____

Its _____

Date: _____

City Reserves the Right to Revise and Modify

ATTACHMENT A

Draft -- City Reserves the Right to Revise and Modify

ATTACHMENT B

Draft -- City Reserves the Right to Revise and Modify

ATTACHMENT C

Draft – City Reserves the Right to Revise and Modify

CONSTRUCTION CONTRACTS - REQUIRED CONTRACT PROVISIONS – AMERICAN RESCUE PLAN ACT FUNDED PROJECTS, DATED JUNE 2021

Contractor shall comply with all applicable Federal statutes, regulations, executive orders, the American Rescue Plan Act, and any interpretive guidance by other parties in any agreements it enters with other parties relating to these funds. Compliance requirements specifically include Sections 602 (b) and 603 (b) of the Social Security Act as added by Section 9901 of the American Rescue Plan Act, Pub. L. No. 117-2 (March 11, 2021).

In addition:

1. Contractor shall comply with regulations adopted by the Treasury pursuant to section 602(f) of the Social Security Act, and guidance issued by the Treasury regarding the foregoing and shall comply with all other applicable federal statutes, regulations, and executive orders.

   Federal regulations applicable to this contract include, without limitation, the following:

   1.1 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2, C.F.R. Part 200
   1.2 Universal Identifier and System for Award Management (SAM), 2 C.F.R. Part 25, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 25 is hereby incorporated by reference.
   1.3 Reporting Subaward and Executive Compensation Information, 2 C.F.R. Part 170, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 170 is hereby incorporated by reference.
   1.4 OMB Guidelines on Governmentwide Debarment and Suspension (Non-Procurement), 2 C.F.R. Part 180, including the requirement too include a term or condition in all lower tier covered transactions (contracts and subcontracts described in 2 C.F.R. Part 180, subpart B) that the award is subject to 2 C.F. R. Part 180 and treasury's implementing regulation at 31 C.F.R. Part 19.
   1.5 Recipient Integrity and Performance matters, pursuant to which the award term set forth in 2 C.F.R. Part 200, Appendix XII to Part 200 is hereby incorporated by reference.
   1.6 Governmentwide Requirements for Drug-Free Workplace, 31 C.F.R. Part 20.
   1.7 New Restrictions on Lobbying, 31 C.F.R. Part 21.
   1.8 Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (42 U.S.C. §§4601-4655) and implementing regulations.
   1.9 Generally applicable federal environmental laws and regulations.
   Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) and Treasury's implementing regulations at 31 C.F.R. Part 22, which prohibits discrimination based on race, color, or national origin under programs or activities receiving federal financial assistance.
   1.10 The Fair Housing Act, Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§ 3601 et seq.) which prohibits discrimination in housing based on race, color, religion, national origin, sex, familial status or disability.

1.11 Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination based on disability under any program or activity receiving federal financial assistance.

1.12 The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.) and Treasury's implementing regulations at 31 C.F.R. Part 23, which prohibits discrimination based on age in programs or activities receiving federal financial assistance.

1.13 Title II of the American with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.), which prohibits discrimination based on disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereof.

1.14 The contractor, its subcontractors and assigns, shall comply with following assurances:

1.14.1 Contractor ensures its current and future compliance with Title VI of the Civil Rights Act of 1964, as amended, which prohibits exclusion from participation, denial of benefits of, or subjection to discrimination under programs and activities receiving federal financial assistance, of any person in the United States on the ground of race, color, or natural origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of Treasury Title VI regulations at 31 CFR Part 22 and other pertinent executive orders such as Executive Order 13166, directives, circulars, policies, memoranda, and/or guidance documents.

1.14.2 Contractor acknowledges that Executive Order 13166, "Improving Access to Persons with Limited English Proficiency," seeks to improve access to federally assisted programs and activities for individuals who, because of national origin, have Limited English proficiency (LEP). Contractor understands that denying a person access to its programs, services, and activities because of LEP is a form of national origin discrimination prohibited under Title VI of the Civil Rights Act of 1964 and the Department of the Treasury's implementing regulations. Accordingly, Contractor shall initiate reasonable steps, or comply with the department of Treasury's directives, to ensure that FEP persons have meaningful access to its programs, services, and activities. Contractor understands and agrees that meaningful access may entail providing language assistance services, including oral interpretation and written translation where necessary, to ensure effective communication in the Contractor's programs, services, and activities.

1.14.3 Contractor agrees to consider the need for language services for LEP persons when Contractor develops applicable budgets and conducts programs, services and activities. As a resource the Department of Treasury has published its LEP guidance at 70 CFR 6067. For more information on taking reasonable steps to provide meaningful access to LEP persons, please visit http://www.lep.gov.

1.14.4 Contractor acknowledges and agrees that compliance with the assurances constitutes a condition of continued receipt of federal financial assistance and is binding upon Contractor and Contractor's successors, transferees, and assigns for the period in which such assistance is provided.

1.15 The sub-grantee, contractor, subcontractor, successor, transferee, and assignee shall comply with Title VI of the Civil Rights Act of 1964, which prohibits recipients of federal financial assistance from excluding from a program or activity, denying benefits of, or otherwise discriminating against a person on the basis of race, color, or national origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of Treasury's Title VI regulations, 31 CFR Part 22, which are herein incorporated by reference and made a part of this contract (or agreement). Title VI also includes protection to persons with "Limited English Proficiency" in any program or activity receiving federal financial assistance, 42 U.S.C. § 2000 et seq., as implemented by the Department of Treasury's Title VI regulations, 31 CFR Part 22, and herein incorporated by reference and made a part of this contract or agreement.

1.16 Seat Belt Use. Contractor is encouraged to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company=owned, rented or personally owned vehicles.

1.17 Reducing Text Messaging When Driving. Contractor is encouraged to adopt and enforce policies that ban text messaging while driving.

1.18 If Contractor produces any publication with funds from an ARPA funded project, Contractor will include in the publication the following language: "This project is supported, in whole or in part, by federal award number _____ awarded to the City of Waterbury, by the U.S. Department of Treasury.

1.19 The Contractor shall protect all Whistleblowers as follows:

a) Contractor shall inform its employees in writing of the rights and remedies provided under this section, in the predominant native language of the workforce.
b) In accordance with 41 U.S.G. §4712, Contractor may not discharge, demote or otherwise discriminate against an employee in reprisal for disclosing to any of the list of persons or entities provided below, information that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, and abuse of authority relating to a federal contract or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal contract (including the competition for or negotiation of a contract) or grant.
c) The list of persons and entities referenced in the paragraph above includes the following:
    i. A member of Congress or a representative of a committee of Congress;
    ii. An Inspector General;
    iii. The Government Accountability Office;
    iv. A Treasury employee responsible for contract or grant oversight or management;
    v. An authorized official of the Department of Justice or other law enforcement agency;
    vi. A court or grand jury; or
    vii. A management official or other employee of the City of Waterbury, contractor, or subcontractor who has the responsibility to investigate, discover, or address misconduct.

ATTACHMENT C

ATTACHMENT C

KEVIN MC CAFFERY
DIRECTOR OF PURCHASING
235 GRAND STREET, ROOM 103
WATERBURY, CT 06702

The undersigned declares that the only persons or parties interested in this Proposal as principals are as stated; that the Proposal is made without any collusion with other persons, firms, or corporations; that Proposer has carefully examined the entire Request for Proposal; that Proposer has informed itself fully in regard to all conditions pertaining to the Work and the place where it is to be performed; and that with this representation, the undersigned makes this Proposal. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Proposal and Form are a part.

The undersigned agrees and covenants that the Contract Time shall commence on delivery of the City of Waterbury's written notice to proceed, which shall occur after contract execution by both parties.

The undersigned acknowledges receipt of addenda numbered: (insert date)

1 _____ 4 _____

2 _____ 5 _____

3 _____ 6 _____

All Work for this Project shall be performed at the Proposal Prices as described in the Proposal Documents.

The undersigned hereby certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____
Social Security Number
or Federal Identification Number

_____
Signature of Individual or Corporate Name

_____
Corporate Officer
(if applicable)

City notice of acceptance should be mailed, telegraphed or delivered to the undersigned Proposer at the following address:

Name _____
By: _____
(Title)
Business Address: _____
(City, State, Zip Code)
_____
_____
Phone: _____
Email:_____
Date: _____

Note: If the Proposer is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

ATTACHMENT D

ATTACHMENT D

Insurance Requirements

Contractor/Vendor shall agree to maintain in force at all times during the contract the following minimum coverages and shall name the City of Waterbury and the Waterbury Board of Education as an Additional Insured on a primary and non-contributory basis to all policies, except Workers Compensation. All policies should also include a Waiver of Subrogation. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's rating of "A-"VIII.

If any policy is written on a "Claims Made" basis, the policy must be continually renewed for a minimum of two (2) years from the completion date of this contract. If the policy is replaced and/or the retroactive date is changed, then the expiring policy must be endorsed to extend the repo1ting period for claims for the policy in effect during the contract for two (2) years from the completion date.

Original, completed Certificates of Insurance must be presented to The City of Waterbu1y and the Waterbu1y Board of Education prior to contract issuance. Contractor/Vendor agrees to provide replacement/renewal certificates at least 30 days prior to the expiration date of the policies. Should any of the above described policies be canceled, limits reduced, or coverages altered, 30 days written notice must be given to the City of Waterbury and the Waterbury Board of Education.

General Liability: **$1,000,000 each Occurrence**
$2,000,000 General Aggregate
$2,000,000 Products/ Completed Operations Aggregate

Auto Liability: **$1,000,000 Combined Single Limit each Accident**
Any Auto, All Owned and Hired Autos

Workers Compensation: **WC Statutory Limits**
Employer Liability (EL)
$1,000,000 EL each Accident
$1,000,000 EL Disease each Employee
$1,000,000 EL Disease Policy Limits

Excess/ Umbrella Liability: **$5,000,000 each Occurrence**
$5,000,000 Aggregate

Builder's Risk/Installation Floater Insurance: **Coverage equaling the completed value of the project**

Contractors Pollution Liability Insurance: **$1,000,000 each Occurrence/Claim**
$1,000,000 Aggregate
There will be no exclusion for Hazardous materials, including Asbestos and Lead

Wording for Additional Insured Endorsement and Waiver of Subrogation:

The City of Waterbury, its Board of Education and KBE Building Corporation (all affiliated entities and each of their respective members, managers, partners, agents, officers, directors, commissions, officials, stakeholders, shareholders and employee) is listed as Additional Insured on a primary and non-contributory basis on all policies except Workers Compensation and Professional Liability. All policies shall include a Waiver of Subrogation except Builders Risk.

ATTACHMENT E

ATTACHMENT E
PRICING PROPOSAL

Replace HVAC at Crosby & Wallace

RFP#7815

1. General Conditions	$
2. Demolition (Excluding Asbestos Abatement)	$
3. Asbestos Abatement	$
4. Masonry	$
5. Metal Fabrications/Framing	$
6. Fire Protection	$
7. Spray Applied Fireproofing	$
8. Roof Patching	$
9. Doors/Frames/Hardware	$
10. Interior Finishes	$
11. HVAC	$
12. Electrical	$
GRAND TOTAL	$

Estimated Lead Time for Major Equipment: (how many weeks)

_____

_____

_____

_____

_____

In the event of mathematically incorrect calculations of individual items or totals, the mathematically correct amount as determined by the City shall govern in determining the TOTAL PROPOSAL PRICE.

The undersigned also agrees that the quantities indicated are for Proposal comparison purposes only and are not represented to be actual quantities for completion of the Work.

The undersigned hereby certifies under the penalties of perjury that this Proposal is in all respects bona fide, fair, and made without collusion or fraud with any other person. As used in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____

Social Security Number or Federal Identification Number

_____

Company Name

_____

Signature of Individual or Corporate Name

_____

Corporate Officer (if applicable)

ATTCHMENT F

Minimum Rates and Classifications
for Building Construction

ID#: 23-51814

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: 7815 Project Town: Waterbury
State#: FAP#:
Project: Replace Mechanical Equipment at Crosby/Wallace Complex

CLASSIFICATION	Hourly Rate	Benefits
1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**		
1c) Asbestos Worker/Heat and Frost Insulator	45.56	32.65
2) Boilermaker	45.21	29.05
3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	39.4	34.62 + a
3b) Tile Setter	37.1	30.52
3c) Tile and Stone Finishers	30.0	25.30
3d) Marble & Terrazzo Finishers	31.07	24.23
3e) Plasterer	42.77	29.63

------LABORERS------

As of: August 23, 2023

4) Group 1: General laborers, carpenter tenders, concrete specialists, wrecking laborers and fire watchers.	33.5	25.59
4) Group 1a: Acetylene Burners (Hours worked with a torch)	34.5	25.59
4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofer/mixer/nozzleman (Person running mixer and spraying fireproof only).	33.75	25.59
4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	34.0	25.59
4c) **Group 4: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license) (the pipelayer rate shall apply only to one or two employees of the total crew who primary task is to actually perform the mating of pipe sections) P6 and P7 rate is $26.80.	34.5	25.59
4d) Group 5: Air track operator, sand blaster and hydraulic drills.	34.25	25.59
4e) Group 6: Blasters, nuclear and toxic waste removal.	36.5	25.59
4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped).	36.5	25.59
4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew.	31.78	25.59
4h) Group 9: Top men on open air caisson, cylindrical work and boring crew.	31.24	25.59
4i) Group 10: Traffic Control Signalman	20.1	25.59
4j) Group 11: Toxic Waste Removers A or B With PPE	36.5	25.59

As of: August 23, 2023

5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	37.61	27.61
5a) Millwrights	38.02	28.41
6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	43.4	32.07+3% of gross wage
7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	61.42	37.335+a+b
-----LINE CONSTRUCTION----		
Groundman	26.5	6.5% + 9.00
Linemen/Cable Splicer	48.19	6.5% + 22.00
8) Glazier (Trade License required: FG-1,2)	41.18	24.55 + a
9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	42.37	40.02 + a
----OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone; Hoisting Engineer (2 drums or over). (Trade License Required)	52.78	27.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and Over	48.37	27.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	52.41	27.80 + a

As of: August 23, 2023

Group 2a: Cranes (under 100 ton rated capacity).	51.51	27.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer)	48.0	27.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Finegrade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	47.1	27.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper); Goldhofer.	46.64	27.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Spreader, Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24 mandrel).	45.92	27.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	45.92	27.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	45.55	27.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under mandrel).	45.14	27.80 + a
Group 8: Mechanic; Grease Truck Operator; Hydroblaster; Barrier Mover; Power Stone Spreader; Welding; Work Boat Under 26 ft.; Transfer Machine; Rigger Foreman.	44.67	27.80 + a
Group 9: Front End Loader (under 3 cubic yards); Skid Steer Loader regardless of attachments; (Bobcat or Similar); Forklift, Power Chipper; Landscape Equipment (including Hydroseeder); Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	44.14	27.80 + a

As of: August 23, 2023

Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	41.69	27.80 + a
Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	41.69	27.80 + a
Group 12: Wellpoint Operator.	41.61	27.80 + a
Group 13: Compressor Battery Operator.	40.92	27.80 + a
Group 14: Elevator Operator; Tow Motor Operator (solid tire no rough terrain).	39.54	27.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	39.06	27.80 + a
Group 16: Maintenance Engineer.	38.28	27.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator; Portable Grout Plant Operator; Portable Water Filtration Plant Operator.	43.46	27.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (Minimum for any job requiring a CDL license); Rigger; Signalman.	40.54	27.80 + a

------PAINTERS (Including Drywall Finishing)------

10a) Brush and Roller	37.62	24.55
10b) Taping Only/Drywall Finishing	38.37	24.55
10c) Paperhanger and Red Label	38.12	24.55
10e) Blast and Spray	40.62	24.55

As of: August 23, 2023

11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	48.28	35.50
12) Well Digger, Pile Testing Machine	37.26	24.05 + a
Roofer: Cole Tar Pitch	44.5	23.30 + a
Roofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	43.0	23.30 + a
15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	41.89	43.22
16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	48.28	35.50
------TRUCK DRIVERS------		
17a) 2 Axle, Helpers	32.16	30.51 + a
17b) 3 Axle, 2 Axle Ready Mix	32.27	30.51 + a
17c) 3 Axle Ready Mix	32.33	30.51 + a
17d) 4 Axle	32.39	30.51 + a
17e) 4 Axle Ready Mix	32.44	30.51 + a
17f) Heavy Duty Trailer (40 Tons and Over)	34.66	30.51 + a

As of: August 23, 2023

17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	32.44	30.51 + a
17h) Heavy Duty Trailer up to 40 tons	33.39	30.51 + a
17i) Snorkle Truck	32.54	30.51 + a
18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	47.55	32.27 + a
19) Theatrical Stage Journeyman	25.76	7.34

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.*

***Note: Hazardous waste premium $3.00 per hour over classified rate*

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.
Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.
The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.
The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.
All subsequent annual adjustments will be posted on our Web Site for contractor access.
Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

As of: August 23, 2023

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: August 23, 2023

As of: August 23, 2023

PREVAILING WAGE BID PACKAGE

- Prevailing Wage Law Poster (PDF, 97KB)
- Section 31-53b: Construction safety and Health Course. Proof of completion required for employees on public building projects.
  - Informational Bulletin - The 10-Hour OSHA Construction Safety and Health Course (PDF, 20KB)
- Notice For All Mason Contractors (PDF, 5KB)
- CT General Statute 31-55a
- Contractor's Wage Certification Form (PDF, 11KB)
- Payroll Certification - Public Works Projects
- Information Bulletin - Occupational Classifications
- Footnotes (Rev. 07/19) (PDF)

Opportunity ★ Guidance ★ Support

CONNECTICUT DEPARTMENT OF LABOR

THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Worker training requirements for public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (h) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 46 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268, and, on or after July 1, 2012, that any plumber or electrician subject to the continuing education requirements of section 20-334d, who has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration five or more years prior to the date such electrician or plumber begins work on such public works project, has completed a supplemental refresher training course of at least four hours in duration in construction safety and health taught by a federal Occupational Safety and Health Administration authorized trainer.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2012, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or, in the case of a supplemental refresher training course, shall include, but not be limited to, an update of revised Occupational Safety and Health Administration standards and a review of required construction hazards training, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety

and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project or, in the case of supplemental refresher training, a student course completion card issued by said Occupational Safety and Health Administration authorized trainer dated not earlier than five years prior to the date such electrician or plumber begins work on such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1; P.A. 10-47, S. 2; P.A. 11-63, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009; P.A. 10-47 made a technical change in Subsec. (a); P.A. 11-63 amended Subsec. (a) by adding provision re supplemental refresher training course for plumbers and electricians subject to Sec. 20-334d, amended Subsec. (c) by adding provisions re regulations and subject matter of refresher training course and refresher training course student completion cards, and made technical changes, effective July 1, 2011.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders -** operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9) -** operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

Sec. 31-55a. Annual adjustments to wage rates by contractors doing state work. Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

(P.A. 02-69, S. 1.)

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

Construction Manager at Risk/General Contractor/Prime Contractor

I,_____of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signed

Subscribed and sworn to before me this _____ day of _____,_____.

_____
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

12/9/2013 *IF REQUIRED
WWS-CP1

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such person is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

_____	_____	_____
(Signature)	(Title)	Submitted on (Date)

*****THIS IS A PUBLIC DOCUMENT*****
*****DO NOT INCLUDE SOCIAL SECURITY NUMBERS*****

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:
Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							
												$ Base Rate	1. $ 2. $ 3. $							
												$ Cash Fringe	4. $ 5. $ 6. $							

*IF REQUIRED

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine *"job classification"* on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- ***ASBESTOS WORKERS***

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- ***ASBESTOS INSULATOR***

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- ***BOILERMAKERS***

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- ***BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS***

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- ***CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS***

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

• The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

• If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

• An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- ***ELECTRICIANS***

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- ***ELEVATOR CONSTRUCTORS***

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ***License required by Connecticut General Statutes: R-1,2,5,6.***

- ***FORK LIFT OPERATOR***

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- ***GLAZIERS***

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- ***IRONWORKERS***

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- ***INSULATOR***

• Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- ***LABORERS***

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- ***PAINTERS***

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- ***LEAD PAINT REMOVAL***

• Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

• Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- ***PLUMBERS AND PIPEFITTERS***

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- ***POWER EQUIPMENT OPERATORS***

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- ***ROOFERS***

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- ***SHEETMETAL WORKERS***

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- ***SPRINKLER FITTERS***

Installation, alteration, maintenance and repair of fire protection sprinkler systems. ***License required per Connecticut General Statutes: F-1,2,3,4.***

- ***TILE MARBLE AND TERRAZZO FINISHERS***

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ***License required, drivers only, per Connecticut General Statutes.***

For example:

• Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
• Hauling material off site is not covered provided they are not dumping it at a location outlined above.
• Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➢ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6790.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

⇨ Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

ATTACHMENT G

- GOOD JOBS ORDINANCE

CHAPTER 34: CITY POLICY

Section

General Provisions

34.01 Lost articles; state law adopted

Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects

34.10 Title

34.15 Purpose

34.16 Findings

34.17 Definitions

34.18 Hiring goal and implementation

34.19 Referral mechanism

34.20 Monitoring

34.21 Good faith efforts

34.22 Contract requirements for covered services

Cross-reference:

Centralized procurement system, see Ch. 38

Interlocal agreements, see Ch. 40

Statutory reference:

Advertising; sale of perishable goods, see Conn. Gen. Stat. § 50-11

Disposition after expiration of time for making claim, see Conn. Gen. Stat. § 50-14

Duties of finder, see Conn. Gen. Stat. § 50-10

Lost and unclaimed property, see Conn. Gen. Stat. Ch. 859

Procedure if unclaimed, see Conn. Gen. Stat. § 50-13

Restoration to owner if claimed, see Conn. Gen. Stat. § 50-12

GENERAL PROVISIONS

§ 34.01 LOST ARTICLES; STATE LAW ADOPTED.

The provisions of Conn. Gen. Stat. §§ 50-10 through 50-14 are adopted as permitted by Conn. Gen. Stat. § 50-9 and shall apply within the city to the finding of any article of the value of $1 or more.

(1967 Code, § 13-11)

HIRING OF WATERBURY RESIDENTS ON CERTAIN PUBLICLY-FUNDED CONSTRUCTION PROJECTS

§ 34.10 TITLE.

The City of Waterbury Code of Ordinances §§ 34.10 through 34.22 entitled "Hiring of Waterbury Residents on Certain Publicly-Funded Construction Projects" shall also be known and may be cited as the "Good Jobs Ordinance" for the City.

(Ord. passed 5-11-2015)

§ 34.15 PURPOSE.

The purpose of this subchapter is to increase the benefit to the City of Waterbury and its residents from the city's investment of public funds in certain publicly-funded construction projects to allow the city to recognize, as a benefit of such investment, a reduction in the amount of poverty and unemployment that would otherwise exist amongst its residents and also to help reduce the economic burden that would otherwise be placed on the city in having to provide alternative assistance to those residents who, but for their being hired pursuant to the provisions of this ordinance, would remain unemployed.

(Ord. passed 2-21-2012)

§ 34.16 FINDINGS.

The City of Waterbury finds that a substantial number of city residents are not being employed by contractors performing work on publicly-funded construction projects in the City of Waterbury and that the residents, therefor, are not receiving the maximum possible benefit from the City of Waterbury's investment of public funds in the projects. The city further finds that:

(A) Recent research of hiring patterns on construction projects reveals a pattern of low hiring of residents in favor of nonresidents whose hiring is draining significant resources from the city.

(1) Only 14% of work hours performed on the construction of the $138,000,000 waste water treatment plant in 1998 - 1999 were performed by residents;

(2) Only 10% of laborers hours on city street paving in 1999 were performed by residents;

(3) With an average wage of $21 per hour on tax-funded city construction work as exemplified by the waste water treatment plant construction project, more than $13,000,000 in wages was lost by city residents on that project. Due to typical turnover of those funds among businesses in the community, $13,000,000 - $26,000,000 of additional economic activity from the multiplier affect was lost to city businesses;

(4) As a result of the high percentage of noncity residents on construction projects, fewer Waterbury residents are able to be home owners, thus reducing property taxes to the city. For each resident who loses the opportunity to be a home owner, the city loses an estimated $2,000 in revenue per year.

(5) The migration of benefits caused by the high percentage of noncity residents on construction projects increases the burden on health care providers to provide uncompensated care to Waterbury residents without health insurance. Over the course of the waste water treatment plant project alone, for example, $5,000,000 in health and pension benefits were lost to city residents. If this subchapter were minimally met, it would double the wages and benefits going to city residents; and

(6) The extra cost to tax payers of the under-usage of apprentices on the project compared to what is permissible under state law is estimated at close to $1,000,000.

(B) Waterbury residents face higher rates of unemployment than other towns and cities in the region and state.

(1) The unemployment rate among construction workers who are residents of the city is 50% higher than the statewide unemployment rate among construction workers, and more than double the unemployment rate among construction workers in similarly-sized cities. For example, the Connecticut Department of Labor reports

that in September 1999, 324 city residents applied for construction jobs at unemployment offices out of a total construction workforce of 3,600 (9%). Statewide, 3,908 applicants applied out of a total construction labor force of 63,800 (6%). In Danbury, 166 city residents applied out of a total construction workforce of 4,100 (4%).

(2) Since 1984 the city's unemployment rate has been consistently higher than the rate of unemployment in the Naugatuck Valley region and the state. Unemployment is especially severe in some neighborhoods, which faced up to 19% unemployment, compared to the city's 8% unemployment in the 1990 Census.

(C) Poverty is much greater and incomes are much lower in Waterbury than elsewhere in the region and state.

(1) According to the 1990 Census, 12.1% of the city's residents lived below the poverty level, compared to 2.7% in the rest of the region and 6.8% statewide.

(2) Median 1990 household income was $30,533 in Waterbury compared to $41,721 for the state, and compared to $45,000 - $67,500 for towns in the rest of the Naugatuck Valley region. Estimates updating this data to 1997 show little change. Residents on average earn $10,000 less per capita than the statewide average of $28,000.

(3) Poverty is even more pronounced in some neighborhoods with up to 30% of their residents in poverty.

(4) The average wage for residents coming off of welfare in the city is one of the lowest in the State of Connecticut at $5.93 per hour.

(5) Over one-third of female headed households are under poverty.

(6) City children are among the poorest in the State of Connecticut, 61% of students city-wide are eligible for reduced price meals versus 25% statewide.

(Ord. passed 2-21-2012)

§ 34.17 DEFINITIONS.

For the purpose of this subchapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

ADMINISTRATOR. The person(s), city department or agency designated by the Mayor of the city with the responsibility of overseeing the implementation and enforcement of this subchapter.

APPRENTICE. Definition as set forth in Conn. Gen. Stat. § 31-22m and any subsequent amendments approved by the Connecticut General Assembly is incorporated by reference herein.

BASIC SKILLED WORKER. A person who is currently enrolled in or having completed a training program administered by or on behalf of a legally organized labor union or a state-approved standardized craft training program. Specifically excluded from this definition is an ***APPRENTICE*** as defined by Conn. Gen. Stat. § 31-22m.

CITY. The City of Waterbury, Connecticut.

CITY FUNDS. Funds originating within the city pursuant to the city's taxing powers or authority to raise money through the sale of public bonds, permit tax abatements and enter into tax fixing agreements and tax increment financing agreements.

CONSTRUCTION. The process of building, altering, repairing, improving or demolishing any public infrastructure facility, including any public structure, public building or other public improvements of any kind to city property or other property or space in which the city has an interest. It does not include the routine operation, routine repair or routine maintenance of any existing public infrastructure facility, including structures, buildings or real property.

CONSTRUCTION PROJECT. Any project for which the primary purpose involves construction, as defined above, deconstruction, the remediation of any hazardous materials as defined in the Connecticut General

Statutes, the rehabilitation or renovation of any structure or the creation, extension, reconstruction, reconditioning or rebuilding of any portion of a municipal infrastructure or public utility system.

CONTRACTOR. Any person hired by the city, directly or indirectly through an owner, to perform construction work on covered projects, including subcontractors hired by general contractors.

COVERED PROJECT. Any construction project taking place in the city with a value of $500,000 or greater, funded in whole or in part by city funds or funds administered by the city in accordance with federal or state grant or loan programs or any other federal or state programs pursuant to which the city is funding, in whole or in part, the project. This definition of ***COVERED PROJECT*** shall include funds derived from the aforementioned federal or state grant, loan or other programs only to the extent permitted by federal and state law. The value of the projects shall equal the total consideration to be paid to all contractors stated in each contract pursuant to which contractors are performing construction work on covered projects.

FIRST-SOURCE REFERRAL PROGRAM. A program whose purpose includes but is not limited to, job training and the referral of qualified residents to contractors. The ***FIRST-SOURCE REFERRAL PROGRAM*** shall use the Good Jobs umbrella coalition of community groups and churches as a priority source for recruitment.

GOOD JOBS ADMINISTRATION BUDGET. The amount of funding required to oversee the implementation and enforcement of this subchapter in a given fiscal year.

HIRING GOAL. The 30% of the total worker hours on each covered project shall be performed by residents. At least 25% of construction trade jobs shall go to apprentices and/or basic skilled workers. At least 70% of all "new hires" (those workers hired by a contractor on a project, other than existing employees and those referred by union hiring halls with prior seniority in the case of a union job) shall be "economically disadvantaged" individuals, defined as those earning less than 150% of the poverty line at the time of application. A minimum of 5% of the construction workforce labor hours will be local resident, minority artisans. A minimum of 5% of the construction workforce labor hours will be women. A minimum of 10% of the total work hours shall be allocated for minorities. Contractors are expected to employ a workforce that represents the population of the city.

LIAISON COMMITTEE. The committee established by the Board of Aldermen to monitor compliance with the provisions of this subchapter, and make recommendations to the Administrator and the Board of Aldermen regarding administration of this subchapter. The committee shall convene at a minimum of once every quarter in a space open to the public. The committee shall be comprised of two representatives of the Board of Aldermen one to be appointed by the President of the Board of Aldermen and one to be appointed by the Minority Leader on the Board of Aldermen, one representative from the Board of Education to be appointed by the President of the Board of Education, one representative of the Workforce Development Board, and five representatives who are appointed by the Board of Aldermen to represent: one contractor, one union, one civil rights group, one community and one Human Rights Commission. The committee members shall serve for a term of two years, and this nomination and selection process shall be used to fill any vacancy.

NEW HIRE. Those workers hired by a contractor on a project, other than existing employees, and those referred by union hiring halls with prior seniority in the case of a union job.

OWNER. The person who enters into a contract with a contractor for work on a covered project other than the city.

PERSON. An individual or a company, partnership, foreign or domestic corporation, partnership, limited liability company or other business entity.

RESIDENT. Any person whose domicile is the City of Waterbury, Connecticut.

ROUTINE MAINTENANCE. Simple, small-scale activities (usually requiring only minimal skills or training) planned and performed at regular intervals and being necessary to (1) extend the life of, or to delay or prevent the premature failure of, any plant or system or of any structure or structural system, building component or equipment; or (2) protect against normal wear and tear; or (3) maintain a suitable aesthetic

appearance. Examples of ***ROUTINE MAINTENANCE*** may include, but are not limited to, lawn or grass cutting, hedge trimming, painting, caulking, sealing, plumbing or electrical repairs, carpet cleaning or other cleaning performed at regular intervals.

SUBCONTRACTOR. Any person hired by a contractor to perform construction work on covered projects.

(Ord. passed 2-21-2012; Ord. passed 8-19-2013; Ord. passed 5-11-2015)

§ 34.18 HIRING GOAL AND IMPLEMENTATION.

(A) All contractors and subcontractors performing work on covered projects shall make good faith efforts to satisfy the hiring goal.

(B) Any contractors or subcontractors that fail to meet the hiring goal shall be required to demonstrate to the Administrator's satisfaction that the contractor or subcontractor made good faith efforts to meet the hiring goal.

(C) (1) The Mayor of the city shall appoint an Administrator annually no later than June 30th to serve as the Administrator for the city's fiscal year following such appointment or within 30 days of a vacancy that might arise during any fiscal year. The foregoing not withstanding, an incumbent Administrator shall serve until their successor has been appointed and qualified. If, in the event of a vacancy, the Mayor fails to appoint a replacement Administrator within the first 30 days following the effective date of that vacancy, then the Board of Aldermen shall have the power to fill the vacancy provided that the Board does so:

(a) Within 30 days from the date upon which the power to make the appointment vested in the Board; or

(b) Prior to May 31st if the power to make the appointment vests in the Board on or after May 1st.

(2) Should the Board fail to make the appointment during any 30 day period it has to do so, or prior to May 31st if the power to make the appointment vests in the Board on or after May 1st, then the power of appointment shall revert to the Mayor. Thereafter, throughout the remainder of the then current fiscal year, the power to make the appointment shall alternate between the Mayor and the Board, at 30 day intervals, until an appointment is made or until June 1st at which point in time the power to make the appointment shall vest in the Mayor.

(D) The Mayor shall annually, prior to the adoption of the city's budget for the then next fiscal year and after consultation with the Administrator and all relevant city department heads, establish a Good Jobs Administration Budget for the then next fiscal year and the Mayor shall include a line item in his annual budget submission to the Board of Aldermen sufficient to fund the Good Jobs Administration Budget. If, during the fiscal year in which the Mayor submits a given Good Jobs Administration Budget as part of his budget submission, the city has received as liquidated damages, pursuant to its contracts for covered projects, an amount greater than or equal to the Good Jobs Administration Budget as then submitted by the Mayor, the city shall be required to fund the Good Jobs Administration Budget as submitted by the Mayor and approved by the Board of Aldermen. To the extent possible, the cost required to oversee the implementation and enforcement of this subchapter for each project shall be funded and paid for through each project.

(Ord. passed 2-21-2012; Ord. passed 5-11-2015)

§ 34.19 REFERRAL MECHANISM.

(A) No less than four weeks prior to the commencement of construction on covered projects, the contractor shall meet with the Administrator and provide the number of job positions to be created by the project by trade and the qualifications by job title. The Administrator shall make reasonable efforts to ensure that adequate job training is available to the extent necessary to achieve the hiring goal and that screening and referral mechanisms are in place so that contractors can access qualified residents. Additionally, the Administrator shall designate a first-source referral program for the city.

(B) In the event a contractor or subcontractor cannot satisfy the hiring goal through its own employees and union hiring halls, the contractor or subcontractor shall next utilize the first source referral program in order to

satisfy the hiring goal. The contractor or subcontractor must wait five business days after a request has been submitted before advertising the position elsewhere.

(C) Qualifications required shall be only those relevant to the job. In satisfying the hiring goal, the contractor and any subcontractor shall employ all qualified persons referred by the first source referral program. The contractor and any subcontractor must utilize the first source referral program whenever its hiring needs increase and they are unable to comply with the hiring goals.

(Ord. passed 2-21-2012; Ord. passed 5-11-2015)

§ 34.20 MONITORING.

(A) The owner for a covered project shall require all construction contracts to comply with all provisions of this subchapter, and a copy of this subchapter shall be included with all contracts with contractors and subcontractors performing construction work on covered projects. This subchapter must be a contractual obligation in all contracts.

(B) All contractors and subcontractors performing construction work on covered projects shall submit to the Administrator weekly certified payroll records within five working days of the end of each payroll period. The records must show the person-hours on a craft-by-craft basis and identify the address, social security number, hiring date, ethnicity, gender and trade (journeyperson or apprentice) of all employees on the project. All reports must have an original signature and be signed by an authorized officer or employee of the company. Failure to comply with the provisions of this division (B) shall be deemed by the Administrator to be a violation of this subchapter and shall be subject to, and invoiced, liquidated damages on a weekly basis. Any willful misrepresentation contained in the information requested pursuant to this division (B) shall be deemed by the Administrator to be a violation of this subchapter and shall be subject to, and invoiced, liquidated damages on a weekly basis. The Administrator shall notify the City of Waterbury Department of Finance upon any violation of this subchapter. No portion of any invoice submitted by a contractor that is subject to liquidated damages shall be paid by the city until such time as all liquidated damages relating to that invoice have been paid to the city.

(C) Unless prohibited by federal, state or local law, all records in the city's possession shall be available for public inspection.

(D) The Administrator shall review all information provided pursuant to division (B) hereof and submit monthly reports to the Liaison Committee and to the Board of Aldermen summarizing the information.

(Ord. passed 2-21-2012; Ord. passed 5-11-2015)

§ 34.21 GOOD FAITH EFFORTS.

(A) Contractors shall be deemed to have made good faith efforts if they demonstrate to the satisfaction of the Administrator that they have done all of the following:

(1) Utilize the first source referral program to help satisfy the hiring goal;

(2) Notify the public in the city of the employment opportunities available on covered projects. The notification shall comprise a notice in a newspaper of general circulation in the city of employment opportunities, written notice to construction unions, community organizations and city high schools concerning same, and any other notice required by the Administrator. Contractors shall maintain records of responses to the notices received thereby. All notices must state that all qualified applicants will receive consideration without regard to race, color, religion, sex or national origin. The notice required by this division shall include a statement that the notice is provided pursuant to this subchapter;

(3) Maintain a file on the job site of the names and addresses of each worker referred by the first source referral program. The file shall indicate what action was taken with respect to each referred person, and if the person was not hired, the reasons therefore; provided, however, that this subchapter shall not be construed as requiring contractors to hire any persons who do not satisfy applicable job qualifications;

(4) Participate in State of Connecticut-approved local employment training programs in the city's area, or develop on-the-job training opportunities and participate and assist in any association or employer-group training program relevant to the contractor's employment needs;

(5) Regularly review and evaluate their personnel and promotional opportunities, encourage city residents to seek opportunities and establish a program to monitor compliance with this subchapter; and

(6) Utilize other means of obtaining employees who are residents of the city that are reasonably calculated to assist with achieving the hiring goals.

(B) Contractors shall provide the city with any documentation requested by the Administrator in order to establish compliance with this subchapter.

(Ord. passed 2-21-2012)

§ 34.22 CONTRACT REQUIREMENTS FOR COVERED SERVICES.

(A) This city shall include provisions in Chapter 38, entitled "Centralized Procurement System," of the Code of Waterbury mandating that each contract for a covered project, as that term is defined herein, awarded pursuant to Chapter 38 include provisions addressing compliance with the provisions of this subchapter by the contractor or contractors thereunder and by any subcontractor or subcontractors performing work related to any such contract.

(B) Whenever provisions are included in a contract for a covered project pursuant to division (A) of this section, they shall include provisions establishing liquidated damages for the failure of any contractor or subcontractor to comply with the provisions of this subchapter on a weekly basis. The liquidated damages shall be based on an estimate of the cost the city would incur in having to provide alternative employment opportunities, or alternative economic assistance, to those residents who would have benefited by the city's investment in the covered project if they had been hired by the contractor or subcontractor had they complied with the provisions of this subchapter.

(C) Whenever provisions regarding liquidated damages are included in a contract for a covered project pursuant to division (B) of this section, that contract shall, if applicable, also include provisions addressing the following matters:

(1) Weekly compliance reviews by the Administrator for the purpose of assessing compliance with the provisions of this subchapter, or the lack thereof;

(2) Requiring a separate certification of compliance by the Administrator prior to the payment of any funds by the city under any such contract;

(3) The weekly assessment and invoicing of liquidated damages per noncompliant contractor or subcontractor while said contract is executory;

(4) No portion of any invoice submitted by a contractor that is subject to liquidated damages shall be paid by the city until such time as all liquidated damages relating to that invoice have been paid to the city.

(Ord. passed 2-21-2012; Ord. passed 5-11-2015)

SECTION 00 01 01

PROJECT TITLE PAGE

PROJECT MANUAL

FOR

SJ PROJECT NUMBER: 22106

CROSBY / WALLACE COMPLEX - HVAC EQUIPMENT REPLACEMENT

300 PIERPOINT ROAD, WATERBURY, CT 06705

PREPARED FOR: WATERBURY PUBLIC SCHOOLS

PREPARED BY: STUDIO JAED ARCHITECTS AND ENGINEERS

END OF SECTION

SECTION 00 01 10

TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS

1.01 DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

A. 00 01 01 - Project Title Page

B. 00 01 10 - Table of Contents

SPECIFICATIONS

2.01 DIVISION 01 -- GENERAL REQUIREMENTS

A. 01 10 00 - Summary

B. 01 30 00 - Administrative Requirements

C. 01 40 00 - Quality Requirements

D. 01 50 00 - Temporary Facilities and Controls

E. 01 60 00 - Product Requirements

F. 01 70 00 - Execution and Closeout Requirements

G. 01 78 00 - Closeout Submittals

H. 01 79 00 - Demonstration and Training

2.02 DIVISION 02 -- EXISTING CONDITIONS

A. 02 41 00 - Demolition

B. Asbestos Abatement Design

2.03 DIVISION 04 -- MASONRY

A. 04 26 13 - Masonry Veneer

2.04 DIVISION 05 -- METALS

A. 05 40 00 - Cold-Formed Metal Framing

B. 05 50 00 - Metal Fabrications

C. 05 52 13 - Pipe and Tube Railings

2.05 DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

A. 07 42 13 - Metal Wall Panels

B. 07 62 00 - Sheet Metal Flashing and Trim

C. 07 81 00 - Applied Fire Protection

D. 07 92 00 - Joint Sealants

2.06 DIVISION 08 -- OPENINGS

A. 08 11 13 - Hollow Metal Doors and Frames

B. 08 71 00 - Door Hardware

C. 08 91 00 - Louvers

2.07 DIVISION 09 -- FINISHES

A. 09 21 16 - Gypsum Board Assemblies

B. 09 51 00 - Acoustical Ceilings

C. 09 65 00 - Resilient Flooring

D. 09 78 00 - Interior Wall Paneling

E. 09 91 13 - Exterior Painting

2.08 DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

A. 23 05 13 - Common Motor Requirements for HVAC Equipment
B. 23 05 16 - Expansion Fittings and Loops for HVAC Piping
C. 23 05 19 - Meters and Gauges for HVAC Piping
D. 23 05 53 - Identification for HVAC Piping and Equipment
E. 23 05 93 - Testing, Adjusting, and Balancing for HVAC
F. 23 07 13 - Duct Insulation
G. 23 07 19 - HVAC Piping Insulation
H. 23 09 13 - Instrumentation and Control Devices for HVAC
I. 23 09 23 - Direct-Digital Control System for HVAC
J. 23 21 13 - Hydronic Piping
K. 23 21 14 - Hydronic Specialties
L. 23 22 13 - Steam and Condensate Heating Piping
M. 23 22 14 - Steam and Condensate Heating Specialties
N. 23 23 00 - Refrigerant Piping
O. 23 31 00 - HVAC Ducts and Casings
P. 23 33 00 - Air Duct Accessories
Q. 23 34 13 - Axial HVAC Fans
R. 23 34 23 - HVAC Power Ventilators
S. 23 37 00 - Air Outlets and Inlets
T. 23 73 13 - Modular Indoor Central-Station Air-Handling Units

2.09 DIVISION 26 -- ELECTRICAL

A. 26 05 01 - Selective Demolition for Electrical
B. 26 05 19 - Low-Voltage Electrical Power Conductors and Cables
C. 26 05 26 - Grounding and Bonding for Electrical Systems
D. 26 05 29 - Hangers and Supports for Electrical Systems
E. 26 05 34 - Conduit for Electrical Systems
F. 26 05 53 - Identification for Electrical Systems
G. 26 24 16 - Panelboards
H. 26 27 26 - Wiring Devices
I. 26 28 13 - Fuses
J. 26 28 16.13 - Enclosed Circuit Breakers
K. 26 28 16.16 - Enclosed Switches
L. 26 29 13 - Enclosed Controllers
M. 26 29 23 - Variable-Frequency Motor Controllers
N. 26 51 00 - Interior Lighting

END OF SECTION

SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Mechanical Upgrades.

B. Project Name: 22106 ESSER HVAC Crosby HS, Wallace MS

C. Project Location: 300 Pierpont Road, Waterbury , CT 06705.

D. Owner's Name: Waterbury Public Schools.

E. Architect / Engineer's Name: Studio JAED (SJ)

F. The Project consists of:
   1. Demolition of select components of existing HVAC system.
   2. Installation of new HVAC equipment, ductwork, piping and appurtenances.
   3. Electrical work to supplement mechanical modifications.
   4. Selective modification of architectural features as required for completion of mechanical work, including patching, painting, and ceiling removal and reinstallation.
   5. Reconfiguration of the music suite in the basement and associated mechanical and electrical modifications

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Division 00.

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is shown on drawings and descirbed in the specifications.

B. Scope of renovation work is shown on drawings and described in the specifications.

1.04 WORK BY OWNER

A. Building Automation System installation associated with HVAC renovations.

1.05 OWNER OCCUPANCY

A. Owner intends to continue to occupy portions of the existing building during the entire construction period.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Schedule the Work to accommodate Owner's occupancy.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to the building premises.

B. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.
   3. Adhere to owner's guidelines regarding entrance and egress to the site as identified during the pre-bid meeting.

C. Utility Outages and Shutdown:
   1. Prevent accidental disruption of utility services to other facilities.
   2. Any shutdown of a critical building system (including but not limited to HVAC, sprinkler, fire alarm, water, electric) is to occur during a coordinated, off-hours shutdown (either daytime

or overnight hours and either weekdays or weekends at owner's option). Shutdown work is to proceed continuously until the critical building system is restored.

3. Coordinate any interruption and/or shutdown of utilities with the owner at least 14 days in advance of the anticipated interruption and/or shutdown. Limit any interruptions/shutdowns to the absolute minimum amount of time.
4. The owner reserves the right to reschedule construction shutdowns without warning to the contractor as required to respond to emergencies.

1.07 GENERAL STANDARDS

A. General Project Requirements

1. Manufacturers of all coils shall ensure that the coils are clean and free of any residue from the manufacturing and shipping process. If coils are found to be dirty or smoke when hot water is provided to them, the contractor will be responsible for cleaning of the coils, as well as, cleaning the building from smoke, coil emanations, or vapors.
2. The return airflows indicated on the plans correspond to the occupied mode with minimum outside air being supplied. The balance report is to indicate these airflows in this mode of operation.
3. HVAC equipment shall be furnished with a motor starter suitable for the off-on control of the motor by a remote thermostat or bas contact. These starters shall comply with national electric code.
4. All air handling units are to be installed to provide adequate, unobstructed, access and clearance for air filter replacement.
5. Notify the owner in the event any existing hazardous materials, such as asbestos, pcb's, lead, etc., are encountered on the project. The owner will arrange with a qualified specialist for the identification, testing, removal, handling and protection against exposure or environmental pollution, to comply with applicable regulations, laws and ordinances.
6. All thermostats shown on hvac plans are to be mounted 4'-0" maximum aff (top of unit), unless noted otherwise. Contractor is responsible for mounting & wiring all thermostats. Plenum rated cables must be used.
7. Prior to submitting bid, the contractor shall visit the site and be thoroughly familiar with the existing conditions and proposed construction. Contractor shall include in their bid all materials, labor and all incidentals for a complete installation whether specifically indicated or not. All errors, discrepancies and missed items shall be brought to the attention of the engineer during the bidding process by the contractor. These items shall be included in the bid price. No extra cost will be allowed for any discrepancy which could have been noticed at the site by the contractor.
8. The contractor shall be responsible for all additional costs incurred as a result of substitutions or deviations from the basis of design shown on these drawings.
9. Contractor is responsible for providing transitions and flexible connections between all units and supply, return, or outside air ducts.
10. All roof and wall penetrations shall be sleeved and sealed for assembly rating.
11. The contractor is responsible for all new piping penetrations in walls and floors. The piping plans do not specifically note where piping penetrates walls and floors. It is the contractor's responsibility prior to bid to study the plans and if necessary evaluate the site, to account for all piping penetrations of the existing structure.
12. All gas piping is to be installed per NFPA 54, and all local and national codes.
13. Before any system of gas piping is finally put in service, it shall be tested to ensure that it is gas tight. To test for tightness, the piping shall be filled with air or an inert gas, but not with any other gas or liquid. Testing, inspection and purging of gas piping systems shall comply with NFPA 54.
14. Provide splash blocks for all condensate drains.
15. Notify the owner in the event any existing hazardous materials, such as asbestos, pcb's, lead, etc., are encountered on the project. The owner will arrange with a qualified specialist

for the identification, testing, removal, handling and protection against exposure or environmental pollution, to comply with applicable regulations, laws and ordinances.

16. Prior to submitting bid, the contractor shall visit the site and be thoroughly familiar with the existing conditions and proposed construction. Contractor shall include in their bid all material, labor, and all incidentals for a complete installation whether specifically indicated or not. All errors, discrepancies and missed items shall be brought to the attention of the engineer during the bidding process by the contractor. These items shall be included in the bid price. No extra cost will be allowed for any discrepancy which could have been noticed at the site visit by the contractor.
17. Perform work as required by applicable codes, regulations, and laws of local, state, and federal governments and other authorities with lawful jurisdiction. All work shall be in accordance with the latest edition of the national electric code.
18. Material and equipment shall be UL, NEMA, ANSI, IEEE, ADA & CMB approved for intended purpose. Material and installation shall meet requirements of national and local electrical code.
19. Provide all labor, materials, tools, equipment, coordination, additional design and all incidentals necessary to provide a complete and operable system as detailed on plans to the satisfaction of the engineer and the owner. Coordinate all work with the engineer before the start of work.
20. Prior to submitting bid, the contractor shall visit the site and be thoroughly familiar with the existing conditions and proposed construction. Contractor shall include in their bid all material, labor, and all incidentals for a complete installation whether specifically indicated or not. All errors, discrepancies and missed items shall be brought to the attention of the engineer during the bidding process by the contractor. These items shall be included in the bid price. No extra cost will be allowed for any discrepancy which could have been noticed at the site visit by the contractor.
21. Perform work as required by applicable codes, regulations, and laws of local, state, and federal governments and other authorities with lawful jurisdiction. All work shall be in accordance with the latest edition of the national electric code.
22. Material and equipment shall be ul, nema, ansi, ieee, ada & cmb approved for intended purpose. Material and installation shall meet requirements of national and local electrical code.
23. The contractor shall be responsible for all additional costs incurred as a result of substitutions or deviations from the basis of design shown on these drawings.
24. Give notices, file plans, obtain permits, and licenses, pay fees and back charges, and obtain necessary approvals from authorities that have jurisdiction.
25. Maintain record drawings on site. Record set must be complete and current and available for inspection when requisitions for payment are submitted.
26. Guarantee work in writing per specifications, repair or replace defective materials or installation at no cost to owner during the guarantee period. Correct damage caused in making necessary repairs and replacements under guarantee at no cost to owner. Submit guarantee to owner before final payment.
27. Coordinate all electrical items with existing field conditions. Locations shown are approximate and may require minor adjustment in the field to satisfy the design intent.
28. Damage to existing facilities and equipment shall be repaired or replaced immediately by the contractor at no additional expense to the owner.
29. The locations on these plans are approximate and require coordination with all other trades and verification of existing conditions. The contractor is responsible for field verification of all existing associated conditions. Contractor is responsible for obtaining all other trade's drawings and specifications and coordinating with all other trades during bidding and construction.

30. Contractor shall be responsible for maintaining continuity of all power, control, fire alarm, security systems, and communications functions to all areas affected by demolition and/or new construction.
31. Repair and patch any disturbed areas to match adjacent construction.
32. Disconnect and make safe any equipment to be removed by others. Coordinate removal of equipment with other trades prior to demolition.
33. In any area requiring the performance of any trade's work, this contractor shall carefully remove and store any or all electrical items in path of work, reinstalling, and reconnecting same as required, in accordance with the plans and/or as directed after completion of other trade's work in that area.
34. Prior to the start of demolition, contractor shall field verify all branch circuits and maintain those circuits that extend outside the scope of work.
35. After renovating existing electrical work, the contractor shall ensure that all remaining and new equipment will operate properly, including but not limited to backfeeding of existing power and lighting circuits. Refer to single line diagram.
36. All electrical work indicated to remain shall be suitably protected to prevent any damage.
37. Where electrical systems pass through renovated areas to serve other portions of the premises, systems shall be suitably protected to prevent damage or relocated and the systems restored to normal operation. Any outages in systems shall be coordinated with owner. Restore power to existing to remain equipment if interrupted by demolished circuits in the area.
38. Contractor shall submit for review, shop drawings for all equipment and materials used on the project. Submittals shall be reviewed by the architect before purchase of materials.
39. All wiring shall be copper, 600v, 75°/90° rated, flame-retardent, heat and moisture resistant.
40. Permanently label all new electrical equipment, including but not limited to, device designation and supply circuit designation. Update or replace panel directories to include new circuit information resulting from this project.
41. Provide temporary power and lighting for all trades as required to complete the project. All temporary and interim equipment shall be installed in accordance with all applicable codes and standards including, but not limited to NFPA 110 and NFPA 70.
42. Refer to specifications for additional information that is not shown on the drawings.
43. Openings in existing concrete walls and floors required for conduit installation shall be core drilled. Maximum core drill size shall be 5" in diameter. Core drill locations shall be spaced a minimum of 6" from each other measured from the outside edge of the core drill. All core drill openings shall be properly sealed according to their location and application.
44. All outages shall be kept to a minimum. All work that requires a sustained equipment outage shall be performed continuously around the clock until work is completed unless noted otherwise. Coordinate outages with owner representative.
45. Provide for each branch circuit and feeder circuit a dedicated equipment ground wire. For single phase branch circuits of 120 v/1ph or 277v/1 phase, provide dedicated hot, dedicated neutral and dedicated equipment ground wires. Sharing of neutral or equipment ground wires is not permitted. Wiring to all HVAC equipment or other trade equipment shall be in conduit. All equipment and feeder wiring in boiler room/electrical room shall be in rigid conduit. Use of mc cable is limited to branch circuit wiring above recessed ceiling or concealed in wall. Wiring to outlets on table shall be provide in either EMT conduit or flexible metal conduit.
46. Provide identification labels for all branch circuits and feeders circuits at junction boxes, panelboards, troughs, and splice boxes.
47. Provide unspliced feeders from panelboard or switchboard to all equipment. Splicing is permitted for single phase circuits for lighting and outlets only.

48. All wiring devices located in the basement are to be surface mounted with circuit wiring routed in surface mounted conduit per specifications. All other wiring devices shall be recessed unless noted otherwise.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Preconstruction meeting.

C. Site mobilization meeting.

D. Progress meetings.

E. Submittals for review, information, and project closeout.

F. Number of copies of submittals.

G. Requests for Interpretation (RFI) procedures.

H. Submittal procedures.

1.02 REFERENCE STANDARDS

A. AIA G716 - Request for Information.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

B. Make the following types of submittals to Architect:
   1. Requests for Interpretation (RFI).
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Design data.
   6. Manufacturer's instructions and field reports.
   7. Applications for payment and change order requests.
   8. Progress schedules.
   9. Coordination drawings.
   10. Correction Punch List and Final Correction Punch List for Substantial Completion.
   11. Closeout submittals.

1.04 PROJECT COORDINATOR

A. Project Coordinator: Contractor.

B. During construction, coordinate use of site and facilities through the Project Coordinator.

C. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

D. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 10 00 - Summary.

E. Coordinate field engineering and layout work under instructions of the Project Coordinator.

F. Make the following types of submittals to Architect through the Project Coordinator:

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Owner will schedule a meeting after Notice of Award.

B. Attendance Required:
   1. Owner.
   2. Architect.
   3. Contractor.

C. Agenda:
   1. Execution of Owner-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   3. Distribution of Contract Documents.
   4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   5. Designation of personnel representing the parties to Contract, OMB and Architect.
   6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
   7. Scheduling.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

A. Owner will schedule a meeting at the Project site prior to Contractor occupancy.

B. Project Coordinator will schedule meeting at the Project site prior to Contractor occupancy.

C. Attendance Required:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. Contractor's Superintendent.
   5. Contractor's Project Manager.
   6. Major Subcontractors.

D. Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner's requirements and occupancy prior to completion.
   3. Construction facilities and controls provided by Contractor and Owner.
   4. Security and housekeeping procedures.
   5. Schedules.
   6. Application for payment procedures.
   7. Procedures for maintaining record documents.
   8. Requirements for start-up of equipment.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

B. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, and Architect, as appropriate to agenda topics for each meeting.

C. Agenda:
   1. Review minutes of previous meetings.
   2. Review of Work progress.
   3. Field observations, problems, and decisions.
   4. Identification of problems that impede, or will impede, planned progress.
   5. Review of submittals schedule and status of submittals.
   6. Maintenance of progress schedule.
   7. Corrective measures to regain projected schedules.
   8. Planned progress during succeeding work period.
   9. Maintenance of quality and work standards.
   10. Effect of proposed changes on progress schedule and coordination.
   11. Other business relating to Work.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. See 01 32 00 Construction Progress Documentation for requirements.

3.05 COORDINATION DRAWINGS

A. Provide information required by Project Coordinator for preparation of coordination drawings.

B. Review drawings prior to submission to Architect.

3.06 REQUESTS FOR INTERPRETATION (RFI)

A. Definition: A request seeking one of the following:
   1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
   2. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
   1. Prepare a separate RFI for each specific item.
      a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
      b. Do not forward requests which solely require internal coordination between subcontractors.
   2. Prepare in a format and with content acceptable to Owner.
      a. Use AIA G716 - Request for Information .
   3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
   1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
   2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
      a. Approval of submittals (use procedures specified elsewhere in this section).

b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).

3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.

E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
2. Owner's, Architect's, and Contractor's names.
3. Discrete and consecutive RFI number, and descriptive subject/title.
4. Issue date, and requested reply date.
5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

G. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
2. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.

3.07 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals in tabular format.
1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
2. Coordinate with Contractor's construction schedule and schedule of values.
3. Format schedule to allow tracking of status of submittals throughout duration of construction.
4. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.08 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

C. Samples will be reviewed only for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.09 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.10 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

B. Submit for Owner's benefit during and after project completion.

3.11 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review:
   1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies that Contractor requires, plus two copies that will be retained by Architect.

B. Documents for Information: Submit two copies.

C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically so stated.

3.12 SUBMITTAL PROCEDURES

A. Transmit each submittal with approved form.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

E. Schedule submittals to expedite the Project, and coordinate submission of related items.

F. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

H. Provide space for Contractor and Architect review stamps.

I. When revised for resubmission, identify all changes made since previous submission.

J. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

K. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Control of installation.

B. Tolerances.

C. Testing and inspection services.

D. Manufacturers' field services.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. See individual specification sections for testing required.

B. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.

C. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and operation as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary sanitary facilities.

B. Temporary Controls: Barriers, enclosures, and fencing.

C. Security requirements.

D. Vehicular access and parking.

E. Waste removal facilities and services.

F. Project identification sign.

1.02 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

1.03 BARRIERS

A. Provide wood framed barriers with plywood sheathing or plastic zip-walls with temporary support columns to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

D. Traffic and wayfinding controls (interior and exterior): Coordinate with the Owner to provide temporary signage to isolate work areas from building occupants while maintaining required emergency egress.

1.04 INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.05 SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. The contractor is responsible for security of all tools, materials, and completed work.

C. Coordinate with Owner's security program.

1.06 VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Parking is limited in the area. Designated parking areas will be assigned for contrator use.

1.07 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site daily.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Transportation, handling, storage and protection.

B. Product option requirements.

C. Substitution limitations and procedures.

D. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 REFERENCE STANDARDS

A. NEMA MG 1 - Motors and Generators.

B. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Provide interchangeable components of the same manufacture for components being replaced.

C. Motors: Refer to Section 23 05 13 - Motor Requirements for HVAC and Plumbing Equip, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

D. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.

E. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.02 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.03 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Substitutions will be considered when a product, through no fault of the Contractor, becomes unavailable or unsuitable due to regulatory change.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

D. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

E. Substitution Submittal Procedure:
   1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   3. The submittal of the proposed substitution shall identify all deviations between basis of design and proposed substitution. Any non-identified deviations shall be basis for rejection.
   4. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

G. Comply with manufacturer's warranty conditions, if any.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

I. Prevent contact with material that may cause corrosion, discoloration, or staining.

J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.

C. Cutting and patching.

D. Surveying for laying out the work.

E. Cleaning and protection.

F. Starting of systems and equipment.

G. Demonstration and instruction of Owner personnel.

H. Closeout procedures, except payment procedures.

I. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 30 00 - Administrative Requirements: Submittals procedures.

C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.

D. Section 01 78 00 - Closeout Submittals.

E. Section 07 84 00 - Firestopping.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

B. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.05 PROJECT CONDITIONS

A. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
   2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
   1. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.

E. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

F. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.06 COORDINATION

A. See Section 01 10 00 - Summary for occupancy-related requirements.

B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

C. Notify affected utility companies and comply with their requirements.

D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of work of separate sections.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

D. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

H. Periodically verify layouts by same means.

I. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as shown.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.
   2. Relocate items indicated on drawings.
   3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
   3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
      a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
      b. Provide temporary connections as required to maintain existing systems in service.
   4. Verify that abandoned services serve only abandoned facilities.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

D. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.

E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.

F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

G. Refinish existing surfaces as indicated:
   1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.

2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

H. Clean existing systems and equipment.

I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

J. Do not begin new construction in alterations areas before demolition is complete.

K. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-conforming work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00 - Firestopping, to full thickness of the penetrated element.

J. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.09 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

A. See Section 01 79 00 - Demonstration and Training.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner personnel in detail to explain all aspects of operation and maintenance.

E. Provide 8 hours minimum of demonstration and training.

3.11 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

B. Notify Architect when work is considered ready for Substantial Completion.

C. Provide operation and maintenance manuals for all installed equipment and devices, as-built drawings (PDF), and all inspection certificates as two (2) bound hardcopies and two (2) archival-grade (gold foil) DVDs.

D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.

E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

F. Notify Architect when work is considered finally complete.

G. Complete items of work determined by Architect's final inspection.

H. Provide completed documentation as follows:
   1. Consent to Surety of Final Payment (AIA 707)
   2. Certificate of Substantial Completion (AIA G704)
   3. Contractor Satisfaction of Debt and Claims (AIA G706)
   4. Release of Liens for the Contractor, his Subcontractors, and his Suppliers (AIA G706A)

3.14 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

D. Project Record Submittals to be Submitted with Final Payment Application:
   1. Form G704 Substantial Completion (Issued by Architect)
   2. Form G706 Affidavit of Payment of Debts and Claims
   3. Form 706A Release of Liens by Contractor and Subcontractors
   4. Form 707 Consent to Surety of Final Payment
   5. Certificate of Occupancy as Applicable.
   6. Inspection Certificates as Applicable
   7. Environmental Certificates as Applicable
   8. Warranties, Including Letter of Guarantee and Warranty Information
   9. Operation and Maintenance Manuals
   10. Hard Copy of As-Built Drawings
   11. Two DVDs with All Project Record Submittals (Gold-Foil, Archival Grade DVDs)
   12. Testing and Balancing Reports

13. Pest Control Inspection Report and Warranty as Applicable
14. Record Shop Drawings and Submittals
15. Affidavit of Discharge of State Tax Liability
16. Copy of Completed Punch List with Letter From Contractor Stating All Items Have Been Completed

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Addenda.
   3. Change Orders and other modifications to the Contract.
   4. Reviewed shop drawings, product data, and samples.
   5. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

E. Provide servicing and lubrication schedule, and list of lubricants required.

F. Include manufacturer's printed operation and maintenance instructions.

G. Include sequence of operation by controls manufacturer.

H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

I. Additional Requirements: As specified in individual product specification sections.

3.04 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants,Contractorand subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

3.05 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. HVAC systems and equipment.
   2. Electrical systems and equipment.

1.02 RELATED REQUIREMENTS

A. Section 01 78 00 - Closeout Submittals: Operation and maintenance manuals.

B. Other Specification Sections: Additional requirements for demonstration and training.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
   1. Submit to Architect for transmittal to Owner.
   2. Submit not less than four weeks prior to start of training.
   3. Revise and resubmit until acceptable.
   4. Provide an overall schedule showing all training sessions.
   5. Include at least the following for each training session:
      a. Identification, date, time, and duration.
      b. Description of products and/or systems to be covered.
      c. Name of firm and person conducting training; include qualifications.
      d. Intended audience, such as job description.
      e. Objectives of training and suggested methods of ensuring adequate training.
      f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
      g. Media to be used, such a slides, hand-outs, etc.
      h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

D. Training Reports:
   1. Identification of each training session, date, time, and duration.
   2. Sign-in sheet showing names and job titles of attendees.
   3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.

1.04 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.

2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstration may be combined with Owner personnel training if applicable.

C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Owner will provide classroom and seating at no cost to Contractor.

C. Provide training in minimum two hour segments.

D. Provide minimum 8 hours of training.

E. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

F. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
   1. The location of the O&M manuals and procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of the O&M manuals.

G. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.
   2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
   4. Provide hands-on training on all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
   9. Review recommended tools and spare parts inventory suggestions of manufacturers.

10. Review spare parts and tools required to be furnished by Contractor.
11. Review spare parts suppliers and sources and procurement procedures.

H. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

C. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

D. Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

1.03 DEFINITIONS

A. Demolition: Dismantle, raze, destroy or wreck any building or structure or any part thereof.

B. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.

C. Remove and Salvage: Detach or dismantle items from existing construction in a manner to prevent damage. Clean, package, label and deliver salvaged items to Owner in ready-for-reuse condition.

D. Remove and Reinstall: Detach or dismantle items from existing construction in a manner to prevent damage. Clean and prepare for reuse and reinstall where indicated.

E. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.04 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Site Plan: Indicate:
   1. Areas for temporary construction and field offices.

PART 3 EXECUTION

2.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with requirements in Section 01 70 00.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Comply with applicable requirements of NFPA 241.
   3. Use of explosives is not permitted.
   4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   5. Provide, erect, and maintain temporary barriers and security devices.

6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
8. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
9. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from Owner.

D. Do not begin removal until built elements to be salvaged or relocated have been removed.

E. Protect existing structures and other elements to remain in place and not removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

F. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

G. Hazardous Materials:
   1. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCBs, and mercury.

H. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Comply with requirements of Section 01 74 19 - Construction Waste Management and Disposal.
   2. Dismantle existing construction and separate materials.
   3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

2.02 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only. Contractor to field verify existing conditions and provide structural shoring for all new openings or expansion of existing openings in existing exterior walls.
   1. Verify construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from areas that remain occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.
   2. Provide sound retardant partitions of construction and in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.

D. Remove existing work as indicated and required to accomplish new work.
   1. Remove items indicated on drawings.

E. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as indicated.

1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
3. Verify that abandoned services serve only abandoned facilities before removal.
4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
1. Prevent movement of structure. Provide shoring and bracing as required.
2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch to match new work.

2.03 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

Asbestos Abatement Design

121 North Plains Industrial Road
Unit F
Wallingford, CT 06492
Phone: (203) 288-1281

May 9, 2023 FSS PN: 13923

Studio JAED
2500 Wrangle Hill Road
Fox Run Office Plaza, Suite 110
Bear, DE 19701
Attn: David Spangler

RE: Specifications: Asbestos Abatement
Crosby Highschool/Wallace Middle School – Music Suite Area Associated with HVAC Improvements Project 2023
300 Pierpont Road & 3465 East Main Street; Waterbury, CT

Dear Mr. Spangler:

Enclosed please find the Specifications for Asbestos Abatement and associated work to support asbestos containing floor tile and associated mastics (including residual mastic beneath carpeting) the Crosby Highschool & Wallace Middle School Complex located at 300 Pierpont Road & 3465 East Main Street in Waterbury, Connecticut. The Music Suite, specifically the entrance hallway, rooms B111, B106, and B108 require floor tile, floor tile mastic, and residual floor tile mastic abatement. This specification has been prepared to satisfy the requirements of standards for asbestos abatement in the State of Connecticut.

If you have any questions regarding these Specifications, please contact the undersigned at our Wallingford, CT office at (203) 288-1281. Thank you for this opportunity to have served your environmental needs.

Sincerely,

Facility Support Services, LLC (FSS)

Michael DiFabio
CTDPH Project Designer #000329

Enclosure:
Asbestos Abatement Specification
Asbestos Inspection Reports (Initial 4/10/23 & Supplemental 5/5/23)
Abatement Area Sketch

ASBESTOS ABATEMENT SPECIFICATIONS

AREAS ASSOCIATED WITH HVAC IMPROVEMENTS PROJECT 2023

Floor Tiles, Associated Mastic, and Residual Floor Tile Mastic

(Wallace Music Suite: Entrance Hallway, Rooms B111, B106, & B108)

CROSBY HIGHSCHOOL & WALLACE MIDDLE SCHOOL COMPLEX
300 PIERPONT RD & 3465 EAST MAIN ST
WATERBURY, CT 06705

Prepared For:

Studio JAED
2500 Wrangle Hill Road
Fox Run Office Plaza, Suite 110
Bear, DE 19701
Attn: David Spangler

Prepared By:

FSS
Facility Support Services

121 North Plains Industrial Road; Unit F
Wallingford, Connecticut 06492

Michael DiFabio
CTDPH Project Designer #000329

May 9, 2023
FSS Project Number: 13923

TABLE OF CONTENTS

TECHNICAL ABATEMENT SPECIFICATION

Division II	Section 020100	General Requirements
	Section 020160	Scheduling and Phasing
	Section 020260	Unit Prices
	Section 020700	Contract Closeout
	Section 020704	Special Conditions
	Section 020750	Selective Demolition
	Section 020800	Asbestos Removal
	Section 020850	Certificate of Worker's Acknowledgement

ATTACHMENTS

Asbestos Inspection Reports (Initial 4/10/23 & Supplemental 5/5/23)
Asbestos Abatement Area Sketch

SECTION 020100 GENERAL REQUIREMENTS

PART 1 – GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.1 SECTION INCLUDES

A. Contractor Qualifications.

B. Contractor Use of Site and Premises.

C. Work Sequence.

D. Owner's Operations.

E. Closeout and Punch List.

F. Cleaning.

G. Emergency Calls

1.2 CONTRACTOR QUALIFICATIONS

A. The Contractor selected must appear on the approved list of Asbestos Abatement Contractors on file at the State of Connecticut Department of Public Health (CTDPH). Only State-certified asbestos abatement supervisors and workers shall perform asbestos abatement work activities.

B. Submit a written statement regarding whether the Contractor has ever been found out-of-compliance with federal or state asbestos regulations pertaining to worker protection, removal, transport, or disposal.

C. The Contractor shall obtain and pay for all required permits, and prepare and file all original and amended local, state, and EPA pre-notification forms immediately following award of the work.

D. The Contractor shall conduct personal exposure air monitoring for airborne fibers as prescribed by OSHA during the project performance.

E. The Owner reserves the right to award this Contract to the Contractor who best meets all contractor qualifications and Owner's interests.

1.3 CONTRACTORS USE OF SITE AND PREMISES

A. Limit use of site and premises as follows:
   1. Owner occupancy.
   2. Work by Owner.
   3. Use of site and premises by public.

B. Coordinate use of the premises, including use of restroom facilities and utilities under direction of Owner.

C. Assume full responsibility for protection and safekeeping of products under this Contract.

1.4 WORK SEQUENCE

A. Work must be performed to accommodate Owner's requirements. Coordinate removal schedule and operations with the Owner/Consultant.

B. The Owner plans to close the School Building during the duration of the project. No children shall be permitted to occupy any portion of the School.

1.5 OWNER'S OPERATIONS

A. Schedule the Work to accommodate this requirement.

B. Maintain means of egress.

C. Coordinate Work with the Owner and the Fire Marshall.

D. Maintain the fire alarm and fire detection systems at all times.

E. Maintain a permanent means of egress during project. Provide and maintain a temporary means of egress as required by the Fire Marshall.

1.6 CLEANING

A. Throughout the abatement period, the Contractor shall maintain the building and site free of rubbish, debris, surplus materials, and other items not required for the Work. Remove such materials from the site daily to prevent accumulations. Remove all debris from work areas and remove all hazardous waste and asbestos waste as required by the most current federal, state, and local regulations and the requirements of the specifications.

1.7 EMERGENCY CALLS

A. The Contractor shall provide the Consultant and Owner with a telephone number where the Contractor or Contractor's Representative can be reached during non-working hours.

B. At the direction of a duly authorized representative of the Owner, the Contractor may be required to dispatch all necessary personnel and equipment to any point on the work site to clear obstructions or make safe any conditions deemed necessary by the Owner or Consultant.

1.8 ADDITIONAL GENERAL REQUIREMENTS

A. The Abatement Contractor shall employ an English-speaking competent Asbestos Abatement Supervisor with at least three (3) years experience on projects of similar scope and magnitude who shall be responsible for all work involving asbestos abatement as described in the Specifications and defined in the applicable regulations and have full-time daily supervision of the same. The Supervisor shall be the "Competent Person" as defined by OSHA regulations. The Contractor shall provide, on-site, at least one English-speaking foreman at all times when work is in progress. The supervisor and foreman must be thoroughly experienced in asbestos-containing materials removal work, knowledgeable of all applicable federal, state, and local regulations and capable of skillfully executing all work promptly, efficiently and in compliance with all requirements of these specifications. The Owner reserves the right to have any supervisory or foreman personnel removed from the project if they do not demonstrate the requisite qualifications.

B. The Contractor shall allow work performed under this contract to be inspected, if required, by local, state, federal, and any other authorities having jurisdiction over such work. The Contractor shall immediately notify the Owner and Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.

C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.

D. The Contractor shall immediately notify the Owner and Consultant of the delivery of all permits, licenses, certificates of inspection, approval or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of to who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 020160 SCHEDULING AND PHASING

PART 1 - GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.1 GENERAL REQUIREMENTS

A. The Contractor shall present a working schedule to the Owner. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner will inform the Contractor of additions or changes in the scheduling requirements for the project.

B. Refer to all other applicable sections of the specification for coordination with other trades. The Contractor shall coordinate work with all other activities at this site.

1.2 TIME FOR COMPLETION AND WORKING HOURS

A. Upon award of contract from the Owner, the Contractor shall immediately order materials, supplies, and components for the work of this project.

B. The Contractor shall begin the work immediately upon receipt of the "Notice to Proceed" from the Owner. The date of the commencement of the work is termed the "Project Start Date." The Contractor will be required to complete all work of this Contract within the time period stipulated in the finalized schedule. The last day in the schedule is termed as "Contract Completion Date."

C. If conditions arise that are beyond the control of the Contractor and force delays in the performance of the Work, the Owner shall immediately be notified. The Contractor shall state the reason for the delay and shall estimate the expected duration of the delay. Any application for an extension of the Contract completion date shall be made under proper change order procedures. The acceptance of the cause for delay and change order is subject to the Owner's review and approval.

D. Work hours will be established in coordination with the Owner.

E. Any extra hours or days per week worked by the Contractor or Sub-Contractors shall be at no extra cost to the Owner. Denial of extra hours or days per week by the Owner shall not be grounds for extra time allotted to the overall Contract time.

F. The Contractor will define a project work schedule to which the Contractor will be bound. Any change in the work schedule must be approved by the Owner.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 020260 UNIT PRICES

PART 1 – GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.1 SUMMARY

A. A unit price is an amount proposed by the Contractor and stated on the proposal as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the project Scope of Work is altered.

B. Unit prices include material, any direct or indirect expenses of the Contractor or Sub-Contractor, profit, insurance, bonding, and any applicable taxes. The same unit price shall apply whether the work is added or deducted.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 020700 CONTRACT CLOSEOUT

PART 1 – GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.1 GENERAL PROVISIONS

A. General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 FINAL CLEANING

A. Unless otherwise specified under Sections of this Specification, the Contractor shall perform final cleaning operations according to federal and local regulations specified prior to final inspection.

B. Maintain the project site free from accumulations of waste, debris and rubbish caused by operations. At the completion of the work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave the project clean and ready for work of others under separate contract.

C. Cleaning shall include all surfaces, interior and exterior, in which the Contractor has had access.

D. Use only those materials that will not create hazards to health or property.

1.3 REMOVAL CLOSEOUT DOCUMENTS

A. Submit to the Owner, final completed copies of the Waste Shipment Records, signed by all transporters and the designated disposal site owner/operator.

B. Submit to the Consultant copies of all Contractor's logs, notifications & permits, and all worker certifications (certificates, training, medical, and fit-test).

C. The Contractor must be able to provide Certified Payroll documentation to the City of Waterbury Department of Education, or its Representative or Project Auditors upon formal request.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

DIVISION II

SPECIAL CONDITIONS

FOREWORD

Supplementing Division I of the Specifications for the work to be performed under this Contract, DIVISION II, SPECIAL CONDITIONS, shall apply particularly to this Contract.

The enforcement of the requirements of any of the Special Conditions shall not be construed as waiving any of the rights of the Owner, contained in any of the other provisions of the Contract.

The Contract documents, including without limitation, these Special Conditions, shall be interpreted and construed as far as is reasonably possible to be in addition to, supplementary to and consistent with each other.

END OF SECTION

SECTION 020750 SELECTIVE DEMOLITION - ASBESTOS REMOVAL

PART 1 – GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.1 SUMMARY

A. Provide selective demolition to existing walls, partition walls, base trim, etc., and dismantle existing millwork as necessary to access floor tiles, associated mastic, residual floor tile mastic beneath carpeting and all other ACMs, where applicable.

B. **All layers of ACM floor tile, associated mastic, and residual floor tile mastic beneath carpeting are included in the base work; no extra charge will be accepted.** Selective demolition or moving of typically non-movable objects by the Contractor may be required to gain access to all ACMs to be removed.

C. The Contractor shall remove existing plumbing and electrical as required for the removal of existing millwork.

1.2 PROJECT CONDITIONS

A. Occupancy:

1. Areas of the building in which selective demolition may occur will be unoccupied during work. **All work will be performed only during a period when there are no children (< 18 years of age) present in any parts of the building.**

B. Existing Conditions:

1. After the project has begun, the Contractor is responsible for the condition of the structures to be selectively demolished.

2. Unforeseen Conditions: Should unforeseen conditions be encountered that affect design or function of project, investigate and fully submit an accurate, detailed, written report to the office of the Owner. While awaiting a response, reschedule operations if necessary to avoid delay of the overall project.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that necessary utilities have been disconnected and sealed.

B. As practicable, arrange operations to reveal unknown or concealed conditions for examination and verification before removal or demolition.

C. Verify actual conditions to determine, in advance, whether removal or demolition of any element will result in structural deficiency, overloading, failure, or unplanned collapse.

1. A licensed electrical contractor shall disconnect electrical fixtures as necessary to facilitate removal of asbestos-containing materials.
2. A licensed plumbing contractor shall disconnect plumbing fixtures as necessary to facilitate removal of asbestos-containing materials.

3.2 PREPARATION

A. Traffic:

1. Do not obstruct walks or public ways without the written permission of governing authorities and of the Owner. Where routes are permitted to be closed, provide alternate routes, if required.

B. Protection:

1. Provide for the protection of authorized persons passing around or through the area of demolition.
2. Perform demolition so as to prevent damage to adjacent improvements and facilities to remain.
3. Protect walls, floors, and other new or existing work from damage during demolition operations, where applicable.

3.3 POLLUTION CONTROLS

A. Control as much as practicable the spread of dust and dirt.

B. Observe environmental regulations.

C. Do not allow water usage that may result in freezing or flooding.

D. Do not allow adjacent improvements to remain to become soiled by demolition operations.

3.4 DEMOLITION - GENERAL

Not Applicable.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Promptly dispose of materials resulting from demolition operations. Non-contaminated material shall be disposed of as construction waste by the Contractor. Do not allow materials to accumulate on site.

B. All rubbish and waste material from the Work shall be neatly stacked or kept in suitable containers and removed from the premises daily. The premises shall be kept clean and in an orderly condition at all times to the satisfaction of the Owner and the Consultant.

C. Transport materials resulting from demolition operations and legally dispose of off-site.

D. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials (where applicable) and promptly dispose of off-site.

3.6 CLEANING

A. Throughout the construction period, the Contractor shall maintain the building and site free of rubbish, debris, surplus materials, and other items not required for the Work. Remove such material from the site daily to prevent accumulations. Remove all construction debris from work areas, and remove all hazardous waste and asbestos waste, as required, by the most current federal, state, and local regulations and the requirements of the specifications.

END OF SECTION

SECTION 020800 ASBESTOS REMOVAL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

B. Refer to other Sections of these Specifications to determine the type and extent of work therein affecting the work of this Section, whether or not such work is specifically mentioned herein.

1.2 SCOPE OF WORK

A. Work outlined in this section includes all that is necessary for the complete removal and disposal of asbestos-containing and asbestos-contaminated materials identified in the areas as detailed below for the Crosby/Wallace Complex; Waterbury, CT.
The quantities given on the following pages are provided to establish the order of magnitude of the abatement project. Actual quantities may vary. The Contractor is responsible for verification of all quantities of ACM scheduled for removal. This verification shall include an on-site walk-through inspection of the work area.

B. Coordinate this section with other Sections of these Specifications for actual quantities of work required. Location, estimated quantities, and abatement removal plan of specific items noted in paragraph A above include:

TABLE 1: LIST OF ACMs

MATERIAL	LOCATION	ESTIMATED QUANTITY
12" Olive w/ White Speck/Streaks Floor Tile	Wallace Music Suite - Room B111	~ 226 Square Feet
Mastic Associated w/ 12" Olive Floor Tiles	Wallace Music Suite - Room B111	~ 226 Square Feet
Residual Black Mastic Beneath Carpeting	Wallace Music Suite – Entrance Hallway	~ 168 Square Feet
	Wallace Music Suite – Room B106	~384 Square Feet
	Wallace Music Suite – Room B108	~134 Square Feet

1.3 DEFINITIONS

The following definitions relative to asbestos removal:

1. ABATEMENT - Procedures to control fiber releases from asbestos containing materials; includes removal, encapsulation, and enclosure.

2. AIR MONITORING - The process of measuring the airborne fiber concentration within an area or within a person's breathing zone.

3. AMENDED WATER - Water to which a surfactant has been added.

4. ASBESTOS - The name given to a number of naturally occurring fibrous silicates. This includes the serpentine forms and the amphiboles and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms, which have been chemically altered.

5. ASBESTOS PROJECT MONITOR (APM) - A professional capable of conducting air monitoring and analysis of samples for airborne fiber concentrations. This individual should be an industrial hygienist, an environmental scientist, or an engineer with experience in asbestos air monitoring and worker protection equipment and procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with 29 CFR 1910.1001 and 29 CFR 1926.1101.

6. ASBESTOS WORK AREA - A regulated area as defined by OSHA 29 CFR 1926.1101 where asbestos removal operations are performed which is isolated by physical barriers to prevent the spread of asbestos dust, fibers, or debris. The regulated area shall comply with requirements of regulated area for demarcation, access, respirators, prohibited activities, competent persons and exposure assessments and monitoring.

7. ASBESTOS FELT - A product made by saturating felted asbestos with asphalt or other suitable binder, such as a synthetic elastomer.

8. ASBESTOS FIBERS - Those asbestos particles with a length greater than five (5) microns and a length to diameter ratio of 3:1 or greater.

9. ASPHALT SHINGLES, COMPOSITION SHINGLES OR STRIP SLATES - (Pitched Roof Shingle): a roofing material manufactured by saturating a dry felt with asphalt then coating the saturated felt with a harder asphalt mixed with a fine mineral, glass fiber, asbestos or organic stabilizer. All or part of the weather side may be covered with mineral granules, or with powdered talc or mica.

10. BASE FLASHING (ROOF) - The flashing provided by upturned edges of a watertight membrane on a roof. May contain metal and associated waterproofing material or combination of roofing felts and waterproofing at the joint between a roofing surface and a vertical surface such as a wall or parapet. Also base flashing may be present at perimeter of completely flat roofing.

11. BUILT-UP ROOFING - Composition Roofing, Felt and Gravel Roofing, Gravel Roofing) - a continuous roof covering made up of laminations or plies of saturated or coated roofing felts, alternated with layers of asphalt or coal-tar pitch and surfaced with gravel, paint or finish coat.

12. CAULKING - Resilient mastic compound often having a silicone bituminous or rubber base. Used to seal cracks, fill joints and prevent leakage. Typical applications: around windows and doors, at joints between two dissimilar materials. (i.e. masonry to wood, masonry to steel etc.).

13. CLEAN ROOM - An uncontaminated area or room, which is a part of the worker decontamination enclosure with provisions for storage of workers' street clothes and protective equipment.

14. CLEARANCE SAMPLING - Final air sampling performed aggressively after the completion of the removal project in a regulated area. Clearance sampling can be conducted by either of the following two methods:

    (A) Air samples collected by the air sampling professional having a fiber concentration of less than 0.01 fibers/cc of air in each of five (5) samples collected inside the containment will denote acceptable clearance sampling by Phase Contrast Microscopy (PCM).

    (B) Five air samples collected inside the containment by the air sampling professional having an average asbestos concentration of less than 70 structures per square millimeter of air will denote acceptable clearance sampling for Transmission Electron Microscopy (TEM).

15. COMPETENT PERSON - As defined by 29 CFR 1926.1101, a representative of the Abatement Contractor who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure. In addition has authority to take prompt corrective measures to eliminate such hazards during asbestos removal. Competent person shall be properly trained in accordance with Environmental Protection Agency's (EPA) Model Accreditation Plan.

16. CURTAINED DOORWAY - A device to allow ingress and egress from one area to another while permitting minimal air movement between the areas. Two curtained doorways spaced a minimum of six feet apart can form an airlock.

17. DAMP PROOFING - Application of a water impervious material to surface such as wall to prevent penetration of moisture, typically at foundation or below grade surface.

18. DECONTAMINATION ENCLOSURE SYSTEM - A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.

19. ENCAPSULANT - A liquid material which can be applied to asbestos-containing materials which controls the possible release of asbestos fibers from the materials either by creating a membrane over the surface (bridging encapsulant) or penetrating the material and binding its components together (penetrating encapsulant).

20. EQUIPMENT ROOM - Any contaminated area or a room that is part of the worker decontamination enclosure with provisions for storage of contaminated clothing and equipment.

21. FIXED OBJECT - Unit of equipment or furniture in the work areas that cannot be removed from the work area.

22. FRIABLE ASBESTOS MATERIALS - Any material that contains more than 1% asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.

23. GLAZING COMPOUND - any compound used to hold window glass in place, also referred to as putty, or glaziers' putty. Is not field-applied, usually installed during manufacture of windows.

24. GLOVE BAG - A manufactured polyethylene bag type of enclosure with built-in gloves such as is placed with an airtight seal around asbestos-containing material and which permits the asbestos-containing materials contained by the bag to be removed without releasing asbestos fibers to the atmosphere. The use of glove bag is permitted for removal and repair of small amount (less than 3 linear feet/3 square feet) of ACM.

25. HEPA FILTER - High Efficiency Particulate Air (HEPA) filter in compliance with ANSI Z9.2-1979.

26. HEPA VACUUM EQUIPMENT - Vacuum equipment equipped with a HEPA filter system for filtering the effluent air from the unit.

27. MOVABLE OBJECT - Unit of equipment or furniture in the work area that can be removed from the work area.

28. NEGATIVE AIR PRESSURE EQUIPMENT - A portable local exhaust ventilation system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.

29. NESHAPS - National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.

30. PERMISSIBLE EXPOSURE LEVEL (PEL) - The average airborne concentration of asbestos fibers to which an employee is allowed to be exposed over an eight-hour period. The PEL established by OSHA 29 CFR 1926.1101 is 0.1 fibers per cubic centimeter of air averaged over an eight-hour time period. An airborne fiber concentration of 1.0 fibers /cc averaged over a sampling period of 30 minutes is the Excursion Limit. The Contractor is responsible for maintaining work areas in a manner that this standard is not exceeded.

31. REGULATED AREA - An area established by the employer to demarcate where Class I, II, and III asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate, and a work area within which airborne concentrations of asbestos fibers may exceed the PEL.

32. SHOWER ROOM - A room between the clean room and the equipment room in the work decontamination enclosure with hot and cold running water and suitably arranged for employee showering during decontamination. The shower room is located in an airlock between the contaminated area and the clean area.

33. WATERPROOFING - material, usually a membrane or applied compound (tar/mastic), used to make a surface impervious to water. Includes concealed conditions (applications around doors, windows, and in wall cavities), sometimes combined with felts.

1.4 SUBMITTALS

A. The Contractor shall submit the following to the Owner prior to start of project:

1. Evidence that the Contractor is certified to perform asbestos abatement work in the State of Connecticut.
2. Schedule which defines a timetable for executing and completing the project, including set-up, removal, cleanup, decontamination, and air clearance sampling.
3. The identity and licensing of the hauling contractor and the landfill to be used.
4. Connecticut certificate of training (both initial and current refresher), current respirator fit test records, and current medical records for each employee who may be on the project site. Effective June 4, 2000, no individual shall provide services as an asbestos abatement site supervisor or as an asbestos abatement worker without a certificate to do so issued by the CTDPH.
5. Detailed product information on all materials and equipment proposed for asbestos abatement removal on this project.
6. Training and medical records for new employees to start work.
7. Signed copy of the Certificate of Workers Acknowledgment found at the end of this section for each worker who is to be at job site.

B. The following shall be submitted to the Owner at the completion of work:

1. Completed Punch List.
2. Completed copies of Waste Shipment Records (WSR).

1.5 REGULATIONS AND STANDARDS

A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner which will be in conformance with all federal, state, and local regulations and guidelines pertaining to asbestos removal. Specifically, the Contractor shall comply with the requirements of the following:

1. U.S. Environmental Protection Agency (USEPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) Regulations (40 CFR 61, Subpart M).
2. Occupational Safety and Health Administration (OSHA) Asbestos Regulations (29 CFR 1910.1001 and 1926.1101).
3. State of Connecticut Department of Public Health (CTDPH) Standards for Asbestos Abatement Sections 19a-332a-1 through 19a-332a-16. Licensure and Training Requirements for Persons Engaging in Asbestos Abatement and Consultation Services Sections 20-440-1 through 20-440-9 inclusive. Standards for Asbestos-Containing Materials in Schools Sections 19a-333-1 through 19a-333-13.
4. State of Connecticut Department of Environmental Protection (CTDEEP) Regulations, Section 22a-209-8(i).
5. National Fire Protection Association (NFPA) Life Safety Code.
6. All national codes and standards including American National Standards Institute (ANSI) and Underwriter's Laboratories (UL).

1.6 EXEMPTIONS

A. Any deviations from these Specifications require the written approval and authorization from the Owner and Consultant.

B. Any deviation in work practices identified in CTDPH Standards for Asbestos Abatement, Sections 19a-332a-1 to 19a-332a-23, Sections 19a-333-1 through 19a-333-13, Sections 20-440-1 to 20-440-9, Section 20-441, and Section 19a-332e-1 to 19a-332e-2, must be requested in writing and approved in writing by the CTDPH.

1.7 FINAL VISUAL INSPECTION AND CLEARANCE AIR SAMPLING

A. Following the completion of the final cleaning phase of the work in the regulated area, the Consultant shall conduct a final visual inspection of the area. The Contractor shall be responsible for meeting final visual criteria, which is the absence of visible debris, as specified in CTDPH regulation 19a-332a-12(b).

B. Following the completion of the final visual inspection, and upon which time the Consultant agrees that the Contractor has met the final visual criteria, (and following encapsulation of the work area) the Consultant's Asbestos Project Monitor will collect post-removal air samples in the work area. The Owner shall be responsible for payment of the sampling and analysis of the first round of final air clearances for a particular work area.

1.8 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

A. The Contractor shall make the following notifications and provide submittals to the following agencies prior to the commencement of removal/renovation work. These notifications are required prior to the start of the abatement/demolition project:

1. State of Connecticut
   Department of Public Health
   Indoor Air Program
   410 Capitol Avenue
   P.O. Box 340308
   Hartford, CT 06134-0308

2. United States Environmental Protection Agency
   Region 1 – New England
   5 Post Office Square, Suite 100
   Boston, MA 02109-3912

1.9 WORK SITE SAFETY PLAN

A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the work site. The safety plan should include provisions for the following:

1. Evacuation of injured workers.
2. Emergency and fire exit routes from all work areas.
3. Emergency first aid treatment.
4. Local telephone numbers for emergency services including ambulance, fire, and police.
5. Methods to notify appropriate personnel in the event of a fire or other emergency requiring evacuation of the site or area.
6. Site safety plan for fall protection.

B. The Contractor is responsible for training all workers in these procedures.

1.10 CONTROL OVER REMOVAL WORK

A. At the discretion of the Owner & Consultant, full-time project monitoring will be performed as part of this project throughout the duration.

B. The Contractor shall maintain control of and be responsible for access to all work areas to ensure the following requirements:

1. Non-essential personnel are prohibited from entering the area.

2. All authorized personnel entering the work area shall read the "Worker Protection Procedures" which are posted at the entry points to the enclosure system and shall be equipped with properly fitted respirators and protective clothing.3. All personnel who are exiting from the decontamination enclosure system shall be properly decontaminated.

3. Asbestos waste that is taken out of the work area must be properly bagged and labeled in accordance with these specifications. The surface of the bags shall be decontaminated. Asbestos waste leaving the enclosure system must be transported off site at end of work day or immediately placed in locked, posted temporary storage on site, and removed within 24 hours of the project conclusion. The Contractor may seek permission of the Owner to place a temporary lockable storage at a suitable onsite location.

4. Any material, equipment, or supplies that are brought out of the decontamination enclosure system shall be cleaned and decontaminated by wet cleaning and/or HEPA vacuuming of all surfaces.

1.11 PROPER WORKER PROTECTION

A. This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

B. All workers are to be accredited and certified as Asbestos Abatement Workers as required by the CTDPH.

C. The Contractor is required to be certified, accredited, and licensed as required by the CTDPH.

D. In accordance with 29 CFR 1926.1101, all workers shall receive a training course covering the dangers inherent in handling asbestos, the dangers of breathing asbestos dust, proper work procedures, and proper worker protective measures. This course must include but is not limited to the following:

1. Methods of recognizing asbestos.
2. Health effects associated with asbestos.
3. Relationship between smoking and asbestos in producing lung cancer.
4. Nature of operations that could result in exposure to asbestos.
5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
   a. Engineering controls
   b. Work practices
   c. Respirators
   d. Housekeeping procedures
   e. Hygiene facilities
   f. Protective clothing

g. Decontamination procedures
h. Emergency procedures
i. Waste disposal procedures

6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134.
7. Appropriate work practices for the work.
8. Requirements of medical surveillance program.
9. Review of 29 CFR 1926.
10. Pressure differential systems.
11. Work practices including hands on or on-job training.
12. Personal Decontamination procedures.
13. Air monitoring, personal and area.

E. The Contractor shall provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an eight-hour Time Weighted Average (TWA). In the absence of specific airborne fiber data, provide medical examinations for all workers who will enter the work area for any reason. Examination shall at a minimum meet OSHA requirements as set forth in 29 CFR 1926.1101. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

F. Submit the following to the Owner for review. The Contractor shall not start work until the Owner/Consultant reviews the submittals and indicates that they are acceptable.

1. Certificates from an EPA-approved AHERA Abatement Workers course for each worker as evidence that each Asbestos Abatement Worker is accredited as required by the AHERA Regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.
2. Evidence that the Contractor is certified to perform asbestos abatement work by the State of Connecticut Department of Public Health.
3. An original signed copy of the Certificate of Worker's Acknowledgment found at the end of this section, for each worker who is to be at the job site or enter the Work Area.
4. Documents verifying that each worker has had a medical examination within the last 12 months as part of compliance with OSHA medical surveillance requirements. Submit, at a minimum, for each worker the following:
   a. Name and Social Security Number.
   b. Physicians Written Opinion from examining physician including at a minimum the following:
      1) Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
      2) Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
      3) Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
5. Information that was provided to physician in compliance with 29 CFR 1926.1101.
6. A statement that the worker is able to wear and use the type of respiratory protection proposed for the project and is able to work safely in an environment capable of producing heat/cold stress in the worker.

1.12 CONTRACTOR'S AIR SAMPLING RESPONSIBILITY

A. The Contractor shall be responsible for monitoring airborne asbestos fiber concentrations in the workers' breathing zones and to establish conditions and work procedures for maintaining compliance with OSHA Regulations 29 CFR 1910.1001, and 1926.1101.

B. The Contractor's air sampling procedures shall ensure proper documentation of all personal air-sampling results. Documentation for personal sampling must be available at the job site for review by federal and/or state regulatory agencies.

C. All air sampling shall be conducted in accordance with methods described in OSHA Standards 29 CFR 1910.1001 and 1926.1101. The flow rate for air samples will not be less than 0.5 liters/minute and must not exceed 2.5 liters/minute.

1.13 RESTRICTIONS ON CONTRACTOR'S USE OF GROUNDS

A. The Contractor shall confine his/her operations to the actual work site, access routes and storage areas designated by the Owner. The Contractor may place a storage container at a place designated by the Owner.

B. The Contractor shall have sole responsibility for providing all materials, equipment, or tools and any storage required shall be at the Contractor's own risk. The Owner will not assume responsibility for any loss of materials, equipment, or tools stored on its property.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.

C. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to the job site with factory label indicating 4 or 6 mil thickness.

D. Polyethylene disposable bags shall be six (6) mil thick with pre-printed labels.

E. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

F. Surfactant (wetting agent), shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one (1) ounce surfactant to five (5) gallons of water or as directed by manufacturer.

G. Encapsulant shall be non-flammable factory prepared penetrating encapsulant found acceptable to Consultant such as ABC Asbestos Binding Compound manufactured by Fiberlock. Usage shall be in accordance with manufacturer's printed technical data.

H. The Contractor shall have available spray equipment capable of mixing wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all areas where asbestos is present.

I. Impermeable containers are to be used to receive and retain any asbestos- containing or contaminated materials until disposal at an acceptable disposal site. (The containers shall be labeled in accordance with OSHA Standard 29 CFR 1926.1101) Containers must be both air and watertight.

J. Labels and signs, as required by OSHA Standard 29 CFR 1926.1101 will be used.

K. A high efficiency particulate air (HEPA)-filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports where asbestos-containing materials may be disturbed.

2.2 TOOLS AND EQUIPMENT

A. The Contractor shall provide all tools and equipment necessary for asbestos removal.

B. The Contractor's air monitoring professional shall have air-monitoring equipment of type and quantity to monitor operations and conduct personal exposure monitoring per OSHA requirements.

C. The Contractor shall have available sufficient inventory of dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape and air filters.

D. The Contractor shall have available power cables or power sources such as generators (where required).

E. As applicable, exhaust air filtration system units shall contain HEPA filter(s) capable of sufficient air exhaust to create negative pressure of at least 0.02 inches of water column within each enclosure with respect to outside areas. Equipment shall be checked for proper operation by differential pressure gauge continuously during the project. Adequate exhaust air shall be provided for a minimum of four (4) air changes per hour within the enclosure. No air movement system or air filtering equipment shall discharge unfiltered air outside, nor shall filtered air units be exhausted indoors from the work area.

F. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at lead 99.97 percent of all monodispersed particles of 0.3 micrometers in diameter or larger.

G. The Contractor will have reserve units so that the exhaust air filtration system will operate continuously.

2.3 ELECTRICAL

A. Any electrical installations shall be accomplished under the direction of a Licensed Electrician.

B. The Contractor shall furnish and install a portable ground fault circuit interrupters (GFCI) including the following:

1. All circuits individually GFCI-protected.
2. Components UL listed

C. The Contractor shall not use existing electrical outlets within the regulated area:

D. The Contractor will supply temporary lighting for all asbestos removal work areas.

E. The Owner will furnish electrical power for the project.

PART 3 - EXECUTION

3.1 WORKER PROTECTION

A. General:

1. All asbestos abatement removal shall be performed in accordance with 29 CFR 1910.1001, 29 CFR 1926.1101 and State of Connecticut regulations as specified herein. Personnel shall wear and utilize protective clothing and equipment as specified herein. Eating, smoking, drinking, chewing gum, or applying cosmetics shall not be permitted in the asbestos control area. Personnel of other trades not engaged in the removal of asbestos shall not be allowed in the work area unless all the personnel protection provisions of this Specification are complied with by the trade personnel.

2. Engineering controls shall be used to minimize airborne fiber concentrations within the work area. A combination of personal protective equipment and work practices shall also be used to further reduce employee exposure to asbestos fibers.

3. The Contractor shall provide all authorized visitors with protective clothing, as in the procedures described herein and afford them the use of all facilities to keep them free of contamination from asbestos fibers.

4. The Contractor shall provide the decontamination facility for worker and equipment decontamination as well as the results of the personal air monitoring.

B. Respiratory Protection:

1. The Contractor shall select and provide at no cost to his/her employees respirators, which shall provide adequate protection to the employee as specified by Section 1910.1001(g) Table D-1 and Section 1926.1101(h) Table D-4.

2. Respiratory protection shall be worn by all persons potentially exposed to elevated airborne concentrations of asbestos fibers from the initiation of the asbestos removal project until all areas have been given clearance.

3. At a minimum, the Contractor shall provide half-face air-purifying respirators to all workers at the job site. If it is established, through collection and analysis of personal air samples in accordance with the OSHA Reference Method (ORM) (See U.S. Department of Labor; Occupational Safety and Health Administration; Occupational Exposure to Asbestos; Title 29 CFR 1910.1001, "General Industry Standard." Title 29 CFR 1926.1101, "Construction Standard") that this respiratory protection is inadequate, the Contractor will provide Powered Air Purifying Respirators or Type C (continuous flow or pressure demand) supplied air respirators.

   a. Once the exposure limits have been established, the respirators presented in 29 CFR 1910.1001 that afford adequate protection at such upper concentrations of airborne asbestos fibers shall be used.
   b. The minimum personal sampling period shall be seven hours at a flow rate of 0.5 to 2.5 liters per minute. The samples shall be collected within the workers' breathing zone. Personal sampling shall be the responsibility of the Contractor. Personal sampling results shall be available on site no later than 24 hours after sampling.
   c. The filters provided for both the cartridge respirators and the PAPR's shall be National Institute for Occupational Safety and Health (NIOSH) approved for asbestos fibers.

C. Protective Clothing:

1. The Contractor shall provide to all workers, foreman and superintendents, protective disposable clothing consisting of full body coveralls including head covers.

2. The Contractor shall provide eye protection and hard hats, as required, by job conditions and safety regulations.

3. Reusable footwear, hard hats and eye protection devices shall be left in the "contaminated equipment room" until the end of the asbestos removal work.

4. Upon completion of asbestos removal work, the footwear shall be disposed of as contaminated waste or cleaned thoroughly inside and out using soap and water before removing from work area or from equipment and access area.

5. All disposable protective clothing shall be discarded and disposed of as asbestos waste when the wearer exits from the workspace to the outside through the decontamination facilities.
6. The color of the disposable clothing worn outside the work area shall be a different color than the disposable clothing worn inside the work area.

D. Decontamination Procedures:

1. Each worker and authorized visitor without exception shall, upon entering the job site: remove street clothes in the clean change room and put on an appropriate respirator with new filters, and clean disposable protective clothing before entering the equipment room or the work area, except those workers intending to re-wear previously worn protective clothing stored in the equipment room shall enter the equipment room wearing only respirators.

2. Each time he/she leaves the work area, each worker and authorized visitor shall:

   a. Vacuum gross contamination from clothing before leaving the work area.

   b. Proceed to the equipment room and remove all clothing except respirator.

   c. Still wearing the respirator, proceed unclothed into the showers.

   d. Clean the outside of the respirator with soap and water while showering.

   e. Remove filters and wet them and dispose of filters in the container provided for that purpose.

   f. Wash and rinse the inside of the respirator. After showering, dry off with disposable towels.

3. Following showering and drying off, each worker and authorized visitor shall proceed directly to the clean change room and dress in street clothes at the end of the day's work, or before eating, smoking, or drinking.

4. Contaminated reusable work footwear shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos removal work, footwear shall be disposed of as contaminated waste or cleaned inside and out using soap and water before removing these items from the work area or from the equipment and access area. Contaminated protective clothing shall be placed in receptacles for disposal with other asbestos-contaminated materials.

3.2 WORK AREA PREPARATION

A. Shut down and/or isolate any heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure.

B. Where necessary, within regulated areas, shut down electrical power, including receptacles and light fixtures. Provide GFCI devices and temporary lighting installed in compliance with the applicable electrical codes if building lighting is not usable per the Owner's request. Install decontamination system as described below in section 3.3 of these specifications.

C. Pre-clean and seal off all openings, including, but not limited to, windows, corridors, doorways, ducts, grills, diffusers, and any other penetration of the work area, with polyethylene sheeting a minimum of six (6) mil thick, sealed with duct tape.

D. Install adequate number of HEPA ventilation units to achieve the required number of at least 4 air changes per hour and exhaust units to the exterior of the building.

3.3 DECONTAMINATION SYSTEM

A. The Contractor shall establish a decontamination enclosure (decon) contiguous to the work area consisting of equipment room, shower room, and clean room in series. The only access between contaminated and uncontaminated areas shall be through this decontamination enclosure.

B. Access between rooms in the decontamination system shall be through double-flap curtained openings. The clean room, shower room and the equipment room within the decontamination enclosure shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.

C. Construct the decontamination system with PVC or metal framing and cover all sides with a double layer of six (6) mil polyethylene sheeting, spray glued or taped at the joints.

3.4 MAINTENANCE OF THE WORK AREA

A. Acceptance of Asbestos Control Area: The Contractor shall not begin removal unless approved by the APM. The control area must be constructed, the decontamination facility prepared and the supplies to be used assembled, barriers properly constructed, openings sealed, and other preparations made to allow the removal operation to proceed. If conditions are not acceptable, the Contractor shall correct deficiencies to comply with the specifications.

3.5 ASBESTOS REMOVAL PROCEDURE – GENERAL

A. The Contractor shall have a designated "Competent Person" on the job at all times to ensure establishment of a proper enclosure system and proper work practices throughout project.

B. Spray asbestos materials with amended water using airless spray equipment or apply approved removal wetting agent to reduce the release of fibers during removal operation.

C. Fill disposal containers as removal proceeds, seal filled containers and wet clean each container thoroughly, double bag and apply caution label.

D. After completion of stripping work, where needed, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped, and sponged or cleaned by an equivalent method to remove all visible material. During this work, the surfaces being cleaned shall be kept wet.

E. Sealed disposal containers, and all equipment used in the work area, shall be included in the cleanup and shall be removed from work areas via the equipment decontamination enclosure at an appropriate time in the cleaning sequence. All asbestos waste shall be placed in 6-mil polyethylene disposal bags and shall be double bagged in the equipment decontamination enclosure before removal from the site.

F. At any time during asbestos removal, should contamination of areas outside the work area be suspected, the Contractor shall cause all removal work to stop until the he/she takes steps to decontaminate these areas and eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections certify decontamination.

G. After completion of the final cleaning procedure, an inspection shall be conducted by the Consultant APM. The inspection shall verify that ACM and residual dust has been removed from the work area.

3.6 ASBESTOS REMOVAL PROCEDURE – FLOOR TILE AND MASTIC

A. Prior to beginning the removal of any resilient floor covering, remove all movable objects from the work area. If applicable, remove the bookcases, counters, radiators, doors, etc. to access the floor tile and mastic beneath.

B. Remove resilient tile floor covering using the following procedure:

1. Remove binding strips, all vinyl cove base, or other restrictive molding from doorways, walls, etc. clean and dispose of as demolition waste unless contaminated with ACMs. Dispose of any materials that have floor mastic on them as asbestos-containing waste. The contractor may have to perform selective destructive demolition, such as removing partition walls, to access the tile.
2. Wet the floor with amended water, removal encapsulant, or detergent solution, so that entire surface is wet. Do not allow puddle or run off to other areas. If a removal encapsulant is used, use in strict accordance with manufacturer's instructions. If necessary, cover with sheet polyethylene to allow humidity to release tiles from floor. Allow time for humidity and water or removal encapsulant to loosen tiles prior to removal.
3. Keep floor continuously wet throughout removal operation.
4. Remove tiles using a manual or powered spade or stripping machine. Continuously mist floor in area where machine is working with amended water, removal encapsulant or detergent solution. Wet any debris generated as necessary to keep continuously wet. Keep floor where tile has been removed continuously wet until after completion of heavy adhesive residue removal.
5. Floor mastics may be removed using low odor chemical strippers in accordance with manufacturer’s instructions or mechanical means such as shot-blasting or hand grinding.
6. In areas where mastic has been applied to a wood or similar porous sub-flooring, such material shall be removed and disposed of as asbestos containing waste.

C. Debris and Waste

1. Pick up whole tiles, stack, place in lined boxes or place in labeled disposal bags. At the Contractor's option tiles may be placed directly into durable leak-tight containers.
2. Shovel broken tiles and debris into nylon reinforced bags that are placed in a disposal bag, or place directly in leak-tight drums.
3. Place bagged waste in a second disposal bag during decontamination and dispose of as asbestos waste.

D. After completion of floor tile removal, the Contractor may remove mastic adhesive. If the thickness of the mastic residue is too thick to permit effective use of a shot/bead blast machine, utilize hand-scraping/ grinding wet methods to remove gross adhesive and then use the shot/bead blast or equivalent machine/ hand power tools to complete the removal of these materials.

E. After completion of all ACM removal work, the Contractor shall conduct final cleaning.

3.7 ASBESTOS REMOVAL PROCEDURE – RESIDUAL BLACK MASTIC BENEATH CARPETING

A. Prior to beginning the removal of any carpet covering, remove all movable objects from the work area. If applicable, remove the bookcases, counters, radiators, doors, etc. to access the carpeting and residual black mastic beneath.

B. Remove residual black mastic beneath carpeting using the following procedure:

1. Remove binding strips, all vinyl cove base, or other restrictive molding from doorways, walls, etc. clean and dispose of as demolition waste unless contaminated with ACMs. Carpeting may be removed and disposed of as demolition waste as the asbestos containing residual black mastic is encapsulated under the existing non-asbestos containing yellow carpet mastic. Dispose of any materials that have floor mastic on them as asbestos-containing waste. The contractor may have to perform selective destructive demolition, such as removing partition walls, to access the residual black mastic beneath carpeting.
2. Once carpeting is removed, wet the floor with amended water, removal encapsulant, or detergent solution, so that entire surface is wet. Do not allow puddle or run off to other areas. If a removal encapsulant is used, use in strict accordance with manufacturer's instructions.
3. Keep floor continuously wet throughout removal operation.
4. Floor mastics may be removed using low odor chemical strippers in accordance with manufacturer’s instructions or mechanical means such as shot-blasting or hand grinding.
5. In areas where mastic has been applied to a wood or similar porous sub-flooring, such material shall be removed and disposed of as asbestos containing waste.

C. Debris and Waste

1. Shovel debris into a disposal bags, or place directly in leak-tight drums. HEPA vacuums may be utilized to collect asbestos containing debris from mastic abatement. Filters and debris are to be placed into disposal bags or directly into leak tight drums.
2. Place bagged waste in a second disposal bag during decontamination and dispose of as asbestos waste.

D. If the thickness of the mastic residue is too thick to permit effective use of a shot/bead blast machine, utilize hand-scraping/ grinding wet methods to remove gross adhesive and then use the shot/bead blast or equivalent machine/ hand power tools to complete the removal of these materials.

E. After completion of all ACM removal work, the Contractor shall conduct final cleaning.

3.8 CONSULTANT AND SUSPENSION OF WORK

A. The Owner will designate an Asbestos Consultant to perform the duties of the for this Contract. The Consultant may also act as the APM for the project.

B. The removal work shall be reviewed by the Consultant. The Contractor will request an inspection at least 24 hours in advance of requiring the inspection.

C. The Consultant will recommend that the Owner order a suspension of work based on a determination of risk of adverse health and safety impacts on the environment, workers, or the general public, or failure to comply with the Specifications/regulations. The Contractor and the Owner will be notified in writing of the reason and of the recommended resolution.

D. During the progress of the work, the Consultant, following approval by the Owner, shall have the right to make any changes, alterations, additions or omissions in the work or Specifications in accordance with the General Conditions.

E. The Consultant will provide visual inspection services throughout the Contract's duration. It shall be the Contractor's responsibility to comply with pertinent work standards and regulations.

F. The Consultant will conduct visual observations and perform inspections in the work area for evaluating that the work area remains properly secured and isolated and specified work items are properly completed. Upon completion of work in a defined work area, the Consultant will conduct a final visual inspection for the purpose of evaluating work completion. Unsatisfactory conditions shall be immediately corrected in a manner specified by the Consultant and the contract documents. Final payments shall be approved only after the Owner receives all properly completed Waste Shipment Record Forms and other required documentation and records.

3.9 CONSULTANTS' AIR SAMPLING RESPONSIBILITIES

A. Air sampling may be conducted by the Consultant to ascertain the integrity of controls that protect the building from asbestos contamination. Independently, the Contractor shall monitor air quality within the work area to ascertain the protection of employees and to comply with OSHA regulations.

B. Consultant's APM may collect air samples during the following time periods:

1. Pre-Abatement Period: The APM may collect samples prior to abatement work to establish baseline readings. These samples will be collected in and around the proposed work areas. Pre-abatement air samples shall be collected as required to obtain a volume of 1,200 liters. Pre-abatement and during abatement Samples shall be analyzed by PCM methodology using the NIOSH 7400 protocol.

2. Abatement Period: The APM may collect samples when onsite on a daily basis during the work period. A sufficient number of area samples shall be taken outside of the work area to judge the degree of cleanliness or contamination of the building during removal. Additional samples may be taken inside the work area at the discretion of the APM.

3. Post-Abatement Period: As required by regulation, the APM shall conduct air sampling following the final cleanup phase of the project, once the "no visible residue" criterion, as established by the APM, has been met. Five (5) samples shall be collected inside the work area utilizing aggressive methods to comply with the State of Connecticut Department of Public Health Standards for Asbestos Abatement, sections 19a-332a-12, and 19a-332a-13 and United States Environmental Protection Agency (USEPA) Asbestos-Containing Materials in Schools regulation 40 CFR Part 763. Analysis of the

samples to determine airborne concentrations of asbestos shall be conducted by Transmission Electron Microscopy (TEM) method, for areas greater than 160 square feet or 260 linear feet, to show that the concentration of fibers for the average of the five (5) samples is less than or equal to a limit of quantitation for TEM – less than 70 structures per millimeter squared (<70s/mm^2) of air in accordance with the above regulations.

C. The APM may provide ongoing evaluation of the air quality within the building during removal, using his/her best professional judgments with respect to the State of Connecticut Department of Public Health guideline of 0.010 fibers/cc and the background air quality established during the pre-abatement period.

D. If the APM determines that the building air quality has become contaminated from the project, he/she shall immediately inform the Contractor to cease all removal operations and implement a work stoppage clean up procedure. The Contractor shall conduct a thorough cleanup of the areas of the building designated by the Consultant. No further removal work can take place until the APM has assessed that the building air has been decontaminated.

E. Air samples shall be collected as required and shall be analyzed by TEM methodology using the AHERA 40 CFR, Part 763 protocol.

3.10 CONSULTANT'S INSPECTION RESPONSIBILITIES

A. Inspections shall be conducted by the APM as required, throughout the progress of the abatement project. Inspections shall be conducted in order to document the progress of the abatement work as well as the procedures and practices employed by the Contractor.

B. The APM may perform the following inspections during the course of abatement activities:

1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the Contractor. The APM shall be informed sufficiently in advance of the time the inspection is needed. During the course of the pre-commencement inspection, the APM shall inspect the containment and surrounding work areas. This shall include, but not be limited to, inspection of barrier integrity, worker decontamination facility, utilization of power sources, and location and capacity of negative air filtration devices. If, during the course of the pre-commencement inspection, deficiencies are found, the Contractor shall perform the necessary adjustments in order to obtain compliance.

2. Work Area Inspections. Work area inspections may be conducted on a daily basis at the discretion of the Owner/Consultant. During the course of the work inspections, the APM shall observe the Contractor's removal procedures, verify barrier integrity, monitor negative air filtration devices, assess project progress, and inform the Contractor of specific remedial activities if deficiencies are noted.

3. Pre-sealant Final Visual Inspection. A pre-sealant inspection for the regulated area shall be conducted by the APM upon the request of the Contractor. The pre-sealant inspection shall be conducted after completion of the cleaning procedures. The pre-sealant inspection shall verify that no visible ACM or residual debris remain in the work area. If, during the course of the pre-sealant inspection, the APM identifies visible residual ACM or debris, the Contractor shall re-clean the work area until it is deemed acceptable by the APM.

3.11 WASTE DISPOSAL

A. All waste material shall be promptly wetted and placed in 6-mil polyethylene bags or wrapped in two layers of 6-mil polyethylene plastic sheeting as it is generated. A sufficient number of waste bags and/or plastic sheeting shall be located in the immediate work area (unused bags in the equipment room of the decontamination facility must be disposed of as contaminated waste). The Contractor shall count or measure the volume of each filled container leaving the work area and maintain a written record of such.

B. Warning labels, having waterproof print and permanent adhesive, shall be affixed to the sides of all waste bags or transfer containers. Warning labels shall be conspicuous and legible, and contain the following words in accordance with OSHA 1926.1101:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

In addition to the above, affix 'waste generator label' to include the generator's name and address on each waste container. Waste transport vehicles will have appropriate U.S. Department of Transportation signage on them for transportation of asbestos waste materials.

C. A fine water spray shall be used to keep the unbagged or unwrapped waste wet at all times.

D. Sealed waste shall be removed from the work area and stored in an on-site, enclosed and lockable dumpster or transported to the landfill. The temporary storage dumpster area shall be prominently identified and be kept locked.

E. Once a truckload of waste containers has accumulated, the Contractor shall arrange for transportation to the landfill. No temporary co-mingling of asbestos waste from this project with that from another site will be allowed.

F. Waste Transportation and Disposal Regulations:

1. It is the responsibility of the Contractor to determine and ensure compliance with the current waste handling regulations applicable to the work site and the current regulations for waste transportation to and disposal at each ultimate landfill. The Contractor shall comply fully with these regulations and with all U.S. Department of Transportation, EPA, and State of Connecticut Department of Environmental Protection (DEP) requirements.

2. If required, the Contractor (or Subcontractor), at no additional cost, shall maintain a valid hazardous waste transporter's permit and identification number, and document and fully comply with any hazardous waste manifesting requirements.

G. Waste Disposal Procedure:

1. The Contractor shall incorporate in his/her proposal the estimated quantity of asbestos waste disposal to be generated during the work; the proposed final waste site; the estimated number of separate waste shipments (loads), and the current estimated transportation and landfill disposal fees (per cubic yard). Non-contaminated waste transport and disposal shall be solely the Contractor's responsibility. The Contractor shall review each of these items and resolve any discrepancies or deficiencies during the pre-construction site meeting.

2. The Contractor shall package, label, and remove all asbestos waste as specified in the specifications. Packaging shall be accomplished in a manner that minimizes waste volume, but so that waste containers will not tear or break.

3. The Contractor shall provide legal transportation of this waste to the ultimate disposal landfill; and have the waste hauler and the landfill owner complete all other required manifests, dump slips, or other forms. The completed and fully signed (by all required parties) original of the Waste Shipment Record, and copies of the other forms, shall be returned within thirty (30) calendar days to the Consultant for payment approval. No payments will be approved or made for incomplete Waste Shipment Records.

4. All disposal of asbestos-containing and/or asbestos-contaminated material must be in compliance with requirements of and authorized by the Solid Waste Management Division, State of Connecticut Department of Energy and Environmental Protection.

H. Waste Disposal Fees:

1. All Contractor contaminated waste handling costs, such as waste packaging, on-site/off-site storing/handling, transport/disposal, permitting, record keeping, and non-contaminated waste handling must be included in the Contractor's proposal as applicable to removal of asbestos materials and/or performance of the related removal activities.

3.12 PROJECT RESTORATION

A project walk-through shall be conducted, by the Owner or Owner's Consultant (upon the Owners request), after the removal portion of the project to identify areas or equipment damaged during the work. If the Owner determines that the damage is caused by acts or omissions of the Contractor, a punch list shall be developed. The Contractor shall be responsible for repair or replacement, or at the discretion of the Owner, payment for the work of another Contractor to complete the punch list. A second walk through shall be conducted after completion of punch list items.

END OF SECTION

SECTION 020850 CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME_____DATE_____
PROJECT ADDRESS_____
CONTRACTOR'S NAME_____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC. Your employer's contract with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You be trained in safe work practices and in the use of the equipment found on the job. You receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type respirator to be used on the above referenced project. You must be given a copy of the written respiratory protection manual issued by your employer. You must be equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: You must have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course must have included the following:

- Physical characteristics of asbestos
- Health hazards associated with asbestos
- Respiratory protection
- Use of protective equipment
- Pressure Differential Systems
- Work practices including hands on or on-job training
- Personal decontamination procedures
- Air monitoring, personal and area

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.
By signing this document, you are acknowledging only that the Owner of the building you are about to work in has advised you of your obligation to training and protection relative to your employer, the Contractor.

Signature_____

Printed
Name_____Witness_____

Supplemental Asbestos Inspection Report
HVAC Improvements Project 2023

For

Crosby High School & Wallace Middle School

300 Pierpont Road
&
3465 E Main Street
Waterbury, CT 06705

PREPARED FOR:

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Attn: David Spangler

PREPARED BY:

FSS
Facility Support Services

121 North Plains Industrial Rd; Unit F
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Phone (203) 288-1281

May 8, 2023

FSS Project #13923

SIGNATURES OF REPORT AUTHORS

The employees of Facility Support Services, LLC whose names appear below prepared this report. Requests for information on the content of this document should be directed to these individuals.

Michael DiFabio
HBM Project Manager
CT Asbestos Inspector/Management Planner (#000340)

I. PROJECT NARRATIVE

Facility Support Services, LLC (FSS) performed a supplemental limited asbestos inspection at the Crosby High School/Wallace Middle School (Bergin Complex), located at 300 Pierpont Road & 3465 East Main Street in Waterbury, Connecticut, following the initial inspection of April 10, 2023. The initial inspection report is attached in Section VI of this report. The supplemental inspection took place on May 5, 2023, with the purpose of identifying the presence of asbestos in suspect building materials prior to upcoming renovations of the HVAC system of the schools. Specifically the plaster ceiling material of the Music Suite in the Wallace Middle School portion of the building.

The asbestos inspection was performed following the Environmental Protection Agency (EPA), National Emissions Standard for Hazardous Air Pollutants (NESHAP) regulations for building renovations and demolition, 40 CFR Part 61, Amended 11/20/1990. In accordance with contract terms, non-destructive sampling techniques were utilized, and inaccessible materials were not included in this inspection (wall chases, etc.). Should these inaccessible areas be subject to renovations and suspect materials are discovered, sampling and analysis must be conducted to confirm asbestos content.

On May 5, 2023, a total of sixty (6) suspected asbestos bulk samples were collected. The materials identified and sampled from the building are detailed in the following list.

- Wallace Middle School
  - Music Suite
    - Smooth Ceiling Plaster Skim Coat (White)
    - Ceiling Plaster Base Coat (Gray)

II. SUMMARY OF RESULTS

Samples of building materials collected by FSS were analyzed by EMSL Analytical, Inc., for EPA method 600/R-93/116. This is currently the approved EPA test method, which uses Polarized Light Microscopy (PLM) that uses dispersion staining. EMSL Analytical, Inc. is an accredited asbestos laboratory (NVLAP #200700-0) and is a State of Connecticut approved public health laboratory for asbestos analysis.

No Asbestos-Containing Materials were identified during this supplemental inspection.

Laboratory results have revealed that none of the materials tested during this supplemental inspection are considered asbestos containing materials according to Local and Federal Regulations (i.e., contains less than 1% asbestos).

See Section V for a copy of the laboratory analytical reports for the samples collected.

****Please note that asbestos containing materials were identified during the initial inspection of April 10, 2023. The Initial Inspection Report is attached in Section VI of this report****

III. CONCLUSIONS

The smooth ceiling plaster skim and base coats are not asbestos containing materials, according to laboratory analysis. Renovations to these materials can be completed without concern of contamination or personal exposure. The materials can be disposed of as general construction debris.

****Please note that asbestos containing materials were identified during the initial inspection of April 10, 2023. The Initial Inspection Report is attached in Section VI of this report****

FSS made reasonable effort to locate and identify all suspect asbestos containing materials that are part of this project. Any material discovered and may be impacted during project activities, which have not been included in this survey or previously sampled, must be presumed to contain asbestos until such time that bulk samples can be collected and analyzed for asbestos content.

IV. LABORATORY ANALYTICAL RESULTS

EMSL Analytical, Inc.

165 Gracey Avenue Meriden, CT 06451

Tel/Fax: (203) 284-5948 / (203) 284-5978

http://www.EMSL.com / wallingfordlab@emsl.com

EMSL Order: 242302338
Customer ID: FSS93
Customer PO:
Project ID:

Attention: Michael DiFabio
Facility Support Services, LLC
121 North Plains Industrial Road, Unit F
Wallingford, CT 06492

Project: CROSBY/WALLACE 13923

Phone: (203) 288-1281
Fax: (203) 248-4409
Received Date: 05/05/2023 11:30 AM
Analysis Date: 05/08/2023
Collected Date:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
139230505-01A *242302338-0001*	MUSIC SUITE (WALLACE BASEMENT) - SMOOTH PLASTER SKIM COAT (WHITE) -CEILING	White Non-Fibrous Homogeneous		3% Quartz 97% Non-fibrous (Other)	None Detected
139230505-01B *242302338-0002*	MUSIC SUITE (WALLACE BASEMENT) - SMOOTH PLASTER SKIM COAT (WHITE) -CEILING	White Non-Fibrous Homogeneous		2% Quartz 98% Non-fibrous (Other)	None Detected
139230505-01C *242302338-0003*	MUSIC SUITE (WALLACE BASEMENT) - SMOOTH PLASTER SKIM COAT (WHITE) -CEILING	White Non-Fibrous Homogeneous		2% Quartz 98% Non-fibrous (Other)	None Detected
139230505-02A *242302338-0004*	MUSIC SUITE (WALLACE BASEMENT) - PLASTER BASE COAT (GRAY) -WHITE	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
139230505-02B *242302338-0005*	MUSIC SUITE (WALLACE BASEMENT) - PLASTER BASE COAT (GRAY) -WHITE	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
139230505-02C *242302338-0006*	MUSIC SUITE (WALLACE BASEMENT) - PLASTER BASE COAT (GRAY) -WHITE	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected

Initial report from: 05/08/2023 10:23:20

EMSL Analytical, Inc.
165 Gracey Avenue Meriden, CT 06451
Tel/Fax: (203) 284-5948 / (203) 284-5978
http://www.EMSL.com / wallingfordlab@emsl.com

EMSL Order:	242302338
Customer ID:	FSS93
Customer PO:	
Project ID:	

Analyst(s)

Hailey Rangel (4)
Sara Poppa (2)

Danny Sandhu, Asbestos Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 “Interim Method”) but augmented with procedures outlined in the 1993 (”final”) version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Meriden, CT NVLAP Lab Code 200700-0,

Initial report from: 05/08/2023 10:23:20

Asbestos Chain of Custody (Air, Bulk, Soil)

EMSL Order Number / Lab Use Only: 242302338

EMSL Analytical, Inc.
165 Gracey Ave
Meriden, CT 06451
PHONE: (203) 284-5948
EMAIL: MeridenLab@emsl.com

EMSL ANALYTICAL, INC. LABORATORY • PRODUCTS • TRAINING

If Bill-To is the same as Report-To leave this section blank. Third-party billing requires written authorization.

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	Facility Support Services, LLC.	Company Name:	Facility Support Services, LLC.
Contact Name:	Michael DiFabio	Billing Contact:	Michele Viarengo
Street Address:	121 North Plains Industrial Road; Unit F	Street Address:	121 North Plains Industrial Road; Unit F
City, State, Zip:	Wallingford CT 06492 Country: US	City, State, Zip:	Wallingford CT 06492 Country: US
Phone:	2032881281	Phone:	203-288-1281
Email(s) for Report:	mdifabio@fssteam.com	Email(s) for Invoice:	

Project Information

Project Name/No: Crosby/Wallace 13923

Purchase Order:

EMSL LIMS Project ID: (If applicable, EMSL will provide)

US State where samples collected: CT

State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)

Sampled By Name: Mike DiFabio

Sampled By Signature:

No. of Samples in Shipment

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 4-4.5 Hour ☐ 6 Hour ☒ 24 Hour ☐ 32 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

TEM Air 3-6 Hour, please call ahead to schedule. 32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.

Test Selection

PCM Air
- ☐ NIOSH 7400
- ☐ NIOSH 7400 w/ 8hr. TWA

PLM - Bulk (reporting limit)
- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)
- ☐ POINT COUNT
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- POINT COUNT w/ GRAVIMETRIC
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- ☐ NIOSH 9002 (<1%)
- ☐ NYS 198.1 (Friable - NY)
- ☐ NYS 198.6 NOB (Non-Friable - NY)
- ☐ NYS 198.8 (Vermiculite SM-V)

TEM - Air
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312*

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (Non-Friable-NY)
- ☐ TEM EPA 600/R-93/116 w Milling Prep (0.1%)

Other Test (please specify)

TEM - Settled Dust
- ☐ Microvac - ASTM D5755
- ☐ Wipe - ASTM D6480
- ☐ Qualitative via Filtration Prep
- ☐ Qualitative via Drop Mount Prep

Soil - Rock - Vermiculite (reporting limit)*
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.1%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep

*Please call with your project-specific requirements.

☐ Positive Stop - Clearly Identified Homogeneous Areas (HA)

Filter Pore Size (Air Samples) ☐ 0.8um ☐ 0.45um

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
13923050 5-01A	Music Suite (Wallace Basement)	Smooth Plaster Skim Coat	(White) - Ceiling
-01B			
-01C			
-02A		Plaster Base Coat	(Gray) - White
-02B			
-02C			

RECEIVED MAY 05 2023 By 11:30

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment: Dropoff		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time 5/5/23 11:20	Received by:	Date/Time
Relinquished by:	Date/Time.	Received by:	Date/Time

Controlled Document - COC-05 Asbestos R15 4/23/2021

☐ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

V. LICENSURE

1000462 SP 0564 -C01-P00464-I

MICHAEL V DIFABIO
[redacted]

1000462-0000466-0000001 of 0000001-C01-a1d00101-0564-00464

Dear MICHAEL V DIFABIO,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
oplc.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

MANISHA JUTHANI, MD, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

MICHAEL V DIFABIO

CERTIFICATE NO.
000340

CURRENT THROUGH
12/31/23

VALIDATION NO.
03-009736

SIGNATURE COMMISSIONER

EMPLOYER'S COPY

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
MICHAEL V DIFABIO

VALIDATION NO.	CERTIFICATE NO.	CURRENT THROUGH
03-009736	000340	12/31/23

PROFESSION
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

SIGNATURE COMMISSIONER

INSTRUCTIONS:

1. Detach and sign each of the cards on this form
2. Display the large card in a prominent place in your office or place of business.
3. The wallet card is for you to carry on your person. If you do not wish to carry the wallet card, place it in a secure place.
4. The employer's copy is for persons who must demonstrate current licensure/certification in order to retain employment or privileges. The employer's card is to be presented to the employer and kept by them as a part of your personnel file. Only one copy of this card can be supplied to you.

WALLET CARD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
MICHAEL V DIFABIO

VALIDATION NO.	CERTIFICATE NO.	CURRENT THROUGH
03-009736	000340	12/31/23

PROFESSION
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

SIGNATURE COMMISSIONER

VI. Initial ACM Inspection Report
(4/10/2023)

Limited Asbestos Inspection Report
HVAC Improvements Project 2023

For

Crosby High School & Wallace Middle School

300 Pierpont Road
&
3465 E Main Street
Waterbury, CT 06705

PREPARED FOR:

Studio JAED
2500 Wrangle Hill Road
Fox Run Office Plaza, Suite 110
Bear, DE 19701
Attn: David Spangler

PREPARED BY:

121 North Plains Industrial Rd; Unit F
Wallingford, CT 06492
Phone (203) 288-1281

April 14, 2023

FSS Project #13923

SIGNATURES OF REPORT AUTHORS

The employees of Facility Support Services, LLC whose names appear below prepared this report. Requests for information on the content of this document should be directed to these individuals.

Aldi Ajce
CT Asbestos Inspector (#001130)

Michael DiFabio
HBM Project Manager
CT Asbestos Inspector/Management Planner (#000340)

I. PROJECT NARRATIVE

Facility Support Services, LLC (FSS) was contracted to perform a limited asbestos inspection at the Crosby High School/Wallace Middle School (Bergin Complex), located at 300 Pierpont Road & 3465 East Main Street in Waterbury, Connecticut. The inspection took place on April 10, 2023, with the purpose of identifying the presence of asbestos in suspect building materials prior to upcoming renovations of the HVAC system of the schools.

The asbestos inspection was performed following the Environmental Protection Agency (EPA), National Emissions Standard for Hazardous Air Pollutants (NESHAP) regulations for building renovations and demolition, 40 CFR Part 61, Amended 11/20/1990. In accordance with contract terms, non-destructive sampling techniques were utilized, and inaccessible materials were not included in this inspection (wall chases, etc.). Should these inaccessible areas be subject to renovations and suspect materials are discovered, sampling and analysis must be conducted to confirm asbestos content.

On April 10, 2023, a total of sixty-three (63) suspected asbestos bulk samples were collected. The materials identified and sampled from the building are detailed in the following list.

- Wallace Middle School
  - Roof (Penthouses)
    - "Old" Joint Sealant Assoc. w/ Fiberglass Pipe Insulation
    - "New" Joint Sealant Assoc. w/ Fiberglass Pipe Insulation
    - Brown Caulking Assoc. w/ Mechanical Units
    - Exterior Penthouse Louver Caulking
    - Exterior Residual Tar on Penthouse Siding
  - Music Suite
    - Brown Cove Base
    - Mastic Assoc. w/ Brown Cove Base
    - Carpet Mastic
    - 2'x4' Holes & Fissures Ceiling Tile
    - 2'x4' Holes & Large Fissures Ceiling Tile
    - Brown Glue Daubs Assoc. w/ Foam Acoustical Panels
    - 12" Olive w/ White Specks/Streaks Floor Tile
    - Mastic Assoc. w/ 12" Olive Floor Tiles
- Crosby High School
  - Roof (Penthouses, Roof, Exterior Louvers)
    - "New" Joint Sealant Assoc. w/ Fiberglass Pipe Insulation
    - Brown Caulking Assoc. w/ Mechanical Units
    - Exterior Penthouse Louver Caulking
    - Exterior Residual Tar on Penthouse Siding
    - Fiberglass Duct Insulation Glue (Brown/Tan)
    - Grey Louver Caulking (Penthouse #12)
    - Dark Gray/Black Louver Caulking (Fan Rooms)
    - Brick Wall Mortar
    - Brick Wall – Bricks
  - "M-4" Exhaust Fans
    - Top Layer Flashing Tar (Corners)
    - Flashing Material
    - "Sandwiched" Flashing Tar)
  - Fan Rooms
    - "Collar" Joint Insulation on Fiberglass Pipe Insulation
    - "New" Joint Sealant Assoc. w/ Fiberglass Pipe Insulation

II. SUMMARY OF RESULTS

Samples of building materials collected by FSS were analyzed by EMSL Analytical, Inc., for EPA method 600/R-93/116. This is currently the approved EPA test method, which uses Polarized Light Microscopy (PLM) that uses dispersion staining. EMSL Analytical, Inc. is an accredited asbestos laboratory (NVLAP #200700-0) and is a State of Connecticut approved public health laboratory for asbestos analysis.

Asbestos Containing Materials Identified:

- Wallace Middle School
  - Music Suite
    - 12" Olive w/ White Specks/Streaks Floor Tile
    - Mastic Assoc. w/ 12" Olive Floor Tiles

Laboratory results have revealed that the 12" Olive Floor Tile and Associated mastic located within the Music Suite of Wallace Middle School are considered asbestos containing materials according to Local and Federal Regulations (i.e., contains 1% of greater asbestos content).

See Section V for a copy of the laboratory analytical reports for the samples collected.

<u>All other materials sampled during this inspection were non-detect for asbestos.</u>

III. CONCLUSIONS

The 12" Olive w/ White Specks/Streaks and associated Mastic (Black) are asbestos containing (contain greater than 1% asbestos content). Please note that this material may be present beneath additional flooring within the area (e.g. carpet).

Should disturbances and/or renovation to this material be required, work must be conducted by a State of Connecticut Asbestos Abatement Contractor.

FSS made reasonable effort to locate and identify all suspect asbestos containing materials that are part of this project. Any material discovered and may be impacted during project activities, which have not been included in this survey or previously sampled, must be presumed to contain asbestos until such time that bulk samples can be collected and analyzed for asbestos content.

Please note that materials sampled during this inspection are homogenous throughout the inspected areas. Samples collected from individual penthouses on either school roof, are homogenous to the other penthouses located on the same school roof. Materials not suspected to contain asbestos were not sampled during the inspection. Non-suspect materials include wood, metal, plastic, glass, and foams.

IV. LABORATORY ANALYTICAL RESULTS

EMSL Analytical, Inc.

165 Gracey Avenue Meriden, CT 06451

Tel/Fax: (203) 284-5948 / (203) 284-5978

http://www.EMSL.com / wallingfordlab@emsl.com

EMSL Order: 242301795
Customer ID: FSS93
Customer PO:
Project ID:

Attention: Michael DiFabio
Facility Support Services, LLC
121 North Plains Industrial Road, Unit F
Wallingford, CT 06492

Project: CROSBY/WALLACE HVAC/ 13923

Phone: (203) 288-1281
Fax: (203) 248-4409
Received Date: 04/10/2023 4:05 PM
Analysis Date: 04/11/2023
Collected Date: 04/10/2023

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
139230410-01A *242301795-0001*	Penthouse #7 (Wallace) - old joint sealant assoc w/fiberglass pipe insulation	Gray Fibrous Homogeneous	10% Cellulose 25% Min. Wool	65% Non-fibrous (Other)	None Detected
139230410-01B *242301795-0002*	Penthouse #7 (Wallace) - old joint sealant assoc w/fiberglass pipe insulation	Gray Fibrous Homogeneous	5% Cellulose 50% Min. Wool	45% Non-fibrous (Other)	None Detected
139230410-02A *242301795-0003*	Penthouse #6 - new joint sealant assoc. w/fiberglass pipe insulation	Gray/White/Yellow Non-Fibrous Homogeneous	5% Min. Wool 5% Glass	90% Non-fibrous (Other)	None Detected
139230410-02B *242301795-0004*	Penthouse #8 - new joint sealant assoc. w/fiberglass pipe insulation	White/Yellow Non-Fibrous Homogeneous	5% Min. Wool 5% Glass	90% Non-fibrous (Other)	None Detected
139230410-02C *242301795-0005*	Penthouse #9 - new joint sealant assoc. w/fiberglass pipe insulation	Tan/White Non-Fibrous Homogeneous	2% Cellulose 3% Glass	95% Non-fibrous (Other)	None Detected
139230410-03A *242301795-0006*	Penthouse #7 - brown caulking assoc. w/mech units	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-03B *242301795-0007*	Penthouse #8 - brown caulking assoc. w/mech units	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-03C *242301795-0008*	Penthouse #9 - brown caulking assoc. w/mech units	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-04C *242301795-0009*	Penthouse #8 - exterior louver caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-04D *242301795-0010*	Penthouse #9 - exterior louver caulking	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-05A *242301795-0011*	Penthouse #6 - exterior residual tar on siding	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-05B *242301795-0012*	Penthouse #8 - exterior residual tar on siding	Black Non-Fibrous Homogeneous	3% Cellulose	2% Quartz 95% Non-fibrous (Other)	None Detected
139230410-06A *242301795-0013*	Penthouse #1 (Crosby) - new joint sealant assoc. w/fiberglass pipe insulation	White/Yellow Non-Fibrous Homogeneous	5% Min. Wool 15% Glass	80% Non-fibrous (Other)	None Detected

Initial report from: 04/11/2023 16:58:34

EMSL Analytical, Inc.
165 Gracey Avenue Meriden, CT 06451
Tel/Fax: (203) 284-5948 / (203) 284-5978
http://www.EMSL.com / wallingfordlab@emsl.com

EMSL Order: 242301795
Customer ID: FSS93
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
139230410-06B *242301795-0014*	Penthouse #3 - new joint sealant assoc. w/fiberglass pipe insulation	White/Yellow Non-Fibrous Homogeneous	5% Min. Wool 15% Glass	80% Non-fibrous (Other)	None Detected
139230410-06C *242301795-0015*	Penthouse #5 - new joint sealant assoc. w/fiberglass pipe insulation	White Non-Fibrous Homogeneous	3% Cellulose 2% Glass	95% Non-fibrous (Other)	None Detected
139230410-07A *242301795-0016*	Penthouse #2 - brown caulking assoc. w/mech units	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-07B *242301795-0017*	#4 - brown caulking assoc. w/mech units	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-07C *242301795-0018*	#5 - brown caulking assoc. w/mech units	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-08A *242301795-0019*	#2 - exterior louver caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-08B *242301795-0020*	#3 - exterior louver caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-08C *242301795-0021*	#4 - exterior louver caulking	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-09A *242301795-0022*	#1 - exterior residual tar on siding	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-09B *242301795-0023*	#3 - exterior residual tar on siding	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-09C *242301795-0024*	#5 - exterior residual tar on siding	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-10A *242301795-0025*	#5 - fiberglass duct insulation glue (brown)	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-10B *242301795-0026*	#5 - fiberglass duct insulation glue (brown)	Brown/Tan Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
139230410-11A *242301795-0027*	M-4 exhaust fans - top layer flashing tar (corners)	Black Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
139230410-11B *242301795-0028*	M-4 exhaust fans - top layer flashing tar (corners)	Brown/Black Non-Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
139230410-12A *242301795-0029*	M-4 exhaust fans - flashing material	Gray/Black Fibrous Homogeneous	15% Glass	5% Quartz 80% Non-fibrous (Other)	None Detected
139230410-12B *242301795-0030*	M-4 exhaust fans - flashing material	Gray/Black Fibrous Homogeneous	15% Glass	5% Quartz 80% Non-fibrous (Other)	None Detected
139230410-13A *242301795-0031*	M-4 exhaust fans - sandwiched flashing tar	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 04/11/2023 16:58:34

EMSL Analytical, Inc.
165 Gracey Avenue Meriden, CT 06451
Tel/Fax: (203) 284-5948 / (203) 284-5978
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EMSL Order: 242301795
Customer ID: FSS93
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
139230410-13B *242301795-0032*	M-4 exhaust fans - sandwiched flashing tar	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-14A *242301795-0033*	Penthouse #12 - louver caulking (grey)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-14B *242301795-0034*	Penthouse #12 - louver caulking (grey)	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-15A *242301795-0035*	Fan rooms (exterior) - louver caulking (dark gray/black)	Gray/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-15B *242301795-0036*	Fan rooms (exterior) - louver caulking (dark gray/black)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-16A *242301795-0037*	Exterior - brick wall mortar	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
139230410-16B *242301795-0038*	Exterior - brick wall mortar	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
139230410-17A *242301795-0039*	Exterior - brick wall-bricks	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
139230410-17B *242301795-0040*	Exterior - brick wall-bricks	Brown/Gray Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
139230410-18A *242301795-0041*	Music suite - brown cove base	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-18B *242301795-0042*	Music suite - brown cove base	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-19A *242301795-0043*	Music suite - mastic assoc. w/cove base	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-19B *242301795-0044*	Music suite - mastic assoc. w/cove base	Tan/Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-20A *242301795-0045*	Music suite - block wall	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
139230410-20B *242301795-0046*	Music suite - block wall	Gray Non-Fibrous Homogeneous		6% Quartz 94% Non-fibrous (Other)	None Detected
139230410-21A *242301795-0047*	Music suite - carpet mastic	Gray/Tan Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
139230410-21B *242301795-0048*	Music suite - carpet mastic	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-22A *242301795-0049*	Music suite - 2'x4' holes + fissures ceiling tile	Gray/White Fibrous Homogeneous	45% Cellulose 25% Min. Wool	5% Perlite 25% Non-fibrous (Other)	None Detected
139230410-22B *242301795-0050*	Music suite - 2'x4' holes + fissures ceiling tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	5% Perlite 30% Non-fibrous (Other)	None Detected

Initial report from: 04/11/2023 16:58:34

EMSL Analytical, Inc.
165 Gracey Avenue Meriden, CT 06451
Tel/Fax: (203) 284-5948 / (203) 284-5978
http://www.EMSL.com / wallingfordlab@emsl.com

EMSL Order: 242301795
Customer ID: FSS93
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
139230410-23A *242301795-0051*	Music suite - 2'x4' holes + large fissures ceiling tiles	Gray/White Fibrous Homogeneous	45% Cellulose 25% Min. Wool	5% Perlite 25% Non-fibrous (Other)	None Detected
139230410-23B *242301795-0052*	Music suite - 2'x4' holes + large fissures ceiling tiles	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	5% Perlite 30% Non-fibrous (Other)	None Detected
139230410-24A *242301795-0053*	Music suite - brown glue daubs assoc w/acoustical panels	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-24B *242301795-0054*	Music suite - brown glue daubs assoc w/acoustical panels	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
139230410-25A *242301795-0055*	Music suite - 12" olive green w/white specks floor tile	Gray/Green Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
139230410-25B *242301795-0056*	Music suite - 12" olive green w/white specks floor tile	Gray Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
139230410-26A *242301795-0057*	Music suite - mastic assoc. w/12" olive tiles	Black Non-Fibrous Homogeneous	2% Cellulose	2% Quartz 90% Non-fibrous (Other)	6% Chrysotile
139230410-26B *242301795-0058*	Music suite - mastic assoc. w/12" olive tiles	Black Non-Fibrous Homogeneous	3% Cellulose	2% Quartz 90% Non-fibrous (Other)	5% Chrysotile
139230410-27A *242301795-0059*	Fan rooms - fiberglass "collar" joint insulation	Gray/White Fibrous Homogeneous	5% Cellulose 60% Min. Wool	35% Non-fibrous (Other)	None Detected
139230410-27B *242301795-0060*	Fan rooms - fiberglass "collar" joint insulation	Gray/White Fibrous Homogeneous	5% Cellulose 60% Min. Wool	35% Non-fibrous (Other)	None Detected
139230410-27C *242301795-0061*	Fan rooms - fiberglass "collar" joint insulation	Gray/White Fibrous Homogeneous	15% Cellulose 55% Min. Wool	30% Non-fibrous (Other)	None Detected
139230410-28A *242301795-0062*	Fan rooms - fiberglass joint sealant (white)	White Non-Fibrous Homogeneous	2% Cellulose 5% Glass	93% Non-fibrous (Other)	None Detected
139230410-28B *242301795-0063*	Fan rooms - fiberglass joint sealant (white)	White Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected

Analyst(s)

Hailey Rangel (27)
Shannon Halloran (17)
Sara Poppa (19)

Danny Sandhu, Asbestos Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 “Interim Method”) but augmented with procedures outlined in the 1993 (”final”) version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Meriden, CT NVLAP Lab Code 200700-0,

Initial report from: 04/11/2023 16:58:34

OrderID: 242301795

EMSL ANALYTICAL, INC.
LABORATORY•PRODUCTS•TRAINING

Asbestos Chain of Custody (Air, Bulk, Soil)

EMSL Order Number / Lab Use Only: 242301795

EMSL Analytical, Inc.
165 Gracey Ave
Meriden, CT 06451
PHONE: (203) 284-5948
EMAIL: MeridenLab@emsl.com

If Bill-To is the same as Report-To leave this section blank. Third-party billing requires written authorization.

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	Facility Support Services, LLC.	Company Name:	Facility Support Services, LLC.
Contact Name:	Michael DiFabio	Billing Contact:	Michele Viarengo
Street Address:	121 North Plains Industrial Road; Unit F	Street Address:	121 North Plains Industrial Road; Unit F
City, State, Zip:	Wallingford CT 0649 Country: US	City, State, Zip:	Wallingford CT 06492 Country: US
Phone:	2032881281	Phone:	203-288-1281
Email(s) for Report:	mdifabio@fssteam.com	Email(s) for Invoice:	

Project Information

Project Name/No: Gresby/Wallace HJAC / 13923

Purchase Order:

EMSL LIMS Project ID (If applicable, EMSL will provide):

US State where samples collected: CT

State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)

Sampled By Name: M. Difabio / A. Ajie

Sampled By Signature:

No. of Samples In Shipment

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 4-4.5 Hour ☐ 6 Hour ☒ 24 Hour ☐ 32 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

TEM Air 3-6 Hour, please call ahead to schedule. 32 Hour TAT available for select tests only, samples must be submitted by 11:30 am.

Test Selection

PCM Air
- ☐ NIOSH 7400
- ☐ NIOSH 7400 w/ 8hr. TWA

PLM - Bulk (reporting limit)
- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)
- ☐ POINT COUNT
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- POINT COUNT w/ GRAVIMETRIC
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- ☐ NIOSH 9002 (<1%)
- ☐ NYS 198.1 (Friable - NY)
- ☐ NYS 198.6 NOB (Non-Friable - NY)
- ☐ NYS 198.8 (Vermiculite SM-V)

TEM - Air
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312*

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (Non-Friable-NY)
- ☐ TEM EPA 600/R-93/116 w Milling Prep (0.1%)

Other Test (please specify)

TEM - Settled Dust
- ☐ Microvac - ASTM D5755
- ☐ Wipe - ASTM D6480
- ☐ Qualitative via Filtration Prep
- ☐ Qualitative via Drop Mount Prep

Soil - Rock - Vermiculite (reporting limit)*
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.1%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep

*Please call with your project-specific requirements.

☐ Positive Stop - Clearly Identified Homogeneous Areas (HA)

Filter Pore Size (Air Samples) ☐ 0.8um ☐ 0.45um

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
	See Attached		

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Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment: Drop off		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 4/10/23 16:05	Received by:	Date/Time
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-05 Asbestos R15 4/23/2021

☐ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

242301795

FACILITY SUPPORT SERVICES, LLC

Asbestos Sampling Log

CLIENT: Studio JAED DATE: 4/10/23

LOCATION: Crosby/Wallace HVAC SAMPLED BY: M. Difabio / A. Rice

SAMPLE ID	LOCATION	DESCRIPTION
139230410 - 01A	Pent House #7 (Wallace)	Old Joint Sealant Assoc W/ Fiberglass Pipe Insulation
B		↓
02A	Penthouse #6	New Joint Sealant Assoc. W/ Fiberglass Pipe Insulation
B	#8	↓
C	#9	↓
03A	Penthouse #7	Brown Caulking Assoc. W/ Mech Units
B	#8	↓
C	#9	↓
04A	Penthouse #6	Exterior Louver Caulking
B	#8	↓
04C	#9	↓
04D	#9	↓
05A	Penthouse #6	Exterior Residual Tar on Siding
B	#8	
06A	Penthouse #1 (Crosby)	New Joint Sealant Assoc W/ Fiberglass Pipe Insulation
~~[illegible]~~	~~#2~~	↓
06B	#3	
~~[illegible]~~	~~#4~~	
06C	#5	
07A	#2	Brown Caulking Assoc. w/ mech units

No samples for Penthouse #6 of #7

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2 of 5

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PH: 203-288-1281 • FAX: 203-248-4409
Website: www.fssteam.com

242301795

FACILITY SUPPORT SERVICES, LLC

Asbestos Sampling Log

CLIENT: Studio JAED DATE: 4/10/23

LOCATION: Losby/Wallace HVAC SAMPLED BY: M. DiFabio/A. Ajce

SAMPLE ID	LOCATION	DESCRIPTION
139230410 07B	#4	Brown Caulking Assoc w/ mech units
07C	#5	↓
08A	#2	Exterior Lower caulking
08B	#3	↓
08C	#4	↓
09A	#1	Exterior residual tar on siding
09B	#3	↓
09C	#5	↓
10A	#5	Fiberglass Duct Insulation Glue (Brown)
10B	#5	↓
11A	M-4 Exhaust Fans	Top layer Flashing Tar (corners)
B	↓	↓
12A	↓	Flashing Material
B	↓	↓
13A	↓	"Sandwiched" Flashing Tar
B	↓	↓
14A	Penthouse #12	Louver Caulking (Grey)
B	↓	↓
15A	Fan Rooms (Exterior)	Louver Caulking (Dark Gray/Black)
B	↓	↓

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FACILITY SUPPORT SERVICES, LLC

Asbestos Sampling Log

CLIENT: Studio JAED DATE: 4/10/23

LOCATION: Crosby/Wallace HVAC SAMPLED BY: M. DiFabio / A. Ajce

SAMPLE ID	LOCATION	DESCRIPTION
139230410- 16A	Exterior	Brick Wall Mortar
B	↓	↓
17A	↓	Brick Wall - Bricks
B	↓	↓
18A	Music suite	Brown cove base
18B	↓	↓
19A	↓	Mastic assoc. w/ cove base
19B	↓	↓
20A	↓	Block wall
20B	↓	↓
21A	↓	Carpet mastic
21B	↓	↓
22A	↓	2'x4' Holes + Fissures Ceiling Tile
B	↓	↓
23A	↓	2'x4' Holes + Large Fissures: Ceiling Tiles
B	↓	↓
24A	↓	Brown Glue Daubs Assoc w/ Acoustical Panels.
B	↓	↓
25A	↓	12" Olive Green w/ White Specks Floor Tile
B	↓	↓

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4 of 5

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Website: www.fssteam.com

OrderID: 242301795

242301795

FACILITY SUPPORT SERVICES, LLC

Asbestos Sampling Log

CLIENT: Studio JAED DATE: 4/10/23

LOCATION: Crosby/Wallace HVAC SAMPLED BY: M. DiFabio / A. Ajce

SAMPLE ID	LOCATION	DESCRIPTION
139230410-26A	Music Suite	Mastic Assoc w/ 12" olive Tiles
B		↓
27A	Fan Rooms	Fiberglass "Collar" Joint Insulation
B	↓	↓
C	↓	↓
28A	↓	Fiberglass Joint Sealant (white)
B	↓	↓

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2685 STATE STREET • HAMDEN, CT 06517
PH: 203-288-1281 • FAX: 203-248-4409
Website: www.fssteam.com

V. LICENSURE

-C01-P00983-I

1000981-0000986-0000001 of 0000001-C01-a1d00101-1664-00983

Dear ALDI AJCE,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
oplc.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

MANISHA JUTHANI, MD, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

EMPLOYER'S COPY

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
ALDI AJCE

VALIDATION NO.	CERTIFICATE NO.	CURRENT THROUGH
03-004452	001130	07/31/23

PROFESSION
ASBESTOS CONSULTANT-INSPECTOR

SIGNATURE COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH
PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A
ASBESTOS CONSULTANT-INSPECTOR

ALDI AJCE

CERTIFICATE NO.
001130

CURRENT THROUGH
07/31/23

VALIDATION NO.
03-004452

SIGNATURE COMMISSIONER

INSTRUCTIONS:

1. Detach and sign each of the cards on this form
2. Display the large card in a prominent place in your office or place of business.
3. The wallet card is for you to carry on your person. If you do not wish to carry the wallet card, place it in a secure place.
4. The employer's copy is for persons who must demonstrate current licensure/certification in order to retain employment or privileges. The employer's card is to be presented to the employer and kept by them as a part of your personnel file. Only one copy of this card can be supplied to you.

WALLET CARD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
ALDI AJCE

VALIDATION NO.	CERTIFICATE NO.	CURRENT THROUGH
03-004452	001130	07/31/23

PROFESSION
ASBESTOS CONSULTANT-INSPECTOR

SIGNATURE COMMISSIONER

1000462-0000466-0000001 of 0000001-C01-a1d00101-0564-00464

Dear MICHAEL V DIFABIO,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
oplc.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

MANISHA JUTHANI, MD, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

EMPLOYER'S COPY

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
MICHAEL V DIFABIO

VALIDATION NO.	CERTIFICATE NO.	CURRENT THROUGH
03-009736	000340	12/31/23

PROFESSION
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

SIGNATURE COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

MICHAEL V DIFABIO

CERTIFICATE NO.
000340

CURRENT THROUGH
12/31/23

VALIDATION NO
03-009736

SIGNATURE COMMISSIONER

INSTRUCTIONS:

1. Detach and sign each of the cards on this form
2. Display the large card in a prominent place in your office or place of business.
3. The wallet card is for you to carry on your person. If you do not wish to carry the wallet card, place it in a secure place.
4. The employer's copy is for persons who must demonstrate current licensure/certification in order to retain employment or privileges. The employer's card is to be presented to the employer and kept by them as a part of your personnel file. Only one copy of this card can be supplied to you.

WALLET CARD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

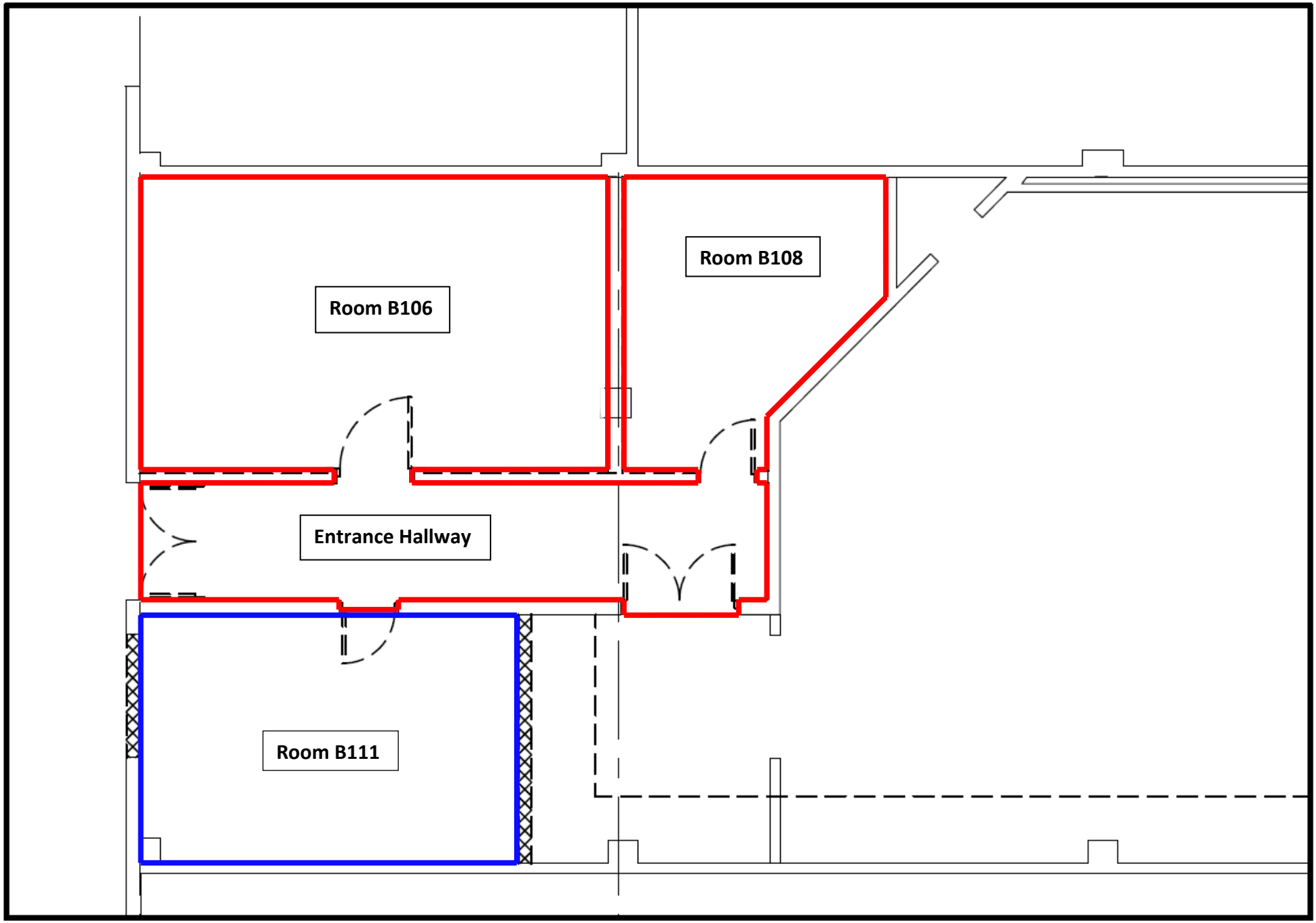
NAME
MICHAEL V DIFABIO

VALIDATION NO.	CERTIFICATE NO.	CURRENT THROUGH
03-009736	000340	12/31/23

PROFESSION
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

SIGNATURE COMMISSIONER

Wallace Middle School – Music Suite Asbestos Abatement Area Sketch:



12" Olive w/ White Specks/Streaks & Associated Mastic –
Total = ~226 ft^2

Residual Black Mastic Beneath Carpeting –
Total = ~ 686 ft^2

End of Asbestos Abatement Design

SECTION 04 26 13
MASONRY VENEER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.
B. Clay facing brick.
C. Mortar and grout.
D. Reinforcement and anchorage.
E. Flashings.
F. Installation of lintels.
G. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Steel stud backup for masonry veneer.
B. Section 05 50 00 - Metal Fabrications: Loose steel lintels.
C. Section 07 62 00 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.
D. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
E. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement.
F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
G. ASTM C67/C67M - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
H. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
I. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
J. ASTM C150/C150M - Standard Specification for Portland Cement.
K. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
L. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
M. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
N. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
O. ASTM C476 - Standard Specification for Grout for Masonry.
P. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.
Q. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.06 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
   2. Load-Bearing Units: ASTM C90, normal weight.

2.02 BRICK UNITS

A. Manufacturers:
   1. Match existing brick..
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
   1. Color and Texture: Match existing; field verify..
   2. Nominal Size: As indicated on drawings.
   3. Compressive Strength: As indicated on drawings, measured in accordance with ASTM C67/C67M.

2.03 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Aggregate: ASTM C144.

D. Grout Aggregate: ASTM C404.

E. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
   1. Color(s): As selected by Architect from manufacturer's full range.
   2. Manufacturers:
      a. Substitutions: See Section 01 60 00 - Product Requirements.

F. Water: Clean and potable.

G. Accelerating Admixture: Nonchloride type for use in cold weather.

2.04 REINFORCEMENT AND ANCHORAGE

A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi) yield strength, deformed billet bars; galvanized.

B. Joint Reinforcement Type: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.

C. Joint Reinforcement Standard: ASTM A951/A951M.
   1. Type: Truss or ladder.

2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
4. Manufacturers:
   a. Hohmann & Barnard, Inc; HB 213 Veneer Anchor: www.h-b.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
3. Vertical adjustment: Not less than 3-1/2 inches.
4. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.
5. Manufacturers:
   a. Substitutions: See Section 01 60 00 - Product Requirements.

E. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.
1. Manufacturers:
   a. ITW Commercial Construction North America; Teks Select Series; _____: www.ITWBuildex.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 FLASHINGS

A. Metal Flashing Materials:
1. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gauge, 0.0187 inch thick; finish 2B to 2D.

B. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane, or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
1. Manufacturers, Synthetic Rubber Products:
   a. Mortar Net Solutions; BTL-1 Butyl Sealant: www.mortarnet.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Termination Bars: Stainless steel; compatible with membrane and adhesives.
1. Manufacturers:
   a. Hohmann & Barnard, Inc; _____: www.h-b.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Drip Edge: Stainless steel; compatible with membrane and adhesives.
1. Manufacturers:
   a. Hohmann & Barnard, Inc; _____: www.h-b.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 ACCESSORIES

A. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; in maximum lengths available.
1. Manufacturers:
   a. Hohmann & Barnard, Inc; _____: www.h-b.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Drainage Fabric: Polyester mesh bonded to a water and vapor-permeable fabric.
   1. Manufacturers:
      a. Advanced Building Products, Inc; Mortairvent: www.advancedbuildingproducts.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.07 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, Proportion Specification.
   1. Exterior, non-loadbearing masonry; Type N.

B. Colored Mortar: Proportion selected pigments and other ingredients to match existing mortar at each exterior wall location with submission for Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

C. Grout: ASTM C476; consistency as required to fill volumes completely for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

D. Brick Units:
   1. Bond: Running.
   2. Coursing: Three units and three mortar joints to equal 8 inches.
   3. Mortar Joints: Concave.

3.03 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Remove excess mortar as work progresses.

C. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

D. Isolate top joint of masonry veneer from horizontal structural framing members or support angles with compressible joint filler.

3.04 WEEPS/CAVITY VENTS

A. Install cavity vents in veneer walls at 32 inches on center horizontally below shelf angles and lintels and at top of walls.

3.05 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.

C. Install cavity mortar control panels continuously throughout full height of exterior masonry cavities during construction of exterior wythe, complying with manufacturer's installation instructions.

3.06 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

A. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 36 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

B. Seismic Reinforcement: Connect veneer anchors with continuous horizontal wire reinforcement before embedding anchors in mortar.

3.07 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

B. Terminate flashing up 8 inches minimum on vertical surface of backing:

C. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.

3.08 LINTELS

3.09 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.

C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.

D. Form expansion joint as detailed on drawings.

3.10 TOLERANCES

A. Install masonry within the site tolerances found in TMS 402/602.

3.11 CLEANING

A. Remove excess mortar and mortar smears as work progresses.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

3.12 PROTECTION

END OF SECTION

SECTION 05 40 00
COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formed steel stud exterior wall and interior wall framing.

B. Exterior wall sheathing.

C. Formed steel joist and purlin framing and bridging.

D. Water-resistive barrier over sheathing.

1.02 RELATED REQUIREMENTS

A. Section 04 26 13 - Masonry Veneer: Veneer masonry supported by wall stud metal framing.

1.03 REFERENCE STANDARDS

A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

E. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing Members.

F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.

G. AWS D1.1/D1.1M - Structural Welding Code - Steel.

H. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel.

I. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

J. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.

C. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
   1. Describe method for securing studs to tracks and for bolted framing connections.
   2. Design data:
      a. Shop drawings signed and sealed by a professional structural engineer.
   3. Calculations for loadings and stresses of specially fabricated framing, signed and sealed by a professional structural engineer.
   4. Details and calculations for factory-made framing connectors, signed and sealed by a professional structural engineer.

D. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention, and _____.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design framing system under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.3/D1.3M and dated no more than 12 months before start of scheduled welding work.

PART 2 PRODUCTS

2.01 FRAMING SYSTEM

A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.

B. Design Requirements: Provide completed framing system having the following characteristics:
   1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100.
   2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
   3. Design Loads: In accordance with applicable codes.
   4. Live load deflection meeting the following, unless otherwise indicated:
      a. Floors: Maximum vertical deflection under live load of 1/480 of span.
      b. Roofs: Maximum vertical deflection under live load of 1/240 of span.
      c. Exterior Walls: Maximum horizontal deflection under wind load of 1/180 of span.
   5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
   6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

2.02 FRAMING MATERIALS

A. Studs and Track: ASTM C955; track in matching nominal width and compatible height.
   1. Gauge and Depth: As required to meet specified performance levels.
   2. Gauge and Depth: As indicated on drawings.
   3. Products:
      a. CEMCO; ProX Header: www.cemcosteel.com/#sle.
      b. MarinoWARE; StudRite: www.marinoware.com/#sle.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

B. Jamb Studs: Engineered, C-shaped with wide flanges, designed to replace conventional double-stud framing at openings.
   1. Products:
      a. SCAFCO Corporation; Kwik-Jamb Studs: www.scafco.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Header: Engineered one-member or two-member assembly, with wide flanges, designed to replace conventional box or nested header framing at openings.
   1. Jamb Mounting Clips: Manufacturer's standard.
   2. Products:
      a. SCAFCO Corporation; HD Header: www.scafco.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Joists and Purlins: Fabricated from ASTM A653/A653M steel sheet, with G90/Z275 hot dipped galvanized coating.
   1. Base Metal: Structural Steel (SS), Grade 33/230.
   2. Gauge and Depth: As required to meet specified performance levels.

E. Framing Connectors: Factory-made, formed steel sheet.
   1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gauge, 0.1345 inch, and factory punched holes and slots.
   2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100.
   3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
      a. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
      b. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 10 feet.
   4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
   5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.
   6. Products:
      a. ClarkDietrich; FastBridge Clip: www.clarkdietrich.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

F. Factory Fabricated Shear Wall Panels:
   1. Products:
      a. CEMCO; Sure-Board Series 200: www.cemcosteel.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 FASTENERS

A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
   1. Products:
      a. Substitutions: See Section 01 60 00 - Product Requirements.

B. Anchorage Devices: Powder actuated.

C. Welding: Comply with AWS D1.1/D1.1M.

2.04 WALL SHEATHING

A. Plywood; PS 1, Grade C-D, Exposure I.

B. Extruded polystyrene (XPS) board insulation, ASTM C578, Type IV, tongue and groove along edges; 3/4 inch thick.

2.05 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.

B. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

D. Water-Resistive Barrier: No. 15 asphalt felt.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify field measurements and adjust installation as required.

3.02 INSTALLATION OF STUDS

A. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.

B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center. Coordinate installation of sealant with floor and ceiling tracks.

C. Place studs at 12 inches on center; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using clip and tie method.

D. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.

E. Install load-bearing studs, brace, and reinforce to develop full strength and achieve design requirements.

F. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.

G. Install intermediate studs above and below openings to align with wall stud spacing.

H. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.

I. Attach cross studs to studs for attachment of fixtures anchored to walls.

J. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

K. Touch-up field welds and damaged galvanized surfaces with primer.

3.03 INSTALLATION OF JOISTS AND PURLINS

A. Install framing components in accordance with manufacturer's instructions.

B. Make provisions for erection stresses. Provide temporary alignment and bracing.

3.04 INSTALLATION OF WALL SHEATHING

A. Install wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using self-tapping screws.
   1. Provide steel diagonal bracing at corners with foam insulation or gypsum board wall sheathing.
   2. Place water-resistive barrier horizontally over wall sheathing, weather lapping edges, and ends.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel and loose lintels items.

1.02 RELATED REQUIREMENTS

A. Section 04 26 13 - Masonry Veneer: Placement of metal fabrications in masonry.

B. Section 09 91 13 - Exterior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

G. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing.

H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

I. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

J. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

K. AWS D1.1/D1.1M - Structural Welding Code - Steel.

L. AWS D1.2/D1.2M - Structural Welding Code - Aluminum.

M. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

N. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

O. SSPC-SP 2 - Hand Tool Cleaning.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.

1.05 QUALITY ASSURANCE

A. Design lintels under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Stainless Steel, General: ASTM A666, Type 304.

E. Stainless Steel Tubing: ASTM A554, Type 304, 16 gauge, 0.0625 inch minimum metal thickness, 1-1/2 inch diameter.

F. Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304.

G. Slotted Channel Fittings: ASTM A1011/A1011M.

H. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

I. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.

J. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

K. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

L. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

A. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.

B. Lintels: As detailed; prime paint finish.

C. Door Frames for Overhead Door Openings, Wall Openings, and _____: Channel sections; prime paint finish.

2.04 FINISHES - STEEL

A. Prepare surfaces to be primed in accordance with SSPC-SP2.

B. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

C. Prime Painting: One coat.

D. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.05 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components as indicated on drawings.

D. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Balcony railings and guardrails.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Handrails and Railings:
   1. Garlock Safety Systems; _____: www.garlocksafety.com/#sle.
   2. Kee Safety, Inc; Kee Klamp (steel): www.keesafety.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Non-Weld Pipe Fittings:
   1. Kee Safety, Inc; Kee Klamp (steel): www.keesafety.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Allow for expansion and contraction of members and building movement without damage to connections or members.

C. Dimensions: See drawings for configurations and heights.
   1. Top Rails and Wall Rails: 1-1/2 inches diameter, round.
   2. Intermediate Rails: 1-1/4 by 1 inch rectangular.
   3. Posts: 1-1/2 inches diameter, round.

D. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
   1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.

E. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.03 STEEL RAILING SYSTEM

A. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.

B. Exposed Fasteners: No exposed bolts or screws.

C. Galvanizing: In accordance with requirements of ASTM A123/A123M.
   1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

2.04 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:
   1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
   3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Weld connections that cannot be shop welded due to size limitations.
   1. Weld in accordance with AWS D1.1/D1.1M.
   2. Match shop welding and bolting.
   3. Clean welds, bolted connections, and abraded areas.
   4. Touch up shop primer and factory-applied finishes.
   5. Repair galvanizing with galvanizing repair paint per ASTM A780/A780M.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

C. Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor railings securely to structure.

D. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 07 42 13
METAL WALL PANELS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Wall panel substrate.

B. Section 07 92 00 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

E. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
   1. Physical characteristics of components shown on shop drawings.
   2. Storage and handling requirements and recommendations.
   3. Installation instructions and recommendations.

C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, _____, and methods of anchorage.

D. Samples: Submit two samples of wall panel and soffit panel, 12 inches by 12 inches in size illustrating finish color, sheen, and texture.

E. Test Reports: Submit test report verifying compliance with NFPA 285 for previously-tested exterior wall assembly.

1.04 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.

B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

C. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.

D. Prevent contact with materials that may cause discoloration or staining of products.

1.05 FIELD CONDITIONS

A. Do not install wall panels when air temperature or relative humidity are outside manufacturer's limits.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Wall Panels - Exposed Fasteners:

1. ATAS International, Inc; Belvedere PenumWall: www.atas.com/#sle.
2. Fabral; Hefti-Rib: www.fabral.com/#sle.
3. McElroy Metal; ____: www.mcelroymetal.com/#sle.
4. Match existing; feild verify..
5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 METAL WALL PANEL SYSTEM

A. Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.
   1. Provide exterior wall panels, interior liner panels, soffit panels, and subgirt framing assembly.
   2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
   3. Design Pressure: In accordance with applicable codes.
   4. Fire Performance: Tested in accordance with, and complying with acceptance criteria of NFPA 285.
   5. Maximum Allowable Deflection of Panel: L/180 for length(L) of span.
   6. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
   7. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
   8. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
   9. Corners: Factory-fabricated in one continuous piece with minimum 2-inch returns.

B. Exterior Wall Panels:
   1. Profile: Vertical; style as indicated.
   2. Side Seams: Double-interlocked, tight-fitting, sealed with continuous gaskets.
   3. Material: Precoated steel sheet, 22 gauge, 0.0299 inch minimum thickness.
   4. Panel Width: verify existing in field inches.
   5. Color: As selected by Architect from manufacturer's standard line.

C. Subgirt Framing Assembly:
   1. 16 gauge, 0.0598 inch thick formed non-precoated steel sheet.
   2. Profile as indicated; to attach panel system to building.

D. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.
   1. Provide mitered internal corners, back braced with ___ gauge, ___ inch thick precoated metal sheet to maintain continuity of profile.

E. Expansion Joints: Same material, thickness and finish as exterior sheets; ___ gauge, ___ inch thick; manufacturer's standard brake formed type, of profile to suit system.

F. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

G. Anchors: Galvanized steel.

2.03 FINISHES

A. Exposed Surface Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over epoxy primer.

B. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film

thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected by Architect from manufacturer's standard line.

1. Products:
    a. PPG; Duranar: www.ppgmetalcoatings.com/#sle.
    b. Sherwin-Williams Company; Fluropon: www.coil.sherwin.com/#sle.
    c. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

A. Cladding Support Clips: Thermally-broken, thermal spacer clips for support of cladding z-girts, angles, channels, and other framing.
    1. Thermal Spacer Clip: Pultruded glass fiber and thermoset polyester resin clip; 3/16 inch thick at top, base, and web.
    2. Clip Depth: As indicated on drawings.

B. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.

C. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.

D. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized. Fastener cap same color as exterior panel.
    1. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws.
    2. Products:
        a. Substitutions: See Section 01 60 00 - Product Requirements.

E. Field Touch-up Paint: As recommended by panel manufacturer.

F. Bituminous Paint: Asphalt base.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that building framing members are ready to receive panels.

3.02 INSTALLATION

A. Install panels on walls and soffits in accordance with manufacturer's instructions.

B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint; allow to dry prior to wall panel installation.

C. Fasten panels to structural supports; aligned, level, and plumb.

D. Locate joints over supports.

E. Lap panel ends 2 inches, minimum.

F. Provide expansion and control joints where indicated.

G. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.03 TOLERANCES

A. Offset From True Alignment Between Adjacent Members Abutting or In Line: 1/16 inch, maximum.

B. Variation from Plane or Location As Indicated on Drawings: 1/4 inch, maximum.

3.04 CLEANING

A. Remove site cuttings from finish surfaces.

B. Remove protective material from wall panel surfaces.

3.05 PROTECTION

A. Protect metal wall panels until completion of project.

B. Touch-up, repair, or replace damaged wall panels or accessories before Date of Substantial Completion.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, sheet metal roofing, exterior penetrations, and other items indicated in Schedule.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

A. Section 04 20 00 - Unit Masonry: Metal flashings embedded in masonry.

B. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

F. CDA A4050 - Copper in Architecture - Handbook.

G. SMACNA (ASMM) - Architectural Sheet Metal Manual.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet Metal Flashing and Trim Manufacturers:
   1. Hickman Edge Systems; _____: www.hickmanedgesystems.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SHEET MATERIALS

A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal.

B. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal, shop pre-coated with PVDF coating.
   1. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
   2. Color: As selected by Architect from manufacturer's standard colors.

C. Pre-Finished Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 18 gauge, 0.040 inch thick; plain finish shop pre-coated with silicone modified polyester coating.
   1. Silicone Modified Polyester Coating: Pigmented organic powder coating, AAMA 2603; baked enamel finish system.
   2. Color: As selected by Architect from manufacturer's standard colors.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

F. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.04 EXTERIOR PENETRATION FLASHING PANELS

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.05 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer: Zinc chromate type.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Fenestration Perimeter Flashing Attachments: Two-piece flashing receiver and clip of extruded aluminum, at least 0.045 inch thick, for attaching flashing at perimeter of exterior wall fenestration openings.
   1. Provide flashing receiver profile appropriate for flashing applications.
   2. Products:

PART 3 EXECUTION

3.01 INSTALLATION

A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..

B. Apply plastic cement compound between metal flashings and felt flashings.

C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

D. Exterior Flashing Receivers: Install in accordance with manufacturer's recommendations, and in proper relationship with adjacent construction, and as follows:

E. Seal metal joints watertight.

END OF SECTION

SECTION 07 81 00
APPLIED FIRE PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Applied fire protection of interior structural steel not exposed to damage or moisture.

B. Applied fire protection of structural steel exposed to damage or moisture.

C. Preparation of applied fire protection for application of exposed overcoat finish specified elsewhere.

1.02 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. ASTM E605/E605M - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

C. ASTM E736/E736M - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.

D. ASTM E759/E759M - Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members.

E. ASTM E760/E760M - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members.

F. ASTM E761/E761M - Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members.

G. ASTM E859/E859M - Standard Test Method for Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members.

H. ASTM E937/E937M - Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

I. UL (FRD) - Fire Resistance Directory.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittals procedures.

B. Product Data: Provide data indicating product characteristics.

C. Manufacturer's Certificate: Certify that applied fireproofing products meet or exceed requirements of Contract Documents.

D. Test Reports: Reports from reputable independent testing agencies for proposed products, indicating compliance with specified criteria, conducted under conditions similar to those on project, as follows:
   1. Bond strength.
   2. Bond impact.
   3. Compressive strength.
   4. Fire tests using substrate materials similar those on project.

E. Manufacturer's Installation Instructions: Indicate special procedures.

F. Field Quality Control Submittals: Submit field test report.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.05 FIELD CONDITIONS

A. Do not apply fireproofing when temperature of substrate material and surrounding air is below 40 degrees F or when temperature is predicted to be below said temperature for 24 hours after application.

B. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.

C. Provide temporary enclosure to prevent spray from contaminating air.

D. Do not allow roof traffic during installation of roof fireproofing and drying period.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a two year period after Date of Substantial Completion.
   1. Include coverage for fireproofing to remain free from cracking, checking, dusting, flaking, spalling, separation, and blistering.
   2. Reinstall or repair failures that occur within warranty period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Applied Fire Protection:
   1. GCP Applied Technologies: www.gcpat.com/#sle.
   2. Isolatek International Corp: www.isolatek.com/#sle.
   3. Southwest Fireproofing Products Company: www.sfrm.com/#sle.
   4. Or Approved Equal._____.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 APPLIED FIRE PROTECTION ASSEMBLIES

A. Provide fire-rated assembly ratings to UL Design Nos. as follows:
   1. Interior columns: Three hours; UL No. X772.
   2. Interior girders: Three hours; UL No. N404.

2.03 MATERIALS

A. Applied Fire Protection Material for Interior Applications, Concealed: Manufacturer's standard factory mixed material, which when combined with water is capable of providing indicated fire resistance, and complying with following requirements:
   1. Composition: Gypsum-based; not mineral-fiber-based.
   2. Bond Strength: 150 pounds per square foot, minimum, when tested in accordance with ASTM E736/E736M when set and dry.
   3. Dry Density: As required by fire resistance design.
   4. Compressive Strength: 8.33 pounds per square inch, minimum.
   5. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760/E760M.
   6. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937/E937M.
   7. Surface Burning Characteristics: Maximum flame spread index of 0 (zero) and maximum smoke developed index of 0 (zero), when tested in accordance with ASTM E84.
   8. Manufacturers:
      a. GCP Applied Technologies; Monokote MK-6: www.gcpat.com/#sle.
      b. Or Approved Equal.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

B. Applied Fire Protection Material Exposed to Damage or Moisture: Manufacturer's standard factory mixed material, which when combined with water is capable of providing indicated fire resistance, and complying with following requirements:
   1. Recommended by manufacturer for permanent exterior exposure.
   2. Composition: Portland cement-based; not mineral fiber-based.
   3. Bond Strength: 1,000 psf, minimum, when tested in accordance with ASTM E736/E736M when set and dry.
   4. Dry Density: As required by fire resistance design.
   5. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760/E760M.
   6. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937/E937M.
   7. Air Erosion Resistance: Weight loss of 0.025 g/sq ft, maximum, when tested in accordance with ASTM E859/E859M after 24 hours.
   8. Surface Burning Characteristics: Maximum flame spread index of 0 (zero) and maximum smoke developed index of 0 (zero), when tested in accordance with ASTM E84.
   9. Manufacturers:
      a. GCP Applied Technologies; Monokote Z-106/HY: www.gcpat.com/#sle.
      b. Or Approved Equal.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

A. Primer Adhesive: Of type recommended by applied fire protection manufacturer.

B. Overcoat: As recommended by manufacturer of applied fire protection material.

C. Water: Clean, potable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive fireproofing.

B. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.

C. Verify that ducts, piping, equipment, or other items that would interfere with application of fireproofing have not been installed.

D. Verify that voids and cracks in substrate have been filled.

E. Verify that projections have been removed where fireproofing will be exposed to view as a finish material.

3.02 PREPARATION

A. Perform tests as recommended by fireproofing manufacturer in applications where adhesion of fireproofing to substrate is in question.

B. Remove incompatible materials that could effect bond by scraping, brushing, scrubbing, or sandblasting.

C. Prepare substrates to receive fireproofing in strict accordance with instructions of fireproofing manufacturer.

D. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.

E. Close off and seal duct work in areas where fireproofing is being applied.

3.03 APPLICATION

A. Apply primer adhesive in accordance with manufacturer's instructions.

B. Apply fireproofing in uniform thickness and density as necessary to achieve required ratings.

C. Apply overcoat to a thickness of ____ inches.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 40 00 - Quality Requirements.

B. Inspect installed fireproofing after application and curing for integrity, prior to its concealment.

C. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings and requirements of authorities having jurisdiction (AHJ).

D. Re-inspect installed fireproofing for integrity of fire protection, after installation of subsequent Work.

3.05 CLEANING

A. Remove excess material, overspray, droppings, and debris.

B. Remove fireproofing from materials and surfaces not required to be fireproofed.

C. At exposed fireproofing, clean surfaces that have become soiled or stained, using manufacturer's recommended procedures.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 09 21 16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

1.02 REFERENCE STANDARDS

A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

B. ASTM C1193 - Standard Guide for Use of Joint Sealants.

C. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants.

D. ASTM C1311 - Standard Specification for Solvent Release Sealants.

E. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness.

F. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.
   5. Substrates for which use of primer is required.
   6. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   7. Sample product warranty.
   8. Certification by manufacturer indicating that product complies with specification requirements.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants:
   1. Dow; _____: www.dow.com/#sle.
   2. Pecora Corporation; _____: www.pecora.com/#sle.
   3. Sika Corporation; _____: www.usa.sika.com/#sle.
   4. Tremco Commercial Sealants & Waterproofing; ____: www.tremcosealants.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to:
      a. Wall expansion and control joints.
      b. Joints between door, window, and other frames and adjacent construction.
      c. Joints between different exposed materials.
      d. Openings below ledge angles in masonry.
      e. Other joints indicated below.
   2. Do not seal the following types of joints:
      a. Intentional weep holes in masonry.
      b. Joints indicated to be treated with manufactured expansion joint cover, or some other type of sealing device.
      c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
      d. Joints where installation of sealant is specified in another section.
      e. Joints between suspended panel ceilings/grid and walls.

B. Type ___ - Exterior Joints: Use nonsag nonstaining silicone sealant, unless otherwise indicated.
   1. Type ___ - Lap Joints in Sheet Metal Fabrications: Butyl rubber, noncuring.
   2. Type ___ - Lap Joints between Manufactured Metal Panels: Butyl rubber, noncuring.

2.03 NONSAG JOINT SEALANTS

A. Type ___ - Nonstaining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 5 percent, minimum.
   2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
   3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
   4. Color: Match adjacent finished surfaces.
   5. Products:
      a. Dow; DOWSIL 756 SMS Building Sealant: www.dow.com/#sle.
      b. Pecora Corporation; Pecora 890 NST (Non-Staining Technology): www.pecora.com/#sle.
      c. Sika Corporation; Sikasil WS-290: www.usa.sika.com/#sle.
      d. Tremco Commercial Sealants & Waterproofing; Spectrem 1: www.tremcosealants.com/#sle.

B. Type ___ - Noncuring Butyl Sealant: Solvent-based, single component, nonsag, nonskinning, nonhardening, nonbleeding; non-vapor permeable; intended for fully concealed applications.

2.04 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
   1. Products:

B. Preformed Extruded Polyurethane Joint Seal: Medium-modulus, preformed polyurethane extrusion used to bridge joints under elastomeric wall coatings, in sizes to fit applications indicated on drawings, combined with polyurethane sealant for bonding joint seal to substrates.
   1. Size: 1-1/2 inch wide, in rolls 100 feet long.
   2. Thickness: 0.051 inch, with ridges along outside bottom edges for bonding area.

3. Color: Light gray.
4. Durometer Hardness, Type A: 55, minimum, when tested in accordance with ASTM D2240.
5. Tensile Strength: 532 psi, in accordance with ASTM D412.
6. Elongation at Break: 690 percent, in accordance with ASTM D412.
7. Products:
   a. Tremco Commercial Sealants & Waterproofing; Dymonic Simple Seal: www.tremcosealants.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

END OF SECTION

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Fire-rated hollow metal doors and frames.

C. Thermally insulated hollow metal doors with frames.

D. Sound-rated hollow metal doors and frames.

E. Hurricane-resistant hollow metal doors and frames.

1.02 RELATED REQUIREMENTS

A. Section 08 71 00 - Door Hardware.

B. Section 09 91 13 - Exterior Painting: Field painting.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. ASCE: American Society of Civil Engineers.

C. HMMA: Hollow Metal Manufacturers Association.

D. NAAMM: National Association of Architectural Metal Manufacturers.

E. NFPA: National Fire Protection Association.

F. SDI: Steel Door Institute.

G. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design.

B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames.

C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors.

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100).

E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

F. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

H. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

J. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.

K. ASTM C476 - Standard Specification for Grout for Masonry.

L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

M. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

N. ASTM E413 - Classification for Rating Sound Insulation.

O. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames.

P. FBC TAS 201 - Impact Test Procedures; Testing Application Standard.

Q. FBC TAS 202 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure; Testing Application Standard.

R. FBC TAS 203 - Criteria for Testing Products Subject To Cyclic Wind Pressure Loading; Testing Application Standard.

S. FLA (PAD) - Florida Building Code Online - Product Approval Directory.

T. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters.

U. ICC A117.1 - Accessible and Usable Buildings and Facilities.

V. ITS (DIR) - Directory of Listed Products.

W. Miami (APD) - Approved Products Directory; Miami-Dade County.

X. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames.

Y. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames.

Z. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames.

AA. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames.

AB. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

AC. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives.

AD. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

AE. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames.

AF. UL (DIR) - Online Certifications Directory.

AG. UL 10B - Standard for Fire Tests of Door Assemblies.

AH. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

E. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Ceco Door, an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. Curries, an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   3. Fleming Door Products, an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   4. Steelcraft, an Allegion brand; ____: www.allegion.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Sound-Rated Hollow Metal Doors and Frames:
   1. AMBICO Limited: www.ambico.com/#sle.
   2. Megamet Industries, Inc; MegaSonic 2A-B - Series Flush Doors: www.megametusa.com/#sle.
   3. Overly Door Company; ____: www.overly.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

C. Hurricane-Resistant and Tornado-Resistant Hollow Metal Doors and Frames:
   1. Krieger Specialty Products: www.kriegerproducts.com/#sle.
   2. Megamet Industries, Inc; MegaStorm Hurricane and Tornado Doors: www.megametusa.com/#sle.
   3. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Typical Door Face Sheets: Flush.
   4. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Hollow Metal Panels: Same construction, performance, and finish as doors.

C. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated.
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 1 - Standard-duty.
      b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
      e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.

2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
    a. Foam Plastic Insulation: Manufacturer's standard board insulation with maximum flame spread index (FSI) of 75, and maximum smoke developed index (SDI) of 450 in accordance with ASTM E84, and completely enclosed within interior of door.
3. Door Thermal Resistance: R-Value of 6.0 minimum, for installed thickness of polystyrene.
4. Door Thickness: 1-3/4 inches, nominal.
5. Top Closures for Outswinging Doors: Flush with top of faces and edges.
6. Door Face Sheets: Flush.
7. Weatherstripping: Refer to Section 08 71 00.
8. Door Finish: Factory primed and field finished.

C. Type ___, Fire-Rated Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level 1 - Standard-duty.
    b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    c. Model 1 - Full Flush.
    d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
    e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
3. Provide units listed and labeled by UL (DIR) or ITS (DIR).
    a. Attach fire rating label to each fire rated unit.
4. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
5. Door Thickness: 1-3/4 inches, nominal.
6. Door Face Sheets: Flush.
7. Door Finish: Factory primed and field finished.

D. Sound-Rated Interior Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level 1 - Standard-duty.
    b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    c. Model 1 - Full Flush.
    d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
2. Door Thickness: As required to meet acoustic requirements indicated.
3. Opening Force of Sound-Rated Doors, Non-Fire-Rated: 5 pounds, maximum, in compliance with ADA Standards.

E. Type ___, Hurricane-Resistant Doors:
1. Comply with Florida Building Code (FBC) test protocols for High Velocity Hurricane Zone (HVHZ) FBC TAS 201, FBC TAS 202 and FBC TAS 203.
2. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
    a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
    b. Wind-Borne Debris Resistance: Door and frame components shall have FLA (PAD) approval or Miami (APD) approval for Large and Small Missile impact and pressure cycling at design wind loads.
3. Hurricane Shelter Application: Comply with ICC 500 standard.
4. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level 3 - Extra Heavy-duty.
    b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
    c. Model 1 - Full Flush.

d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
5. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
6. Door Thickness: 1-3/4 inches, nominal.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Knock-down type.
1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
2. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
3. Frame Finish: Factory primed and field finished.
4. Weatherstripping: Separate, see Section 08 71 00.

D. Door Frames, Fire-Rated: Knock-down type.
1. Fire Rating: Same as door, labeled.
2. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
3. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
4. Frame Finish: Factory primed and field finished.

E. Sound-Rated Door Frames: Knock-down type.
1. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
2. Frame Finish: Factory primed and field finished.

F. Hurricane-Resistant Door Frames: With same hurricane resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Stainless-Steel Finish: Same as stainless-steel door finish.
3. Frame Finish: Factory primed and field finished.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Factory Finish: Complying with ANSI/SDI A250.3, manufacturer's standard coating.
1. Color: As selected by Architect from manufacturer's standard range.

2.06 ACCESSORIES

A. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

B. Astragals for Double Doors: Specified in Section 08 71 00.
1. Exterior Doors: Steel, Z-shaped.
2. Fire-Rated Doors: Steel, shape as required for fire rating.

C. Mechanical Fasteners for Concealed Metal-to-Metal Connections: Self-drilling, self-tapping, steel with electroplated zinc finish.
1. Manufacturers:
a. ITW Commercial Construction North America; ITW CCNA-Buildex Teks Select Series; _____: www.ITWBuildex.com/#sle.
b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Install door hardware as specified in Section 08 71 00.

F. Touch up damaged factory finishes.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

B. Adjust sound control doors so that seals are fully engaged when door is closed.

C. Test sound control doors for force to close, latch, and unlatch; adjust as necessary in compliance with requirements.

3.06 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for hollow metal doors.

B. Hardware for fire-rated doors.

C. Thresholds.

D. Weatherstripping and gasketing.

E. Gate locks.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealants for setting exterior door thresholds.

B. Section 08 06 71 - Door Hardware Schedule: Schedule of door hardware sets.

C. Section 08 11 13 - Hollow Metal Doors and Frames.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
   2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
   3. List groups and suffixes in proper sequence.
   4. Provide complete description for each door listed.
   5. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
   6. Include account of abbreviations and symbols used in schedule.

D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

E. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

F. Keying Schedule:
   1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

1.04 QUALITY ASSURANCE

A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
   1. Locksets and Cylinders: Three years, minimum.
   2. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   2. Accessibility: ADA Standards and ICC A117.1.
   3. Applicable provisions of NFPA 101.
   4. Fire-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
   5. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), testing firm acceptable to authorities having jurisdiction, or _____ as suitable for application indicated.
   6. Listed and certified compliant with specified standards by BHMA (CPD).
   7. Auxiliary Hardware: BHMA A156.16.
   8. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.

D. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Door Hardware Schedule.

E. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
      a. Self-drilling (Tek) type screws are not permitted.
   3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
   4. Provide wall grip inserts for hollow wall construction.
   5. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.
   6. Fire-Rated Applications: Comply with NFPA 80.
      a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
      b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.
   7. Concealed Fasteners: Do not use through or sex bolt type fasteners on door panel sides indicated as concealed fastener locations, unless otherwise indicated.

2.02 HINGES

A. Manufacturers:
   1. McKinney; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. Bommer Industries, Inc; _____: www.bommer.com/#sle.
   3. Stanley, dormakaba Group; _____: www.stanleyhardwarefordoors.com/#sle.

4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Hinges: Comply with BHMA A156.1, Grade 1.
1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
a. Provide hinge width required to clear surrounding trim.
2. Continuous Hinges: Comply with BHMA A156.26.
3. Provide hinges on every swinging door.
4. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
5. Provide non-removable pins on exterior outswinging doors.
6. Provide following quantity of butt hinges for each door:
a. Doors From 60 inches High up to 90 inches High: Three hinges.
b. Doors 90 inches High up to 120 inches High: Four hinges.
c. Doors over 120 inches High: One additional hinge per each additional 30 inches in height.

2.03 PIVOTS

A. Self-Closing Pivots: Comply with BHMA A156.17.

B. Door Weight: Medium; standard openings with up to 650 lbs door weight.

2.04 FLUSH BOLTS

A. Manufacturers:
1. Hager Companies; _____: www.hagerco.com/#sle.
2. Ives, an Allegion brand; _____: www.allegion.com/us/#sle.
3. Trimco; _____: www.trimcohardware.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Flush Bolts: Comply with BHMA A156.16, Grade 1.
1. Flush Bolt Throw: 3/4 inch, minimum.
2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.
a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.
3. Manual Flush Bolts: Provide lever extensions for top bolt at over-sized doors.

2.05 EXIT DEVICES

A. Manufacturers:
1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. DORMA USA, Inc; 8000 Series: www.dorma.com/#sle.
3. Hager Companies; _____: www.hagerco.com/#sle.
4. Stanley, dormakaba Group; _____: www.stanleyhardwarefordoors.com/#sle.
5. Von Duprin, an Allegion brand; _____: www.allegion.com/us/#sle.
6. Substitutions: See Section 01 60 00 - Product Requirements.

B. Exit Devices: Comply with BHMA A156.3, Grade 1.
1. Lever design to match lockset trim.
2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.
5. Provide less bottom rod (LBR) at scheduled locations to eliminate use of floor mounted strikes.
6. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.06 LOCK CYLINDERS

A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
   1. Provide standard, electronic, conventional, full size interchangeable core (FSIC), and small format interchangeable core (SFIC) type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.5 at locations indicated.
   2. Provide cylinders from same manufacturer as locking device.
   3. Provide cams and/or tailpieces as required for locking devices.

2.07 MORTISE LOCKS

A. Manufacturers:
   1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. DORMA USA, Inc; M9000 Series: www.dorma.com/#sle.
   3. Schlage, an Allegion brand; _____: www.allegion.com/us/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.
   1. Latchbolt Throw: 3/4 inch, minimum.
   2. Deadbolt Throw: 1 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Extra-Long-Lip Strikes: Provide for locks used on frames with applied wood casing trim.
      b. Finish: To match lock or latch.

2.08 DOOR PULLS AND PUSH BARS

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. Hager Companies; _____: www.hagerco.com/#sle.
   3. Trimco; _____: www.trimcohardware.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Door Pulls and Push Bars: Comply with BHMA A156.6.
   1. Bar Type: Bar set, unless otherwise indicated.
   2. Material: Aluminum, unless otherwise indicated.

2.09 COORDINATORS

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. Hiawatha, Inc, division of Activar Construction Products Group, Inc; _____: www.activarcpg.com/hiawatha/#sle.
   3. Ives, an Allegion brand; _____: www.allegion.com/us/#sle.
   4. Trimco; _____: www.trimcohardware.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Coordinators: Provide on doors having closers and self-latching or automatic flush bolts to ensure that inactive door leaf closes before active door leaf.
   1. Type: Bar, unless otherwise indicated.
   2. Material: Aluminum, unless otherwise indicated.
   3. Ensure that coordination of other door hardware affected by placement of coordinators and carry bar is applied properly for completely operable installation.

2.10 CARRY BAR

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. Ives, an Allegion brand; _____: www.allegion.com/us/#sle.
   3. Trimco; _____: www.trimcohardware.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Carry Bar: Provides a push on active door when inactive door is opened first to allow coordinator to be engaged for proper door leaf closing sequence.
   1. Material: Brass with nylon rollers, unless otherwise indicated.

2.11 CLOSERS

A. Manufacturers; Concealed - Overhead:
   1. DORMA USA, Inc; RTS88: www.dorma.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Closers: Comply with BHMA A156.4, Grade 1.
   1. Type: Surface mounted to door.
   2. Provide door closer on each exterior door.
   3. Provide door closer on each fire-rated and smoke-rated door.
      a. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
   4. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
   5. At outswinging exterior doors, mount closer on interior side of door.

2.12 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:
   1. Rixson or Sargent; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. DORMA USA, Inc; 900 Series: www.dorma.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
   1. Provide stop for every swinging door, unless otherwise indicated.
   2. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.

2.13 KICK PLATES

A. Manufacturers:
   1. Ives, an Allegion brand; _____: www.allegion.com/us/#sle.
   2. Trimco; _____: www.trimcohardware.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
   1. Size: 8 inch high by 2 inch less door width (LDW) on push side of door.

2.14 ASTRAGALS

A. Astragals: Comply with BHMA A156.22.
   1. Provide surface mounted astragal to cover or fill space for full door height between pair of doors or door and adjacent jamb.
   2. Type: Split, two parts, and with sealing gasket.
   3. Material: Aluminum, with neoprene weatherstripping.
   4. Provide non-corroding fasteners at exterior locations.

2.15 THRESHOLDS

A. Manufacturers:
   1. Substitutions: See Section 01 60 00 - Product Requirements.

B. Thresholds: Comply with BHMA A156.21.
   1. Provide threshold at interior doors for transition between two different floor types, and over building expansion joints, unless otherwise indicated.
   2. Provide threshold at each exterior door, unless otherwise indicated.
   3. Type: Flat surface.
   4. Material: Aluminum.
   5. Threshold Surface: Fluted horizontal grooves across full width.
   6. Field cut threshold to profile of frame and width of door sill for tight fit.
   7. Provide non-corroding fasteners at exterior locations.

2.16 WEATHERSTRIPPING AND GASKETING

A. Manufacturers:
   1. Pemko; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Weatherstripping and Gasketing: Comply with BHMA A156.22.
   1. Head and Jamb Type: Adjustable.
   2. Door Sweep Type: Encased in retainer.
   3. Material: Aluminum, with brush weatherstripping.
   4. Provide gasketing for smoke and draft control doors (Indicated as "S" on Drawings) that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
   5. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.17 SILENCERS

A. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
   1. Single Door: Provide three on strike jamb of frame.
   2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
   3. Material: Rubber, gray color.

2.18 FINISHES

A. Finishes: Identified in Section 08 06 71 - Door Hardware Schedule.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.

C. Install hardware for smoke and draft control doors in accordance with NFPA 105.

D. Use templates provided by hardware item manufacturer.

E. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
   1. For Steel Doors and Frames: See Section 08 11 13.

F. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

3.04 PROTECTION

A. Protect finished Work under provisions of Section 01 70 00 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 08 91 00
LOUVERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Louvers, frames, and accessories.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

B. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating.

C. AMCA 511 - Certified Ratings Program Product Rating Manual for Air Control Devices.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

E. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms.

F. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Test Reports: Independent agency reports showing compliance with specified performance criteria.

1.04 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Louvers:
   1. Construction Specialties, Inc; Acoustical Louver: www.c-sgroup.com/#sle.
   2. Ruskin Company; Louvers: www.ruskin.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 LOUVERS

A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.
   1. Wind Load Resistance: Design to resist positive and negative wind load of 25 psf without damage or permanent deformation.
   2. High-Velocity Wind Load Resistance: Design to comply with applicable requirements of ICC 500 and FEMA P-361, including resistance to horizontal debris impact.
   3. Hinged Units: Provide secondary frame to which louver frame is attached; non-ferrous hinges; provide at _____.

B. Stationary Louvers, Type ___: Horizontal blade, formed galvanized steel sheet construction, with intermediate mullions matching frame.
   1. Free Area: 50 percent, minimum.
   2. Pressure Drop: ____ inches of water gauge maximum per square foot of free area at velocity of ____ fpm, when tested in accordance with AMCA 500-L, test unit size 48 inch by 48 inch.
   3. Blades: Straight.
   4. Frame: 4 inches deep, channel profile; corner joints mitered and, with continuous recessed caulking channel each side.

5. Steel Thickness, Galvanized: Frame 16 gauge, 0.0598 inch minimum base metal; blades 16 gauge, 0.0598 inch minimum base metal.
6. Steel Finish: Superior performing organic coating, finished after fabrication.

2.03 MATERIALS

A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

2.04 FINISHES

A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.

B. Superior Performing Organic Coatings System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
   1. Manufacturers:
      a. PPG; Duranar: www.ppgmetalcoatings.com/#sle.
      b. Sherwin-Williams Company; Fluropon: www.coil.sherwin.com/#sle.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

C. Primer: Zinc chromate, alkyd type.

D. Color: As indicated on drawings.

2.05 ACCESSORIES

A. Blank-Off Panels: See Section 23 31 00.

B. Fasteners and Anchors: Galvanized steel.

C. Flashings: Of same material as louver frame, formed to required shape, single length in one piece per location.

D. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install louver assembly in accordance with manufacturer's instructions.

B. Install louvers level and plumb.

C. Install flashings and align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.

D. Secure louver frames in openings with concealed fasteners.

3.02 CLEANING

A. Strip protective finish coverings.

B. Clean surfaces and components.

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Resilient sound isolation clips.

E. Acoustic insulation.

F. Gypsum sheathing.

G. Gypsum wallboard.

H. Joint treatment and accessories.

I. Acoustic (sound-dampening) wall and ceiling board.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Structural steel stud framing.

B. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

B. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.

D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.

G. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

H. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

I. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

J. ASTM C1396/C1396M - Standard Specification for Gypsum Board.

K. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.

L. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels.

M. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

N. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

O. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

P. ASTM E413 - Classification for Rating Sound Insulation.

Q. ASTM E1414/E1414M - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.

R. GA-216 - Application and Finishing of Gypsum Panel Products.

S. GA-600 - Fire Resistance and Sound Control Design Manual.

T. UL (FRD) - Fire Resistance Directory.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.

C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

D. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Fire-Resistance-Rated Assemblies: Provide completed assemblies with the following characteristics:
   1. Fire-Resistance-Rated Partitions: UL listed assembly No. _____; 1 hour rating.
   2. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.02 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. ClarkDietrich; ____: www.clarkdietrich.com/#sle.
   2. MarinoWARE; ____: www.marinoware.com/#sle.
   3. SCAFCO Corporation; _____: www.scafco.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Structural Steel Framing for Application of Gypsum Board: See Section 05 40 00.

C. Non-structural Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
   1. Studs: C-shaped with knurled or embossed faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C-shaped.
   4. Resilient Sound Isolation Clips: Steel resilient clips with molded rubber isolators, attaches to framing; improves noise isolation performance of wall and floor-ceiling assemblies.
      a. Products:
         1) ClarkDietrich; Sound Clip (CDSC): www.clarkdietrich.com/#sle.

2) Keene Building Products; Cylent Assurance Clip: www.keenebuilding.com/#sle.
3) Substitutions: See Section 01 60 00 - Product Requirements.

D. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

E. Non-structural Framing Accessories:
1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
2. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.

F. Grid Suspension Systems: Steel grid system of main tees and support bars connected to structure using hanging wire.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
1. Georgia-Pacific Gypsum; ____: www.gpgypsum.com/#sle.
2. Gold Bond Building Products, LLC provided by National Gypsum Company; ____: www.goldbondbuilding.com/#sle.
3. USG Corporation; ____: www.usg.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Thickness:
a. Vertical Surfaces: 1/2 inch.
b. Ceilings: 1/2 inch.

C. Abuse Resistant Wallboard:
1. Application: High-traffic areas indicated.
2. Surface Abrasion: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
6. Paper-Faced Type: Gypsum wallboard, as defined in ASTM C1396/C1396M.
7. Type: Fire-resistance-rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.
10. Glass Mat Faced Products:
a. Georgia-Pacific Gypsum; DensArmor Plus Abuse-Resistant: www.gpgypsum.com/#sle.
b. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Interior Extreme AR Gypsum Panel: www.goldbondbuilding.com/#sle.
c. USG Corporation; Sheetrock Brand Glass-Mat Panels Mold Tough AR Firecode X 5/8 in. (15.9 mm): www.usg.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

D. Acoustical Sound Dampening Wall and Ceiling Board: Two layers of heavy paper-faced, high-density gypsum board separated by a viscoelastic polymer layer and capable of achieving STC rating of 60 or more in typical stud wall assemblies as calculated in accordance with ASTM E413 and when tested in accordance with ASTM E90.
   1. Thickness: 1/2 inch.
   2. Long Edges: Tapered.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   4. Products:
      a. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond SoundBreak XP Wall Board: www.goldbondbuilding.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

E. Sound-Absorbing Gypsum Board Ceiling System: Perforated gypsum board with acoustic backer panels and spray-applied finish.
   1. Thickness, Perforated Gypsum Board: 5/8 inch.
   2. Thickness, Backer Panels: 1 inch.
   3. Spray-Applied Finish: Acoustically transparent, acrylic-based finish coating.
   4. Ceiling Attenuation Class (CAC): Not less than 44 when tested in accordance with ASTM E1414/E1414M and classified in accordance with ASTM E413.

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; thickness 5.5 inch.

B. Sound Isolation Tape: Elastomeric foam tape for sound decoupling.
   1. Surface Burning Characteristics: Provide assemblies with flame spread index of 75 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   2. Tape Thickness: 1/4 inch.
   3. Products:
      a. Armacell LLC; ArmaComfort MTD: www.armacell.us/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Finishing Accessories: ASTM C1047, extruded aluminum alloy (6063 T5) or galvanized steel sheet ASTM A924/A924M G90, unless noted otherwise.
   1. Types: As detailed or required for finished appearance.
   2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
   3. Products:

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Joint Compound: Setting type, field-mixed.

E. Abuse Resistant Finishes:
   1. Acrylic, integrally colored textured coating.

F. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

G. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

H. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.

C. Studs: Space studs at 16 inches on center.
   1. Extend partition framing to structure where indicated and to ceiling in other locations.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
   3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.

D. Resilient Sound Isolation Clips: Install resilient sound isolation clips, and where applicable, associated furring sections and channels, in accordance with clip manufacturer's written instructions.

E. Furring for Fire-Resistance Ratings: Install as required for fire-resistance ratings indicated and to GA-600 requirements.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Sound Isolation Tape: Apply to vertical studs and top and bottom tracks/runners in accordance with manufacturer's instructions.

C. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place one bead continuously on substrate before installation of perimeter framing members.
   2. Place continuous bead at perimeter of each layer of gypsum board.
   3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.04 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.06 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.07 TOLERANCES

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

C. Supplementary insulation above ceiling.

1.02 REFERENCE STANDARDS

A. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on suspension system components and acoustical units.

C. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.04 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
   2. Acoustic Ceiling Products, Inc: www.acpideas.com/#sle.
   3. Acoustics First Corporation: www.acousticsfirst.com/#sle.
   4. Rockfon: www.rockfon.com/#sle.
   5. USG Corporation: www.usg.com/ceilings/#sle.
   6. Substitutions: See Section 01 60 00 - Product Requirements.

B. Suspension Systems:
   1. Same as for acoustical units.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

B. Acoustical Panels: Painted mineral fiber, with the following characteristics:
   1. Application(s): Fire-rated assemblies.
   2. Classification: ASTM E1264 Type III.
      a. Form: 1, nodular.
      b. Pattern: "A" - perforated, regularly spaced large holes.
   3. Size: 24 by 24 inches.
   4. Thickness: 3/4 inch.

5. Light Reflectance: ____ percent, determined in accordance with ASTM E1264.
6. NRC Range: 0.70 to 0.80, determined in accordance with ASTM E1264.
7. Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
8. Panel Edge: Square.
9. Color: White.
10. Suspension System Type _____: Exposed grid.
11. Products:
    a. USG Corporation; Fissured Basic Firecode Acoustical Panels: www.usg.com/ceilings/#sle.
    b. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
   1. Materials:
      a. Aluminum Grid: Aluminum sheet, ASTM B209/B209M.

B. Exposed Suspension System, Type ____: Hot-dip galvanized steel grid and cap.
   1. Application(s): Fire-rated assemblies.
   2. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
   3. Profile: Tee; 15/16 inch face width.
   4. Finish: Baked enamel.
   5. Products:
      a. USG Corporation; Donn Brand DX/DXL 15/16 inch Acoustical Suspension System: www.usg.com/ceilings/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Perimeter Moldings: Same metal and finish as grid.

PART 3 EXECUTION

3.01 INSTALLATION - SUSPENSION SYSTEM

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.

C. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

G. Do not eccentrically load system or induce rotation of runners.

3.02 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

E. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

3.03 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.04 CLEANING

A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

B. Clean surfaces.

C. Replace damaged or abraded components.

END OF SECTION

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.

B. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile.

C. ASTM F1861 - Standard Specification for Resilient Wall Base.

D. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

D. Protect roll materials from damage by storing on end.

E. Do not double stack pallets.

1.04 FIELD CONDITIONS

PART 2 PRODUCTS

2.01 TILE FLOORING

A. Vinyl Composition Tile: Homogeneous, with color extending throughout thickness.
   1. Manufacturers:
      a. Armstrong Flooring; Standard Execelon Imperial Texture: www.armstrongflooring.com/#sle.
      b. Johnsonite, a Tarkett Company: www.johnsonite.com/#sle.
      c. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
   3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E648 or NFPA 253.
   4. Size: 12 by 12 inch.
   5. Thickness: 0.125 inch.
   6. Color: To be selected by Architect from manufacturer's full range.

2.02 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; style as scheduled.
   1. Manufacturers:
      a. Johnsonite, a Tarkett Company: www.johnsonite.com/#sle.
      b. Mannington Commercial: www.manningtoncommercial.com#sle.

c. Roppe Corporation; Contours Profiled Wall Base System: www.roppe.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E648 or NFPA 253.
3. Height: 4 inch.
4. Thickness: 0.125 inch.
5. Finish: Satin.
6. Length: 4 foot sections.
7. Color: To be selected by Architect from manufacturer's full range.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

C. Adhesive for Vinyl Flooring:
1. Manufacturers:
a. H.B. Fuller Construction Products, Inc; TEC Flexera Premium Universal Adhesive: www.tecspecialty.com/#sle.
b. Loba-Wakol, LLC; WAKOL D 3120 PVC Adhesive: www.loba-wakol.com/#sle.
c. Stauf USA, LLC; D737 High-Tack: www.staufusa.com/#sle.
d. Substitutions: Section 01 60 00 - Product Requirements.

D. Moldings, Transition and Edge Strips: Same material as flooring.
1. Manufacturers:
a. Mannington Commercial: www.manningtoncommercial.com#sle.
b. Substitutions: See Section 01 60 00 - Product Requirements.

E. Filler for Coved Base: Plastic.

F. Sealer and Wax: Types recommended by flooring manufacturer.

G. Sound Control Underlayment: Recycled rubber type.
1. Manufacturers:
a. Dinoflex Group; Comfort Cushion Acoustic Underlay Tile: www.dinoflex.com/#sle.
b. NetWell Noise Control; FloorFighter: www.controlnoise.com/#sle.
c. Pliteq, Inc; GenieMat RST: www.pliteq.com/#sle.
d. U.S. Rubber Recycling, Inc; Quietsound Acoustical Underlayment: www.usrubber.com/#sle.
e. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
1. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

B. Prohibit traffic until filler is fully cured.

C. Clean substrate.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

3.04 INSTALLATION - SOUND CONTROL UNDERLAYMENT

A. Install in accordance with underlayment manufacturer's instructions.

3.05 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.

3.06 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.07 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.08 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 78 00
INTERIOR WALL PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Decorative plastic wall paneling.

1.02 REFERENCE STANDARDS

A. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's descriptive literature for each specified product. Include anchorage devices specific to project substrate types.

C. Samples: Submit two samples 12 by 12 inches in size, indicating finish, surface design, and color for each type of panels.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Decorative Plastic Wall Paneling:
   1. Marlite, Inc: www.marlite.com/#sle.
   2. Nudo Products, Inc; FiberLite FRP: www.nudo.com/#sle.
   3. Panolam Surface Systems: www.panolam.com/#sle.

2.02 REGULATORY REQUIREMENTS

A. Surface Burning Classification: Provide wall paneling assemblies meeting Class A when tested in accordance with ASTM E84.

2.03 DECORATIVE PLASTIC WALL PANELING

A. Decorative Plastic Wall Paneling: Digitally-printed pattern images with manufacturer's standard scratch-resistant, UV-resistant protective coating.
   1. Panel Size: 4 by 8 feet.
   2. Panel Thickness: 0.075 inch.
   3. Material: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.
   4. Panel Manufacturing Tolerances:
      a. Width and Length: 1/8 inch variation in panel lengths up to and including 12 feet.
      b. Squareness: Not more than 1/8 inch out of square in any direction.
   5. Edges: Square.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install panels in accordance with manufacturer's instructions.

B. Apply adhesive to back side of panel using trowel recommended by adhesive manufacturer.

C. Apply panels to wall with vertical joints plumb and horizontal joints level and pattern aligned with adjoining panels.

D. Using a roller, apply pressure to panel face to ensure proper adhesion between surfaces.

E. Install panels with manufacturer's recommended gaps for panel field and corner joints.

F. Install trim with adhesive.

G. Seal joints at wall base and between panels with approved sealant to prevent moisture intrusion.

H. Remove excess sealant after paneling is installed and prior to curing.

3.02 CLEANING

A. Clean panel faces using cleaning agents and methods recommended by manufacturer to remove soiling.

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Exposed surfaces of steel lintels and ledge angles.
   2. Mechanical and Electrical:

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
   6. Floors, unless specifically indicated.
   7. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
   8. Concrete masonry units in utility, mechanical, electrical, and _____ spaces.
   9. Concealed pipes, ducts, and conduits.

1.02 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.03 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.

B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual.

C. SSPC-SP 1 - Solvent Cleaning.

D. SSPC-SP 6 - Commercial Blast Cleaning.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.

D. Samples: Submit two painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on aluminum sheet, ____by____ inch in size.

E. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

F. Manufacturer's Instructions: Indicate special surface preparation procedures.

G. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. If a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
   2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
   3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.

B. Paints:
   1. PPG Paints; _____: www.ppgpaints.com/#sle.
   2. Sherwin-Williams Company; _____: www.sherwin-williams.com/#sle.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

2. Supply each paint material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, brick, fiber cement siding, primed wood, and primed metal.
1. Two top coats and one coat primer.
2. Top Coat(s): Exterior Alkyd Enamel; MPI #94 or 96.
a. Products:
1) PPG Paints Fast Dry 35 Quick Drying Enamel, Gloss, 95-9000 Series, Gloss. (MPI #96)
2) Substitutions: Section 01 60 00 - Product Requirements.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Anti-Corrosive Alkyd Primer for Metal; MPI #79.
a. Products:
1) PPG Paints Multiprime Multi-Purpose Primer, 4160 Series. (MPI #79)
2) Substitutions: Section 01 60 00 - Product Requirements.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
2. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.
   3. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi at 6 to 12 inches. Allow to dry.

G. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

H. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

I. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

J. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

3.06 SCHEDULE - PAINT SYSTEMS

A. Steel Fabrications: Finish surfaces exposed to view, except ____.
   1. Exterior: ME-OP-3A, gloss; finish all surfaces, including concealed surfaces, before installation.

B. Galvanized Steel: Finish surfaces exposed to view, except ____.
   1. Exterior: Paint MgE-OP-3A, gloss.

C. Shop-Primed Metal Items: Finish surfaces exposed to view, except ____.
   1. Finish the following items:

a. Exposed surfaces of lintels.

END OF SECTION

SECTION 22 05 29
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prefabricated trapeze-framed systems.

B. Strut systems for pipe or equipment support.

C. Pipe hangers.

D. Pipe supports, guides, shields, and saddles.

E. Anchors and fasteners.

1.02 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

C. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping.

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

E. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings.

F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

G. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures.

H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

J. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

L. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

M. FM (AG) - FM Approval Guide.

N. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

O. UL (DIR) - Online Certifications Directory.

P. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
   2. Coordinate the work with other trades to provide additional framing and materials required for installation.

3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 30 00.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

1.05 QUALITY ASSURANCE

A. Comply with applicable building code.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide required hardware to hang or support piping, equipment, or fixtures with related accessories as necessary to complete installation of plumbing work.

B. Provide hardware products listed, classified, and labeled as suitable for intended purpose.

C. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 2.5. Include consideration for vibration, equipment operation, and shock loads where applicable.

D. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.

E. Fire Resistance: Provide hardware rated for 60 minutes resistance unless specifically indicated by the authority having jurisdiction.

F. Materials for Metal Fabricated Supports: Comply with Section 05 50 00.
1. Zinc-Plated Steel: Electroplated in accordance with ASTM B633 unless stated otherwise.
2. Galvanized Steel: Hot-dip galvanized in accordance with ASTM A123/A123M or ASTM A153/A153M unless stated otherwise.

G. Corrosion Resistance: Use corrosion-resistant metal-based materials fully compatible with exposed piping materials and suitable for the environment where installed.

2.02 PREFABRICATED TRAPEZE-FRAMED SYSTEMS

A. Prefabricated Trapeze-Framed Metal Strut Systems:
1. Strut Channel or Bracket Material:
a. Indoor Dry Locations: Use zinc-plated steel or galvanized steel.
2. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.
3. Minimum Channel Dimensions: 1-5/8 inch width by 13/16 inch height.
4. Accessories: Provide bracket covers, cable basket clips, cable tray clips, clamps, conduit clamps, fire-retarding brackets, j-hooks, protectors, and vibration dampeners.

2.03 STRUT SYSTEMS FOR PIPE OR EQUIPMENT SUPPORT

A. Strut Channels:

1. ASTM A653/A653M galvanized steel bracket with clamps for surface mounting of piping or plumbing equipment support.
2. Channel or Bracket Kits: Include rods, brackets, end-fixed fittings, covers, clips, and other related hardware required to complete sectional trapeze section for piping or other support.

B. Hanger Rods:
1. Threaded zinc-plated steel unless otherwise indicated.
2. Minimum Size, Unless Otherwise Indicated or Required:
   a. Piping up to 1 inch: 1/4 inch diameter.
   b. Piping larger than 1 inch: 3/8 inch diameter.

C. Channel Nuts:
1. Provide carbon steel channel nut with epoxy copper or zinc finish and long, regular, or short spring as indicated on drawings.

2.04 PIPE HANGERS

A. Band Hangers, Adjustable:
1. MSS SP-58 type 7 or 9, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.

B. J-Hangers, Adjustable:
1. MSS SP-58 type 5, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.

C. Swivel Ring Hangers, Adjustable:
1. MSS SP-58 type 10, epoxy-painted, zinc-colored.
2. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
3. FM (AG) and UL (DIR) listed for specific pipe size runs and loads.

D. Clevis Hangers, Adjustable:
1. Copper Tube: MSS SP-58 type 1, epoxy-plated copper.
2. Standard-Duty: MSS SP-58 type 1, zinc-colored, epoxy plated.
3. UL (DIR) listed: Pipe sizes 2-1/2 to 8 inch.
4. FM (AG) listed: Pipe sizes 2-1/2 to 8 inch.

2.05 PIPE CLAMPS

A. Riser Clamps:
1. For insulated pipe runs, provide two bolt-type clamps designed for installation under insulation.
2. MSS SP-58 type 1 or 8, carbon steel or steel with epoxy plated, plain, stainless steel, or zinc plated finish.
3. UL (DIR) listed: Pipe sizes 1/2 to 8 inch.

B. Extension Split Pipe Clamp:
1. MSS SP-58 type 12, hinged split ring and yoke roller hanger with epoxy copper or plain finish.
2. Material: ASTM A47/A47M malleable iron or ASTM A36/A36M carbon steel.
3. Provide hanger rod and nuts of the same type and material for a given pipe run.
4. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.

C. Offset Pipe Clamps: Double-leg design two-piece pipe clamp.

D. Strut Clamps:
1. Pipe Clamp: Two-piece rigid, universal, or outer diameter type, carbon steel with epoxy copper or zinc finish.

E. Insulation Coupling:
   1. Two bolt-type clamps designed for installation under insulation.
   2. Material: Carbon steel with epoxy copper or zinc finish.

2.06 PIPE SUPPORTS, GUIDES, SHIELDS, AND SADDLES

A. Dielectric Barriers: Provide between metallic supports and metallic piping and associated items of dissimilar type; acceptable dielectric barriers include rubber or plastic sheets or coatings attached securely to pipe or item.

B. Stanchions:
   1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
   2. Provide coated or plated saddles to isolate steel hangers from dissimilar metal tube or pipe.
   3. For pipe runs, use stanchions of same type and material where vertical adjustment is required for stationary pipe.

C. Intermediate Anchors and Pipe Alignment Guides:
   1. Pipe Sizes 6 inch and Smaller: Minimum clearance of 0.16 inch.
   2. Pipe Size 8 inch: 0.625 inch U-bolt with double nuts providing minimum clearance of 0.28 inch.
   3. Pipe Size 10 inch: 0.75 inch U-bolt.
   4. Pipe Sizes 12 to 16 inch: 0.875 inch U-bolt.
   5. Pipe Sizes 18 to 30 inches: 1 inch U-bolt.
   6. Use pipe clamps with oversize pipe sleeve that provides clearance around pipe.

D. Pipe Alignment Guides, Galvanized steel:
   1. Pipe Sizes 8 inch and Smaller: Spider or sleeve type.
   2. Pipe Sizes 10 inch and Larger: Roller type.

E. Pipe Shields for Insulated Piping:
   1. MSS SP-58 type 40, ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.
   2. General Construction and Requirements:
      a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
      b. Shields Material: UV-resistant polypropylene with glass fill.
      c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch.
      d. Service Temperature: Minus 40 to 178 degrees F.
      e. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.

F. Pipe Supports:
   1. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
   2. Liquid Temperatures Up to 122 degrees F:
      a. Overhead Support: MSS SP-58 types 1, 3 through 12 clamps.
      b. Support From Below: MSS SP-58 types 35 through 38.

G. Pipe Supports, Thermal Insulated:
   1. General Requirements:
      a. Insulated pipe supports to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
      b. Pipe insulation protection shields to be provided at the hanger points and guide locations on pipes requiring insulation as indicated on drawings.
      c. Surface Burning Characteristics: Flame spread index/smoke developed index of 5/30, maximum, when tested in accordance with ASTM E84 or UL 723.
      d. Provide pipe supports for 1/2 to 30 inch iron pipes.

e. Insulation inserts to consist of rigid phenolic foam insulation surrounded by 360 degree, PVC jacketing.

2. PVC Jacket:
   a. Pipe insulation protection shields to be provided with ball bearing hinge and locking seam.
   b. Minimum Service Temperature: Minus 40 degrees F.
   c. Maximum Service Temperature: 180 degrees F.
   d. Moisture Vapor Transmission: 0.0071 perm inch, when tested in accordance with ASTM E96/E96M.
   e. Minimum Thickness: 60 mil, 0.06 inch.

2.07 ANCHORS AND FASTENERS

A. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

B. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.

C. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.

D. Hollow Masonry: Use toggle bolts.

E. Preset Concrete Inserts: Continuous metal strut channel and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
   1. Channel Material: Use galvanized steel.
   2. Manufacturer: Same as manufacturer of metal strut channel framing system.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

C. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.

D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

G. Provide thermal insulated pipe supports complete with hangers and accessories. Install thermal insulated pipe supports during the installation of the piping system.

H. Equipment Support and Attachment:
   1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
   2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
   3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

I. Preset Concrete Inserts: Use manufacturer-provided closure strips to inhibit concrete seepage during concrete pour.

J. Secure fasteners according to manufacturer's recommended torque settings.

K. Remove temporary supports.

3.02 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 22 10 05
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Domestic water piping, above grade.

B. Pipe, pipe fittings, valves, and connections for piping systems.
   1. Domestic water.
   2. Pipe flanges, unions, and couplings.
   3. Pipe hangers and supports.
   4. Ball valves.
   5. Valves.

1.02 REFERENCE STANDARDS

A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

C. ASME B31.9 - Building Services Piping.

D. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators.

E. ASTM B32 - Standard Specification for Solder Metal.

F. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

G. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).

H. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.

I. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

J. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

K. MSS SP-67 - Butterfly Valves.

L. MSS SP-70 - Gray Iron Gate Valves, Flanged and Threaded Ends.

M. MSS SP-71 - Gray Iron Swing Check Valves, Flanged and Threaded Ends.

N. MSS SP-78 - Gray Iron Plug Valves, Flanged and Threaded Ends.

O. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves.

P. MSS SP-85 - Gray Iron Globe and Angle Valves, Flanged and Threaded Ends.

Q. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

R. NSF 61 - Drinking Water System Components - Health Effects.

S. NSF 372 - Drinking Water System Components - Lead Content.

1.03 SUBMITTALS

A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

B. Project Record Documents: Record actual locations of valves.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of experience.

C. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum 3 years of experience.

D. Perform Work in accordance with local standards.

E. Valves: Manufacturer's name and pressure rating marked on valve body.

F. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.

G. Welder Qualifications: Certified in accordance with ASME BPVC-IX.

H. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.05 REGULATORY REQUIREMENTS

A. Perform Work in accordance with local plumbing code.

B. Conform to applicable code for installation of backflow prevention devices.

C. Provide certificate of compliance from authority having jurisdiction indicating approval of installation of backflow prevention devices.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.07 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

1.08 EXTRA MATERIALS

A. Provide two repacking kits for each size valve.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 WATER PIPING, ABOVE GRADE

A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
   2. Joints: ASTM B32, alloy Sn95 solder.

2.03 FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe Sizes 3 Inches and Under:
   1. Ferrous pipe: Class 150 malleable iron threaded unions.
   2. Copper tube and pipe: Class 150 bronze unions with soldered joints.

B. Flanges for Pipe Size Over 1 Inch:
   1. Ferrous pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
   2. Copper tube and pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.

2.04 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
   2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
   3. Trapeze Hangers: Welded steel channel frames attached to structure.
   4. Vertical Pipe Support: Steel riser clamp.

B. Plumbing Piping - Water:
   1. Conform to ASME B31.9.
   2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
   3. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
   4. Hangers for Hot Pipe Sizes 2 Inches to 4 Inches: Carbon steel, adjustable, clevis.
   5. Hangers for Hot Pipe Sizes 6 Inches and Over: Adjustable steel yoke, cast iron pipe roll, double hanger.
   6. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.
   7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 Inches and Over: Steel channels with welded supports or spacers and hanger rods, cast iron roll.
   8. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
   9. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
   10. Wall Support for Hot Pipe Sizes 6 Inches and Over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron pipe roll.
   11. Vertical Support: Steel riser clamp.
   12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   13. Floor Support for Hot Pipe Sizes to 4 Inches: Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.
   14. Floor Support for Hot Pipe Sizes 6 Inches and Over: Adjustable cast iron pipe roll and stand, steel screws, and concrete pier or steel support.
   15. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.05 GATE VALVES

A. Manufacturers:
   1. Conbraco Industries: www.conbraco.com.
   2. Nibco, Inc: www.nibco.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Up To and Including 3 Inches:
   1. 1, Class 125, bronze body, bronze trim, rising stem, handwheel, inside screw, solid wedge disc, solder ends.

C. 2 Inches and Larger:
   1. 1, Class 125, iron body, bronze trim, outside screw and yoke, handwheel, solid wedge disc, flanged ends. Provide chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

2.06 GLOBE VALVES

A. Manufacturers:
   1. Conbraco Industries: www.conbraco.com.
   2. Nibco, Inc: www.nibco.com.

3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Up To and Including 3 Inches:
1. 1, Class 125, bronze body, bronze trim, handwheel, bronze disc, solder ends.

C. 2 Inches and Larger:
1. 1, Class 125, iron body, bronze trim, handwheel, outside screw and yoke, renewable bronze plug-type disc, renewable seat, flanged ends. Provide chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

2.07 BALL VALVES

A. Manufacturers:
1. Conbraco Industries: www.conbraco.com.
2. Nibco, Inc: www.nibco.com.
3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.

C. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder ends with union.

2.08 PLUG VALVES

A. Manufacturers:
1. Conbraco Industries: www.conbraco.com.
2. Nibco, Inc: www.nibco.com.
3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Construction 2-1/2 Inches and Larger: 1, 175 psi CWP, cast iron body and plug, pressure lubricated, teflon or Buna N packing, flanged or grooved ends. Provide lever operator with set screw.

2.09 BUTTERFLY VALVES

A. Manufacturers:
1. Hammond Valve: www.hammondvalve.com.
2. Crane Co.: www.cranevalve.com.
3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Construction 1-1/2 Inches and Larger: MSS SP-67, 200 psi CWP, cast or ductile iron body, nickel-plated ductile iron disc, resilient replaceable EPDM, Buna N, or EPT seat, wafer, lug, or grooved ends, extended neck, 10 position lever handle.

C. Provide gear operators for valves 8 inches and larger, and chain-wheel operators for valves mounted over 8 feet above floor.

2.10 SWING CHECK VALVES

A. Manufacturers:
1. Hammond Valve: www.hammondvalve.com.
2. Nibco, Inc: www.nibco.com.
3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Up to 3 Inches:
1. 1, Class 125, bronze body and cap, bronze swing disc with rubber seat, solder ends.

C. Over 3 Inches:

1. 1, Class 125, iron body, bronze swing disc, renewable disc seal and seat, flanged or grooved ends.

2.11 SPRING LOADED CHECK VALVES

A. Manufacturers:
   1. Hammond Valve: www.hammondvalve.com.
   2. Crane Co.: www.cranevalve.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Class 125, iron body, bronze trim, stainless steel springs, bronze disc, Buna N seals, wafer style ends.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

A. All gas piping shall be painted standard ANSI yellow.

B. Install in accordance with manufacturer's instructions.

C. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

D. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

E. Install piping to maintain headroom, conserve space, and not interfere with use of space.

F. Group piping whenever practical at common elevations.

G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 22 05 16.

H. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 07 19.

I. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 08 31 00.

J. Establish elevations of buried piping outside the building to ensure not less than 3 ft of cover.

K. Install vent piping penetrating roofed areas to maintain integrity of roof assembly .

L. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

M. Provide support for utility meters in accordance with requirements of utility companies.

N. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Section 09 90 00.

O. Excavate in accordance with Section 31 23 16.

P. Install bell and spigot pipe with bell end upstream.

Q. Install valves with stems upright or horizontal, not inverted.

R. Pipe vents from gas pressure reducing valves to outdoors and terminate in weather proof hood.

S. Install water piping to ASME B31.9.

T. Install fuel oil piping to ASME B31.9.

U. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

V. Sleeve pipes passing through partitions, walls and floors.

W. Inserts:
   1. Provide inserts for placement in concrete formwork.
   2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
   3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
   4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
   5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut flush with top of slab.

X. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.9.
   2. Support horizontal piping as scheduled.
   3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
   4. Place hangers within 12 inches of each horizontal elbow.
   5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
   6. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
   7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
   8. Provide copper plated hangers and supports for copper piping.
   9. Prime coat exposed steel hangers and supports. Refer to Section 09 90 00. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
   10. Provide hangers adjacent to motor driven equipment with vibration isolation; refer to Section 22 05 48.
   11. Support cast iron drainage piping at every joint.

3.04 APPLICATION

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

D. Install gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

E. Install globe valves for throttling, bypass, or manual flow control services.

F. Provide lug end butterfly valves adjacent to equipment when provided to isolate equipment.

G. Provide spring loaded check valves on discharge of water pumps.

H. Provide plug valves in natural gas systems for shut-off service.

I. Provide flow controls in water recirculating systems where indicated.

3.05 TOLERANCES

A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.

B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

3.06 FIELD TESTS AND INSPECTIONS

A. Verify and inspect systems according to requirements by the Authority Having Jurisdiction. In the absence of specific test and inspection procedures proceed as indicated below.

B. Domestic Water Systems:
   1. Perform hydrostatic testing for leakage prior to system disinfection.
   2. Test Preparation: Close each fixture valve or disconnect and cap each connected fixture.
   3. General:
      a. Fill the system with water and raise static head to 10 psi above service pressure. Minimum static head of 50 to 150 psi. As an exception, certain codes allow a maximum static pressure of 80 psi.

C. Test Results: Document and certify successful results, otherwise repair, document, and retest.

3.07 SCHEDULES

A. Pipe Hanger Spacing:
   1. Metal Piping:
      a. Pipe size: 1/2 inches to 1-1/4 inches:
         1) Maximum hanger spacing: 6.5 ft.
         2) Hanger rod diameter: 3/8 inches.
      b. Pipe size: 1-1/2 inches to 2 inches:
         1) Maximum hanger spacing: 10 ft.
         2) Hanger rod diameter: 3/8 inch.
      c. Pipe size: 2-1/2 inches to 3 inches:
         1) Maximum hanger spacing: 10 ft.
         2) Hanger rod diameter: 1/2 inch.
      d. Pipe size: 4 inches to 6 inches:
         1) Maximum hanger spacing: 10 ft.
         2) Hanger rod diameter: 5/8 inch.
      e. Pipe size: 8 inches to 12 inches:
         1) Maximum hanger spacing: 14 ft.
         2) Hanger rod diameter: 7/8 inch.
      f. Pipe size: 14 inches and Over:
         1) Maximum hanger spacing: 20 ft.
         2) Hanger rod diameter: 1 inch.
   2. Plastic Piping:
      a. Pipe Size 1" to 6":
         1) Maximum hanger spacing: 6 ft.
         2) Hanger rod diameter: 3/8 inch.
      b. Pipe Size 8" and Over:
         1) Maximum hanger spacing: 6 ft.
         2) Hanger rod diameter: 7/8 inch.

END OF SECTION

SECTION 23 05 13
MOTOR REQUIREMENTS FOR HVAC AND PLUMBING EQUIP

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single phase electric motors.

B. Three phase electric motors.

1.02 REFERENCE STANDARDS

A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings.

B. IEEE 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators.

C. NEMA MG 1 - Motors and Generators.

D. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

A. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.

B. Test Reports: Indicate test results verifying nominal efficiency and power factor for three phase motors larger than 1/2 horsepower.

C. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.

D. Operation Data: Include instructions for safe operating procedures.

E. Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacture of electric motors for HVAC use, and their accessories, with minimum three years documented product development, testing, and manufacturing experience.

B. Conform to applicable electrical code, NFPA 70 and local energy code.

C. Provide certificate of compliance from authority having jurisdiction indicating approval of high efficiency motors.

D. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc. or testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

1.06 WARRANTY

A. Provide five year manufacturer warranty for motors larger than 20 horsepower.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Lincoln Motors: www.lincolnmotors.com/#sle.

B. A. O. Smith Electrical Products Company: www.aosmithmotors.com/#sle.

C. Reliance Electric/Rockwell Automation: www.reliance.com.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 GENERAL CONSTRUCTION AND REQUIREMENTS

A. Electrical Service: Refer to Section 26 27 17 for required electrical characteristics.

B. Electrical Service, General. See drawings for specific details:
   1. Motors 1/2 HP and Smaller: 115 volts, single phase, 60 Hz.
   2. Motors Larger than 1/2 Horsepower: 460 volts, three phase, 60 Hz.

C. Construction:
   1. Open drip-proof type except where specifically noted otherwise.
   2. Design for continuous operation in 40 degrees C environment.
   3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
   4. Motors with frame sizes 254T and larger: Premium Efficiency Type.

D. Explosion-Proof Motors: UL approved and labelled for hazard classification, with over temperature protection.

E. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor.

F. Wiring Terminations:
   1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
   2. For fractional horsepower motors where connection is made directly, provide conduit connection in end frame.

2.03 APPLICATIONS

A. Exception: Motors less than 250 watts, for intermittent service may be the equipment manufacturer's standard and need not conform to these specifications.

B. Single phase motors for shaft mounted fans and centrifugal pumps: Split phase type.

C. Single phase motors for shaft mounted fans or blowers: Permanent split capacitor type or electronically commutated (ECM) type. See schedules for requirements.

D. Single phase motors for fans, pumps, and blowers: Capacitor start type.

E. Single phase motors for fans, blowers, and pumps: Capacitor start, capacitor run type.

F. Motors located in outdoors and in draw through cooling towers: Totally enclosed weatherproof epoxy-treated type.

2.04 SINGLE PHASE POWER - SPLIT PHASE MOTORS

A. Starting Torque: Less than 150 percent of full load torque.

B. Starting Current: Up to seven times full load current.

C. Breakdown Torque: Approximately 200 percent of full load torque.

D. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve or ball bearings.

E. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

2.05 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

A. Starting Torque: Exceeding one fourth of full load torque.

B. Starting Current: Up to six times full load current.

C. Multiple Speed: Through tapped windings.

D. Open Drip-proof or Enclosed Air Over Enclosure: Class A (50 degrees C temperature rise) insulation, minimum 1.0 Service Factor, prelubricated sleeve or ball bearings, automatic reset overload protector.

2.06 SINGLE PHASE POWER - CAPACITOR START MOTORS

A. Starting Torque: Three times full load torque.

B. Starting Current: Less than five times full load current.

C. Pull-up Torque: Up to 350 percent of full load torque.

D. Breakdown Torque: Approximately 250 percent of full load torque.

E. Motors: Capacitor in series with starting winding; provide capacitor-start/capacitor-run motors with two capacitors in parallel with run capacitor remaining in circuit at operating speeds.

F. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve bearings.

G. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

2.07 THREE PHASE POWER - SQUIRREL CAGE MOTORS

A. Starting Torque: Between 1 and 1-1/2 times full load torque.

B. Starting Current: Six times full load current.

C. Power Output, Locked Rotor Torque, Breakdown or Pull Out Torque: NEMA Design B characteristics.

D. Design, Construction, Testing, and Performance: Conform to NEMA MG 1 for Design B motors.

E. Insulation System: NEMA Class B or better.

F. Testing Procedure: In accordance with IEEE 112. Load test motors to determine free from electrical or mechanical defects in compliance with performance data.

G. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.

H. Thermistor System (Motor Frame Sizes 254T and Larger): Three PTC thermistors embedded in motor windings and epoxy encapsulated solid state control relay for wiring into motor starter; refer to Section 26 29 13.

I. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA STD 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.

J. Sound Power Levels: To NEMA MG 1.

K. Part Winding Start Above 254T Frame Size: Use part of winding to reduce locked rotor starting current to approximately 60 percent of full winding locked rotor current while providing approximately 50 percent of full winding locked rotor torque.

L. Weatherproof Epoxy Sealed Motors: Epoxy seal windings using vacuum and pressure with rotor and starter surfaces protected with epoxy enamel; bearings double shielded with waterproof non-washing grease.

M. Nominal Efficiency: As scheduled at full load and rated voltage when tested in accordance with IEEE 112.

N. Nominal Power Factor: As scheduled at full load and rated voltage when tested in accordance with IEEE 112.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.

C. Check line voltage and phase and ensure agreement with nameplate.

D. Provide detailed installation and purchase information for reimbursement by Utility for rebate program.

3.02 SCHEDULE - PREMIUM EFFICIENCY

A. NEMA Open Motor Service Factors.
   1. 1/6-1/3 hp:
      a. 3600 rpm: 1.35.
      b. 1800 rpm: 1.35.
      c. 1200 rpm: 1.35.
      d. 900 rpm: 1.35.
   2. 1/2 hp:
      a. 3600 rpm: 1.25.
      b. 1800 rpm: 1.25.
      c. 1200 rpm: 1.25.
      d. 900 rpm: 1.15.
   3. 3/4 hp:
      a. 3600 rpm: 1.25.
      b. 1800 rpm: 1.25.
      c. 1200 rpm: 1.15.
      d. 900 rpm: 1.15.
   4. 1 hp:
      a. 3600 rpm: 1.25.
      b. 1800 rpm: 1.15.
      c. 1200 rpm: 1.15.
      d. 900 rpm: 1.15.
   5. 1.5-150 hp:
      a. 3600 rpm: 1.15.
      b. 1800 rpm: 1.15.
      c. 1200 rpm: 1.15.
      d. 900 rpm: 1.15.

B. Three Phase - Premium Efficiency, Open Drip-Proof Performance:
   1. Ratings.
      a. 1 hp:
         1) NEMA Frame: 145T.
         2) Minimum Percent Power Factor: 72.
         3) Minimum Percent Efficiency: 82.5% @ 1200 RPM, 85.5%@ 1800 RPM, 77% @ 3600 RPM
      b. 1-1/2 hp:
         1) NEMA Frame: 182T.
         2) Minimum Percent Power Factor: 73.

3) Minimum Percent Efficiency: 86.5% @ 1200 RPM, 86.5% @ 1800 RPM, 84% @ 3600 RPM

c. 2 hp:
1) NEMA Frame: 184T.
2) Minimum Percent Power Factor: 75.
3) Minimum Percent Efficiency: 87.5% @ 1200 RPM, 86.5% @ 1800 RPM, 85.5% @ 3600 RPM

d. 3 hp:
1) NEMA Frame: 213T.
2) Minimum Percent Power Factor: 60.
3) Minimum Percent Efficiency: 88.5% @ 1200 RPM, 89.5% @ 1800 RPM, 85.5% @ 3600 RPM

e. 5 hp:
1) NEMA Frame: 215T.
2) Minimum Percent Power Factor: 65.
3) Minimum Percent Efficiency: 89.5% @ 1200 RPM, 89.5% @ 1800 RPM, 86.5% @ 3600 RPM

f. 7-1/2 hp:
1) NEMA Frame: 254T.
2) Minimum Percent Power Factor: 73.
3) Minimum Percent Efficiency: 90.2% @ 1200 RPM, 91% @ 1800 RPM, 88.5% @ 3600 RPM

g. 10 hp:
1) NEMA Frame: 256T.
2) Minimum Percent Power Factor: 74.
3) Minimum Percent Efficiency: 91.7% @ 1200 RPM, 91.7% @ 1800 RPM, 89.5% @ 3600 RPM

h. 15 hp:
1) NEMA Frame: 284T.
2) Minimum Percent Power Factor: 77.
3) Minimum Percent Efficiency: 91.7% @ 1200 RPM, 93% @ 1800 RPM, 90.2% @ 3600 RPM.

i. 20 hp:
1) NEMA Frame: 286T.
2) Minimum Percent Power Factor: 78.
3) Minimum Percent Efficiency: 92.4% @ 1200 RPM, 93% @ 1800 RPM, 91% @ 3600 RPM

j. 25 hp:
1) NEMA Frame: 324T.
2) Minimum Percent Power Factor: 74.
3) Minimum Percent Efficiency: 93% @ 1200 RPM, 93.6% @ 1800 RPM, 91.7% @ 3600 RPM

k. 30 hp:
1) NEMA Frame: 326T.
2) Minimum Percent Power Factor: 78.
3) Minimum Percent Efficiency: 93.6% @ 1200 RPM, 94.1% @ 1800 RPM, 91.7% @ 3600 RPM

l. 40 hp:
1) NEMA Frame: 364T.
2) Minimum Percent Power Factor: 77.

3) Minimum Percent Efficiency: 94.1% @ 1200 RPM, 94.1 @ 1800 RPM, 92.4% @ 3600 RPM

m. 50 hp:
1) NEMA Frame: 365T.
2) Minimum Percent Power Factor: 79.
3) Minimum Percent Efficiency: 94.1% @ 1200 RPM, 94.5% @ 1800 RPM, 93% @ 3600 RPM

C. Three Phase - Premuim Efficiency, Totally Enclosed, Fan Cooled Performance:
1. 1200 rpm.
a. 1 hp:
1) NEMA Frame: 145T.
2) Minimum Percent Power Factor: 72.
3) Minimum Percent Efficiency: 82.5% @ 1200 RPM, 85.5% 2 1800 RPM, 77% @ 3600 RPM

b. 1-1/2 hp:
1) NEMA Frame: 182T.
2) Minimum Percent Power Factor: 73.
3) Minimum Percent Efficiency: 87.5% @ 1200 RPM, 86.5% @ 1800 RPM, 84% @ 3600 RPM

c. 2 hp:
1) NEMA Frame: 184T.
2) Minimum Percent Power Factor: 68.
3) Minimum Percent Efficiency: 88.5% @ 1200 RPM, 86.5% @ 1800 RPM, 85.5% @ 3600 RPM

d. 3 hp:
1) NEMA Frame: 213T.
2) Minimum Percent Power Factor: 63.
3) Minimum Percent Efficiency: 89.5% @ 1200 RPM, 89.5% @ 1800 RPM, 86.5% @ 3600 RPM

e. 5 hp:
1) NEMA Frame: 215T.
2) Minimum Percent Power Factor: 66.
3) Minimum Percent Efficiency: 89.5% @ 1200 RPM, 89.5% @ 1800 RPM, 88.5% @ 3600 RPM

f. 7-1/2 hp:
1) NEMA Frame: 254T.
2) Minimum Percent Power Factor: 68.
3) Minimum Percent Efficiency: 91% @ 1200 RPM, 91.7% @ 1800 RPM, 89.5% @ 3600 RPM

g. 10 hp:
1) NEMA Frame: 256T.
2) Minimum Percent Power Factor: 75.
3) Minimum Percent Efficiency: 91% @ 1200 RPM, 91.7% @ 1800 RPM, 90.2% @ 3600 RPM

h. 15 hp:
1) NEMA Frame: 284T.
2) Minimum Percent Power Factor: 72.
3) Minimum Percent Efficiency: 91.7% @ 1200 RPM, 92.4% @ 1800 RPM, 91% @ 3600 RPM

i. 20 hp:

1) NEMA Frame: 286T.
2) Minimum Percent Power Factor: 76.
3) Minimum Percent Efficiency: 91.7% @ 1200 RPM, 93% @ 1800 RPM, 91% @ 3600 RPM

j. 25 hp:
1) NEMA Frame: 324T.
2) Minimum Percent Power Factor: 71.
3) Minimum Percent Efficiency: 93% @ 1200 RPM, 93.6% @ 1800 RPM, 91.7% @ 3600 RPM

k. 30 hp:
1) NEMA Frame: 326T.
2) Minimum Percent Power Factor: 79.
3) Minimum Percent Efficiency: 93% @ 1200 RPM, 93.6% @ 1800 RPM, 91.7% @ 3600 RPM.

l. 40 hp:
1) NEMA Frame: 364T.
2) Minimum Percent Power Factor: 78.
3) Minimum Percent Efficiency: 94.1% @ 1200 RPM, 94.1% @ 1800 RPM, 92.4% @ 3600 RPM

m. 50 hp:
1) NEMA Frame: 365T.
2) Minimum Percent Power Factor: 81.
3) Minimum Percent Efficiency: 94.1% @ 1200 RPM, 94.5% @ 1800 RPM, 93% @ 3600 RPM

END OF SECTION

SECTION 23 05 16
EXPANSION FITTINGS AND LOOPS FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flexible pipe connectors.

B. Expansion joints and compensators.

C. Pipe loops, offsets, and swing joints.

1.02 REFERENCE STANDARDS

A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

B. EJMA (STDS) - EJMA Standards.

1.03 SUBMITTALS

A. Product Data:
   1. Flexible Pipe Connectors: Indicate maximum temperature and pressure rating, face-to-face length, live length, hose wall thickness, hose convolutions per foot and per assembly, fundamental frequency of assembly, braid structure, and total number of wires in braid.
   2. Expansion Joints: Indicate maximum temperature and pressure rating, and maximum expansion compensation.

B. Design Data: Indicate selection calculations.

C. Manufacturer's Instructions: Indicate manufacturer's installation instructions, special procedures, and external controls.

D. Project Record Documents: Record installed locations of flexible pipe connectors, expansion joints, anchors, and guides.

E. Maintenance Data: Include adjustment instructions.

1.04 REGULATORY REQUIREMENTS

A. Conform to UL requirements.

1.05 EXTRA MATERIALS

A. Supply two sets of packing for each packed expansion joint.

PART 2 PRODUCTS

2.01 FLEXIBLE PIPE CONNECTORS - STEEL PIPING

A. Manufacturers:
   1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
   2. Metraflex Company: www.metraflex.com.

B. Inner Hose: Carbon Steel.

C. Exterior Sleeve: Single braided, stainless steel or bronze.

D. Pressure Rating: 125 psi and 450 degrees F.

E. Joint: As specified for pipe joints.

F. Size: Use pipe sized units.

G. Maximum offset: 3/4 inch on each side of installed center line.

2.02 FLEXIBLE PIPE CONNECTORS - COPPER PIPING

A. Manufacturer:

1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
2. Metraflex Company: www.metraflex.com/#sle.

B. Inner Hose: Bronze.

C. Exterior Sleeve: Braided bronze.

D. Pressure Rating: 125 psi and 450 degrees F.

E. Joint: As specified for pipe joints.

F. Size: Use pipe sized units.

G. Maximum offset: 3/4 inch on each side of installed center line.

H. Application: Copper piping.

2.03 EXPANSION JOINTS - STAINLESS STEEL BELLOWS TYPE

A. Manufacturers:
1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
2. Metraflex Company: www.metraflex.com/#sle.

B. Pressure Rating: 125 psi and 400 degrees F.

C. Maximum Compression: 1-3/4 inches.

D. Maximum Extension: 1/4 inch.

E. Joint: As specified for pipe joints.

F. Size: Use pipe sized units.

G. Application: Steel piping 3 inches and under.

2.04 EXPANSION JOINTS - EXTERNAL RING CONTROLLED STAINLESS STEEL BELLOWS TYPE

A. Manufacturers:
1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
2. Metraflex Company: www.metraflex.com/#sle.

B. Pressure Rating: 125 psi and 400 degrees F.

C. Maximum Compression: 15/16 inch.

D. Maximum Extension: 5/16 inch.

E. Maximum Offset: 1/8 inch.

F. Joint: Flanged.

G. Size: Use pipe sized units.

H. Accessories: Internal flow liner.

I. Application: Steel piping over 2 inches.

2.05 EXPANSION JOINTS - SINGLE SPHERE, ELBOW OR FLEXIBLE COMPENSATOR

A. Manufacturers:
1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
2. Metraflex Company: www.metraflex.com/#sle.

B. Body: Teflon.

C. Pressure Rating, Sizes 3/4 Inch to 2 Inch: 150 psi and 210 degrees F.

D. Pressure Rating, Sizes 1-1/2 Inch to 12 Inch: 150 psi and 250 degrees F.

E. Pressure Rating, Sizes 14 Inch to 24 Inch: 105 psi and 250 degrees F.

F. Maximum Compression: 3/4 inch.

G. Maximum Elongation: 1/2 inch.

H. Maximum Offset: 1/2 inch.

I. Maximum Angular Movement: 15 degrees.

J. Joint: Tapped steel flanges.

K. Size: Use pipe sized units.

L. Accessories: Control rods.

M. Application: Steel piping 2 inches and over.

2.06 EXPANSION JOINTS - TWO-PLY BRONZE BELLOWS TYPE

A. Manufacturers:
   1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
   2. Metraflex Company: www.metraflex.com/#sle.

B. Construction: Bronze with anti-torque device, limit stops, internal guides.

C. Pressure Rating: 125 psi and 400 degrees F.

D. Maximum Compression: 1-3/4 inches.

E. Maximum Extension: 1/4 inch.

F. Joint: As specified for pipe joints.

G. Size: Use pipe sized units.

H. Application: Copper piping.

2.07 EXPANSION JOINTS - LOW PRESSURE COMPENSATOR WITH TWO-PLY BRONZE BELLOWS

A. Manufacturers:
   1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
   2. Metraflex Company: www.metraflex.com/#sle.

B. Working Pressure: 75 psi.

C. Maximum Temperatures: 250 degrees F.

D. Maximum Compression: 1/2 inch.

E. Maximum Extension: 5/32 inch.

F. Joint: Soldered.

G. Size: Use pipe sized units.

H. Application: Copper or steel piping 3 inches and under.

2.08 EXPANSION JOINTS - STEEL WITH PACKED SLIDING SLEEVE

A. Working Pressure and Temperature: Class 150.

B. Joint: As specified for pipe joints.

C. Size: Use pipe sized units.

D. Application: Steel piping 2 inches and over.

2.09 EXPANSION JOINTS - COPPER WITH PACKED SLIDING SLEEVE

A. Working Pressure: 125 psi.

B. Maximum Temperature: 250 degrees F.

C. Joint: As specified for pipe joints.

D. Size: Use pipe sized units.

E. Application: Copper or steel piping 2 inches and over.

2.10 ACCESSORIES

A. Stainless Steel Pipe: ASTM A269.

B. Pipe Alignment Guides:
   1. Two piece welded steel with enamel paint, bolted, with spider to fit standard pipe, frame with four mounting holes, clearance for minimum 1 inch thick insulation, minimum 3 inches travel.

C. Swivel Joints:
   1. Fabricated steel body, double ball bearing race, field lubricated, with rubber (Buna-N) o-ring seals.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with EJMA (Expansion Joint Manufacturers Association) Standards.

C. Install flexible pipe connectors on pipes connected to vibration isolated equipment. Provide line size flexible connectors.

D. Install flexible connectors at right angles to displacement. Install one end immediately adjacent to isolated equipment and anchor other end. Install in horizontal plane unless indicated otherwise.

E. Anchor pipe to building structure where indicated. Provide pipe guides so movement is directed along axis of pipe only. Erect piping such that strain and weight is not on cast connections or apparatus.

F. Provide support and equipment required to control expansion and contraction of piping. Provide loops, pipe offsets, and swing joints, or expansion joints where required.

G. Substitute grooved piping for vibration isolated equipment instead of flexible connectors. Grooved piping need not be anchored.

END OF SECTION

SECTION 23 05 19
METERS AND GAGES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pressure gage taps.

B. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

A. ASME B40.100 - Pressure Gauges and Gauge Attachments.

B. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers.

C. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers.

D. UL 393 - Indicating Pressure Gauges for Fire-Protection Service.

1.03 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.

C. Samples: Submit one of each type of instrument specified.

D. Project Record Documents: Record actual locations of components and instrumentation.

E. Operation and Maintenance Data: pressure gages, thermometers, static pressure gages.

1.04 FIELD CONDITIONS

A. Do not install instrumentation when areas are under construction, except for required rough-in, taps, supports and test plugs.

PART 2 PRODUCTS

2.01 PRESSURE GAGES

A. Manufacturers:
   1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
   2. Moeller Instrument Co., Inc: www.moellerinstrument.com/#sle.
   3. Omega Engineering, Inc: www.omega.com/#sle.

B. Pressure Gages: ASME B40.100, UL 393 drawn steel case, phosphor bronze bourdon tube, rotary brass movement, brass socket, with front recalibration adjustment, black scale on white background.
   1. Case: Steel with brass bourdon tube.
   2. Size: 4-1/2 inch diameter.
   3. Mid-Scale Accuracy: One percent.
   4. Scale: Psi and KPa.

2.02 PRESSURE GAGE TAPPINGS

A. Gage Cock: Tee or lever handle, brass for maximum 150 psi.

B. Needle Valve: Brass or stainless steel 1/4 inch NPT for minimum 150 psi.

C. Pulsation Damper: Pressure snubber, brass with 1/4 inch connections.

D. Syphon: Brass, Stainless Steel or Bronze 1/4 inch angle or straight pattern.

2.03 STEM TYPE THERMOMETERS

A. Manufacturers:
   1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.

2. Omega Engineering, Inc: www.omega.com/#sle.
3. Weksler Glass Thermometer Corp: www.wekslerglass.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Thermometers - Fixed Mounting: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish.
1. Size: 7 inch scale.
2. Window: Clear Lexan.
3. Stem: 3/4 inch brass.
4. Accuracy: 2 percent, per ASTM E77.
5. Calibration: Degrees F and Degrees C.

C. Thermometers - Adjustable Angle: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.
1. Size: 7 inch scale.
2. Window: Clear Lexan.
3. Stem: 3/4 inch NPT brass.
4. Accuracy: 2 percent, per ASTM E77.
5. Calibration: Degrees F and Degrees C.

2.04 DIAL THERMOMETERS

A. Manufacturers:
1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
2. Omega Engineering, Inc: www.omega.com/#sle.
3. Weksler Glass Thermometer Corp: www.wekslerglass.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Thermometers - Fixed Mounting: Dial type bimetallic actuated; ASTM E1; stainless steel case, silicone fluid damping, white with black markings and black pointer, hermetically sealed lens, stainless steel stem.
1. Size: 2 inch diameter dial.
2. Lens: Clear Lexan.
3. Accuracy: 1 percent.
4. Calibration: Degrees F and Degrees C.

C. Thermometer: ASTM E1, stainless steel case, adjustable angle with front recalibration, bimetallic helix actuated with silicone fluid damping, white with black markings and black pointer hermetically sealed lens, stainless steel stem.
1. Size: 3 inch diameter dial.
2. Lens: Clear Lexan.
3. Accuracy: 1 percent.
4. Calibration: Degrees F and Degrees C.

D. Thermometers: Dial type vapor or liquid actuated; ASTM E1; stainless steel case, with brass or copper bulb, copper or bronze braided capillary, white with black markings and black pointer, glass lens.
1. Size: 2-1/2 inch diameter dial.
2. Lens: Clear Lexan.
3. Length of Capillary: Minimum 5 feet.
4. Accuracy: 2 percent.
5. Calibration: Degrees F and Degrees C.

2.05 THERMOMETER SUPPORTS

A. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.

B. Flange: 3 inch outside diameter reversible flange, designed to fasten to sheet metal air ducts, with brass perforated stem.

2.06 TEST PLUGS

A. Test Plug: 1/4 inch or 1/2 inch brass or stainless steel fitting and cap for receiving 1/8 inch outside diameter pressure or temperature probe with neoprene core for temperatures up to 200 degrees F.

B. Test Plug: 1/4 inch or 1/2 inch brass or stainless steel fitting and cap for receiving 1/8 inch outside diameter pressure or temperature probe with Nordel core for temperatures up to 350 degrees F.

C. Test Plug: 1/4 inch or 1/2 inch brass or stainless steel fitting and cap for receiving 1/8 inch outside diameter pressure or temperature probe with Viton core for temperatures up to 400 degrees F.

D. Test Kit: Carrying case, internally padded and fitted containing one 2-1/2 inch diameter pressure gages, one gage adapters with 1/8 inch probes, two 1-1/2 inch dial thermometers.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide one pressure gage per pump, installing taps before strainers and on suction and discharge of pump. Pipe to gage.

C. Install pressure gages with pulsation dampers. Provide gage cock to isolate each gage. Extend nipples to allow clearance from insulation.

D. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch for installation of thermometer sockets. Ensure sockets allow clearance from insulation.

E. Install thermometer sockets adjacent to controls systems thermostat, transmitter, or sensor sockets. Refer to Section 23 09 23. Where thermometers are provided on local panels, duct or pipe mounted thermometers are provided on local panels, duct or pipe mounted thermometers are not required.

F. Coil and conceal excess capillary on remote element instruments.

G. Provide instruments with scale ranges selected according to service with largest appropriate scale.

H. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

I. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.

J. Locate test plugs adjacent thermometers and thermometer sockets, adjacent to pressure gages and pressure gage taps, adjacent to control device sockets and where indicated.

3.02 SCHEDULE

A. Pressure Gage Tappings, Location:
   1. Control valves 3/4 inch & larger - inlets and outlets.
   2. Major coils - inlets and outlets.

B. Stem Type Thermometers, Location and Scale Range:
   1. Headers to central equipment, 0 to 220 degrees F.

2. Coil banks - inlets and outlets, 0 to 220 degrees F.
3. After major coils, 0 to 220 degrees F.

C. Thermometer Sockets, Location:
1. Control valves 1 inch & larger - inlets and outlets.

D. Dial Thermometers, Location and Scale Range:
1. Each supply air zone, 0 to 150 degrees F.
2. Outside air, 0 to 120 degrees F.
3. Return air, 0 to 100 degrees F.
4. Mixed air, 0 to 100 degrees F.

E. Static Pressure and Filter Gauges, Location and Scale Range:
1. Built up filter banks, 0 to 3.0 inches W.C..
2. Unitary filter sections, 0 to 3.0 inches W.C..
3. Supply fan discharge, 0 to 3.0 inches W.C..

END OF SECTION

SECTION 23 05 53
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates.
B. Tags.
C. Stencils.
D. Pipe Markers.
E. Ceiling tacks.

1.02 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.03 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.
B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
D. Product Data: Provide manufacturers catalog literature for each product required.
E. Samples: Submit two labels, tags and pipe markers.
F. Manufacturer's Installation Instructions: Indicate special procedures, and installation.
G. Project Record Documents: Record actual locations of tagged valves.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

A. Air Handling Units: Nameplates.
B. Fans: Nameplates
C. Automatic Controls: Tags. Key to control schematic.
D. Control Panels: Nameplates.
E. Dampers: Ceiling tacks, where located above lay-in ceiling.
F. Ductwork: Stencilled painting.
G. Instrumentation: Nameplates
H. Major Control Components: Nameplates.
I. Piping: Pipe markers.
J. Relays: Nameplates
K. Small-sized Equipment: Nameplates
L. Thermostats: Nameplates.
M. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.02 MANUFACTURERS

A. Brady Corporation: www.bradycorp.com.
B. Champion America, Inc: www.Champion-America.com.
C. Seton Identification Products: www.seton.com/aec.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 NAMEPLATES

A. Description: Laminated three-layer plastic with engraved letters.
   1. Letter Color: White.
   2. Letter Height: 1/4 inch.
   3. Background Color: Black.

2.04 TAGS

A. Plastic Tags: Laminated three-layer plastic with engraved white letters on green contrasting background color. Tag size minimum 1-1/2 inch diameter.

B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

C. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.

2.05 STENCILS

A. Stencils: With clean cut symbols and letters of following size:
   1. 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 1/2 inch high letters.
   2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 3/4 inch high letters.
   3. 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color field, 1-1/4 inch high letters.
   4. 8 to 10 inch Outside Diameter of Insulation or Pipe: 24 inch long color field, 2-1/2 inch high letters.
   5. Over 10 inch Outside Diameter of Insulation or Pipe: 32 inch long color field, 3-1/2 inch high letters.
   6. Ductwork and Equipment: 2-1/2 inch high letters.

B. Stencil Paint: As specified in Section 09 90 00, semi-gloss enamel, colors conforming to ASME A13.1.

2.06 PIPE MARKERS

A. Color: Conform to ASME A13.1.

B. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

C. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

D. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.07 CEILING TACKS

A. Description: Steel with 3/4 inch diameter color coded head.

B. Color code as follows:
   1. HVAC Equipment: Yellow.
   2. Fire Dampers and Smoke Dampers: Red.
   3. Heating/Cooling Valves: Blue.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.02 INSTALLATION

A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Apply stencil painting in accordance with Section 09 90 00.

D. Install plastic pipe markers in accordance with manufacturer's instructions.

E. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

F. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

G. Identify air handling units, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.

H. Identify control panels and major control components outside panels with plastic nameplates.

I. Identify thermostats relating to terminal boxes or valves with nameplates.

J. Identify valves in main and branch piping with tags.

K. Identify air terminal units and radiator valves with numbered tags.

L. Tag automatic controls, instruments, and relays. Key to control schematic.

M. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

N. Identify ductwork with plastic nameplates or stencilled painting. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.

O. Locate ceiling tacks to locate valves or dampers above lay-in panel ceilings. Locate in corner of panel closest to equipment.

3.03 UNIT IDENTIFICATION SCHEDULE

A. Equipment Type: Exhaust Fan (EF)
   1. Identification: Tag (EF-X) where X = Unit number. Include manufacturer, model number, serial number, date of manufacturer start-up, date of manufacture, design airflow, voltage, frequency, phase
   2. Background:
      a. Size: As needed to contain information
      b. Color: Black
   3. Lettering:
      a. Size: 1/4 inch high
      b. Color: White
   4. Placement: As directed by Architect/Engineer

B. Equipment Type: Air Handling Unit (AHU)
   1. Identification: Tag (AHU-X) where X = Unit number. Include manufacturer, model number, serial number, date of manufacturer start-up, date of manufacture, refrigerant type (if applicable), voltage, frequency, phase
   2. Background:
      a. Size: As needed to contain information

b. Color: Black

3. Lettering:
   a. Size: 1/4 inch high
   b. Color: White
4. Placement: As directed by Architect/Engineer

END OF SECTION

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing, adjustment, and balancing of air systems.

B. Testing, adjustment, and balancing of hydronic, steam, and refrigerating as applicable systems.

C. Measurement of final operating condition of HVAC systems.

D. Sound measurement of equipment operating conditions.

E. Vibration measurement of equipment operating conditions.

F. Commissioning activities.

1.02 REFERENCE STANDARDS

A. AABC MN-1 - AABC National Standards for Total System Balance; Associated Air Balance Council.

B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems.

C. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems.

D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing.

1.03 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Installer Qualifications: Submit name of adjusting and balancing agency and TAB supervisor for approval within 30 days after award of Contract.

C. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
   1. Submit to Architect.
   2. Submit six weeks prior to starting the testing, adjusting, and balancing work.
   3. Include certification that the plan developer has reviewed the contract documents, the equipment and systems, and the control system with the Architect and other installers to sufficiently understand the design intent for each system.
   4. Include at least the following in the plan:
      a. Preface: An explanation of the intended use of the control system.
      b. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
      c. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
      d. Identification and types of measurement instruments to be used and their most recent calibration date.
      e. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
      f. Final test report forms to be used.
      g. Detailed step-by-step procedures for TAB work for each system and issue, including:
         1) Terminal flow calibration (for each terminal type).
         2) Diffuser proportioning.
         3) Branch/submain proportioning.
         4) Total flow calculations.

5) Rechecking.
6) Diversity issues.

h. Expected problems and solutions, etc.
i. Criteria for using air flow straighteners or relocating flow stations and sensors; analogous explanations for the water side.
j. Details of how TOTAL flow will be determined; for example:
1) Air: Sum of terminal flows via control system calibrated readings or via hood readings of all terminals, supply (SA) and return air (RA) pitot traverse, SA or RA flow stations.
2) Water: Pump curves, circuit setter, flow station, ultrasonic, etc.
k. Specific procedures that will ensure that both air and water side are operating at the lowest possible pressures and methods to verify this.
l. Confirmation of understanding of the outside air ventilation criteria under all conditions.
m. Method of verifying and setting minimum outside air flow rate will be verified and set and for what level (total building, zone, etc.).
n. Method of checking building static and exhaust fan and/or relief damper capacity.
o. Proposed selection points for sound measurements and sound measurement methods.
p. Methods for making coil or other system plant capacity measurements, if specified.
q. Time schedule for TAB work to be done in phases (by floor, etc.).
r. Description of TAB work for areas to be built out later, if any.
s. Time schedule for deferred or seasonal TAB work, if specified.
t. False loading of systems to complete TAB work, if specified.
u. Exhaust fan balancing and capacity verifications, including any required room pressure differentials.
v. Interstitial cavity differential pressure measurements and calculations, if specified.
w. Procedures for field technician logs of discrepancies, deficient or uncompleted work by others, contract interpretation requests and lists of completed tests (scope and frequency).
x. Procedures for formal progress reports, including scope and frequency.
y. Procedures for formal deficiency reports, including scope, frequency and distribution.

D. Field Logs: Submit at least twice a week to Studio JAED; Commissioning Authority and HVAC Controls Contractor.

E. Control System Coordination Reports: Communicate in writing to the controls installer all setpoint and parameter changes made or problems and discrepancies identified during TAB that affect, or could affect, the control system setup and operation.

F. Progress Reports.

G. AHU Pre-Demolition Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified or expected performance.
1. Submit to the Commissioning Authority; Studio JAED and HVAC Controls Contractor within one week after completion of testing, adjusting, and balancing.
2. Revise TAB plan to reflect actual procedures and submit as part of final report.
3. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
4. Provide reports in hard cover letter size 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

5. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
6. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
7. Units of Measure: Report data in I-P (inch-pound) units only.
8. Include the following on the title page of each report:
   a. Name of Testing, Adjusting, and Balancing Agency.
   b. Address of Testing, Adjusting, and Balancing Agency.
   c. Telephone number of Testing, Adjusting, and Balancing Agency.
   d. Project name.
   e. Project location.
   f. Project Engineer.
   g. Project altitude.
   h. Report date.

H. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
1. Submit to the Commissioning Authority; Studio JAED and HVAC Controls Contractor within two weeks after completion of testing, adjusting, and balancing.
2. Revise TAB plan to reflect actual procedures and submit as part of final report.
3. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
4. Provide reports in hard cover letter size 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.
5. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
6. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
7. Units of Measure: Report data in I-P (inch-pound) units only.
8. Include the following on the title page of each report:
   a. Name of Testing, Adjusting, and Balancing Agency.
   b. Address of Testing, Adjusting, and Balancing Agency.
   c. Telephone number of Testing, Adjusting, and Balancing Agency.
   d. Project name.
   e. Project location.
   f. Project Engineer.
   g. Project altitude.
   h. Report date.

I. Project Record Documents: Record actual locations of flow measuring stations and balancing valves and rough setting.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Perform total system balance in accordance with one of the following:
1. AABC MN-1, AABC National Standards for Total System Balance.
2. NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems.
3. SMACNA (TAB).
4. Maintain at least one copy of the standard to be used at project site at all times.

B. **NOTE**: This project requires AHU-Pre-Demolition TAB to be performed on all AHUs prior to demolition of them in addition to all of the other requirements of this section. Perform TAB for all air system procedures, hydronic system procedures, and steam. Provide TAB report to Architect/Engineer for review and approval prior to submission of submittals for AHUs.

C. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.

D. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.

E. TAB Agency Qualifications:
   1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
   2. Having minimum of three years documented experience.
   3. Certified by one of the following:
      a. AABC, Associated Air Balance Council: www.aabchq.com; upon completion submit AABC National Performance Guaranty.
      b. NEBB, National Environmental Balancing Bureau: www.nebb.org/#sle.
      c. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#sle.

F. TAB Supervisor Qualifications: Professional Engineer licensed in the State in which the Project is located.

3.02 EXAMINATION

A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
   1. Systems are started and operating in a safe and normal condition.
   2. Temperature control systems are installed complete and operable.
   3. Proper thermal overload protection is in place for electrical equipment.
   4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
   5. Duct systems are clean of debris.
   6. Fans are rotating correctly.
   7. Fire and volume dampers are in place and open.
   8. Air coil fins are cleaned and combed.
   9. Access doors are closed and duct end caps are in place.
   10. Air outlets are installed and connected.
   11. Duct system leakage is minimized.
   12. Hydronic systems are flushed, filled, and vented.
   13. Pumps are rotating correctly.
   14. Proper strainer baskets are clean and in place.
   15. Service and balance valves are open.

B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.

C. Beginning of work means acceptance of existing conditions.

3.03 PREPARATION

A. Hold a pre-balancing meeting at least one week prior to starting TAB work.
   1. Require attendance by all installers whose work will be tested, adjusted, or balanced.

B. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Architect to facilitate spot checks during testing.

C. Provide additional balancing devices as required.

3.04 ADJUSTMENT TOLERANCES

A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 5 percent of design for return and exhaust systems.

B. Air Outlets and Inlets: Adjust total to within plus 5 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 5 percent of design.

C. Hydronic Systems: Adjust to within plus or minus 10 percent of design.

3.05 RECORDING AND ADJUSTING

A. Field Logs: Maintain written logs including:
   1. Running log of events and issues.
   2. Discrepancies, deficient or uncompleted work by others.
   3. Contract interpretation requests.
   4. Lists of completed tests.

B. Ensure recorded data represents actual measured or observed conditions.

C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

D. Mark on drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.

E. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.

F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

G. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by the Owner.

H. Check and adjust systems approximately six months after final acceptance and submit report.

3.06 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.

B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.

I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

K. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.

L. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches positive static pressure near the building entries.

M. Check multi-zone units for motorized damper leakage. Adjust air quantities with mixing dampers set first for cooling, then heating, then modulating.

N. For variable air volume system powered units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.

O. On fan powered VAV boxes, adjust air flow switches for proper operation.

3.07 WATER SYSTEM PROCEDURE

A. Adjust water systems to provide required or design quantities.

B. Use calibrated Venturi tubes, orifices, or other metered fittings and pressure gauges to determine flow rates for system balance. Where flow metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.

C. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.

D. Effect system balance with automatic control valves fully open to heat transfer elements.

E. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.

F. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.

3.08 COMMISSIONING

A. See Section 23 08 00 for additional requirements.

B. Perform prerequisites prior to starting commissioning activities.

C. Fill out Prefunctional Checklists for:
   1. Air side systems.
   2. Water side systems.

D. Furnish to the Commissioning Authority, upon request, any data gathered but not shown in the final TAB report.

E. Re-check minimum outdoor air intake flows and maximum and intermediate total airflow rates for 20 percent of the air handlers plus a random sample equivalent to 20 percent of the final TAB report data as directed by Commissioning Authority.
   1. Original TAB agency shall execute the re-checks, witnessed by the Commissioning Authority.
   2. Use the same test instruments as used in the original TAB work.
   3. Failure of more than 10 percent of the re-checked items of a given system shall result in the rejection of the system TAB report; rebalance the system, provide a new system TAB report, and repeat random re-checks.
   4. For purposes of re-check, failure is defined as follows:

a. Air Flow of Supply and Return: Deviation of more than 10 percent of instrument reading.
b. Minimum Outside Air Flow: Deviation of more than 20 percent of instrument reading; for inlet vane or VFD OSA compensation system using linear proportional control, deviation of more than 30 percent at intermediate supply flow.
c. Temperatures: Deviation of more than one degree F.
d. Air and Water Pressures: Deviation of more than 10 percent of full scale of test instrument reading.
e. Sound Pressures: Deviation of more than 3 decibels, with consideration for variations in background noise.

5. For purposes of re-check, a whole system is defined as one in which inaccuracies will have little or no impact on connected systems; for example, the air distribution system served by one air handler or the hydronic chilled water supply system served by a chiller or the condenser water system.

F. In the presence of the Commissioning Authority, verify that:
1. Final settings of all valves, splitters, dampers and other adjustment devices have been permanently marked.
2. The air system is being controlled to the lowest possible static pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from fan to diffuser having all balancing dampers wide open and that during full cooling of all terminal units taking off downstream of the static pressure sensor, the terminal unit on the critical leg has its damper 90 percent or more open.
3. The water system is being controlled to the lowest possible pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from the pump to the coil having all balancing valves wide open and that during full cooling the cooling coil valve of that leg is 90 percent or more open.

3.09 SCOPE

A. Test, adjust, and balance the following:
1. Air Coils.
2. Air Handling Units.
3. Fans.
4. Air Filters.
5. Air Inlets and Outlets.

3.10 MINIMUM DATA TO BE REPORTED

A. Electric Motors:
1. Manufacturer
2. Model/Frame
3. HP/BHP
4. Phase, voltage, amperage; nameplate, actual, no load
5. RPM
6. Service factor
7. Starter size, rating, heater elements
8. Sheave Make/Size/Bore

B. V-Belt Drives:
1. Identification/location
2. Required driven RPM
3. Driven sheave, diameter and RPM
4. Belt, size and quantity

5. Motor sheave diameter and RPM
6. Center to center distance, maximum, minimum, and actual

C. Air Cooled Condensers:
1. Identification/number.
2. Location.
3. Manufacturer.
4. Model number.
5. Serial number.
6. Entering DB air temperature, design and actual.
7. Leaving DB air temperature, design and actual.
8. Number of compressors.

D. Cooling Coils:
1. Identification/number
2. Location
3. Service
4. Manufacturer
5. Air flow, design and actual
6. Entering air DB temperature, design and actual
7. Entering air WB temperature, design and actual
8. Leaving air DB temperature, design and actual
9. Leaving air WB temperature, design and actual
10. Water flow, design and actual
11. Water pressure drop, design and actual.
12. Entering water temperature, design and actual.
13. Leaving water temperature, design and actual.
14. Saturated suction temperature, design and actual
15. Air pressure drop, design and actual

E. Heating Coils:
1. Identification/number
2. Location
3. Service
4. Manufacturer
5. Air flow, design and actual
6. Water flow, design and actual
7. Water pressure drop, design and actual
8. Entering water temperature, design and actual
9. Leaving water temperature, design and actual
10. Entering air temperature, design and actual
11. Leaving air temperature, design and actual
12. Air pressure drop, design and actual

F. Air Moving Equipment:
1. Location
2. Manufacturer
3. Model number
4. Serial number
5. Arrangement/Class/Discharge
6. Air flow, specified and actual
7. Return air flow, specified and actual
8. Outside air flow, specified and actual
9. Total static pressure (total external), specified and actual

10. Inlet pressure
11. Discharge pressure
12. Sheave Make/Size/Bore
13. Number of Belts/Make/Size
14. Fan RPM

G. Return Air/Outside Air:
1. Identification/location
2. Design air flow
3. Actual air flow
4. Design return air flow
5. Actual return air flow
6. Design outside air flow
7. Actual outside air flow
8. Return air temperature
9. Outside air temperature
10. Required mixed air temperature
11. Actual mixed air temperature
12. Design outside/return air ratio
13. Actual outside/return air ratio

H. Exhaust Fans:
1. Location.
2. Manufacturer.
3. Model number.
4. Serial number.
5. Air flow, specified and actual.
6. Total static pressure (total external), specified and actual.
7. Inlet pressure.
8. Discharge pressure.
9. Sheave Make/Size/Bore.
10. Number of Belts/Make/Size.
11. Fan RPM.

I. Duct Traverses:
1. System zone/branch
2. Duct size
3. Area
4. Design velocity
5. Design air flow
6. Test velocity
7. Test air flow
8. Duct static pressure
9. Air temperature
10. Air correction factor

J. Duct Leak Tests:
1. Description of ductwork under test
2. Duct design operating pressure
3. Duct design test static pressure
4. Duct capacity, air flow
5. Maximum allowable leakage duct capacity times leak factor
6. Test apparatus
    a. Blower

b. Orifice, tube size
c. Orifice size
d. Calibrated

7. Test static pressure
8. Test orifice differential pressure
9. Leakage

K. Air Monitoring Stations:
1. Identification/location
2. System
3. Size
4. Area
5. Design velocity
6. Design air flow
7. Test velocity
8. Test air flow

L. Flow Measuring Stations:
1. Identification/number
2. Location
3. Size
4. Manufacturer
5. Model number
6. Serial number
7. Design Flow rate
8. Design pressure drop
9. Actual/final pressure drop
10. Actual/final flow rate
11. Station calibrated setting

M. Terminal Unit Data:
1. Manufacturer
2. Type, constant, variable, single, dual duct
3. Identification/number
4. Location
5. Model number
6. Size
7. Minimum static pressure
8. Minimum design air flow
9. Maximum design air flow
10. Maximum actual air flow
11. Inlet static pressure

END OF SECTION

SECTION 23 07 13
DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Duct insulation.

B. Duct Lagging.

C. Insulation jackets.

1.02 RELATED REQUIREMENTS

A. Section 09 90 00 - Painting and Coating: Painting insulation jackets.

B. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

C. Section 23 05 53 - Identification for HVAC Piping and Equipment.

D. Section 23 31 00 - HVAC Ducts and Casings: Glass fiber ducts.

1.03 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

C. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

D. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.

E. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

F. ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation.

G. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material).

H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

I. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

K. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association.

L. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.

M. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

B. Manufacturer's Instructions: Indicate installation procedures necessary to ensure acceptable workmanship and that installation standards will be achieved.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section with not less than three years of documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of experienceand approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.07 FIELD CONDITIONS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

2.02 GLASS FIBER, FLEXIBLE

A. Manufacturer:
   1. Knauf Insulation: www.knaufusa.com.
   2. Johns Manville Corporation: www.jm.com/#sle.
   3. Owens Corning Corp: www.owenscorning.com/#sle.
   4. CertainTeed Corporation: www.certainteed.com/#sle.

B. Insulation: ASTM C553; flexible, noncombustible blanket.
   1. K value: 0.25 at 75 degrees F, when tested in accordance with ASTM C518.
   2. Minimum "R" Value: Minimum R value of (8) is required for interior installations and a minimum R value of (12) is required for exterior installations.
   3. Maximum Service Temperature: 450 degrees F.
   4. Maximum Water Vapor Sorption: 5.0 percent by weight.

C. Vapor Barrier Jacket:
   1. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
   2. Secure with pressure sensitive tape.

D. Vapor Barrier Tape:
   1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Outdoor Vapor Barrier Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

F. Tie Wire: Annealed steel, 16 gage.

2.03 GLASS FIBER, RIGID

A. Manufacturer:
   1. Knauf Insulation: www.knaufusa.com.
   2. Johns Manville Corporation: www.jm.com/#sle.
   3. Owens Corning Corp: www.owenscorning.com.
   4. CertainTeed Corporation: www.certainteed.com/#sle.

B. Insulation: ASTM C612; rigid, noncombustible blanket.
   1. K Value: 0.24 at 75 degrees F, when tested in accordance with ASTM C518.

2. Minimum "R" Value: Minimum R value of (8) is required for interior installations and a minimum R value of (12) is required for exterior installations.
3. Maximum service temperature: 450 degrees F.
4. Maximum Water Vapor Sorption: 5.0 percent.

C. Vapor Barrier Jacket:
1. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
2. Secure with pressure sensitive tape.

D. Vapor Barrier Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Indoor Vapor Barrier Finish:
1. Cloth: Untreated; 9 oz/sq yd weight, glass fabric.
2. Vinyl emulsion type acrylic, compatible with insulation, black color.

2.04 JACKETS

A. Canvas Jacket: UL listed 6 oz/sq yd plain weave cotton fabric treated with dilute fire retardant lagging adhesive.
1. Lagging Adhesive:
a. Compatible with insulation.

B. Aluminum Jacket: ASTM B209 (ASTM B209M).
1. Thickness: 0.016 inch sheet.
2. Finish: Embossed.
3. Joining: Longitudinal slip joints and 2 inch laps.
4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.
6. Metal Jacket Bands: 3/8 inch wide; 0.010 inch thick stainless steel.

2.05 DUCT LAGGING

A. Manufacturers:
1. Sound Seal: www.soundseal.com
2. Kinetics Noise Control: www.kineticsnoise.com.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Lagging: Loaded vinyl noise barrier with a scrim reinforced aluminum foil facing on one side with a 1" thick fiberglass decoupler.
1. Apparent Thermal Conductivity: Maximum of.25 at 75 degrees F
2. Service Temperature: Up to 350 degrees F.

C. Adhesive: Waterproof, fire-retardant type, ASTM C916.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that ducts have been tested before applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Insulated ducts conveying air below ambient temperature:
1. Provide insulation with vapor barrier jackets.
2. Finish with tape and vapor barrier jacket.

3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

D. Insulated ducts conveying air above ambient temperature:
1. Provide with or without standard vapor barrier jacket.
2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

E. Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with aluminum jacket and paint per architect's specifications unless noted otherwise.

F. Exterior Applications: Provide insulation with vapor barrier jacket. Cover with with calked aluminum jacket with seams located on bottom side of horizontal duct section. Provide tapered caps on all horizontal ducts for shedding water.

G. External Duct Insulation Application:
1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
2. Secure insulation without vapor barrier with staples, tape, or wires.
3. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

3.03 SCHEDULES

A. INDOOR DUCT AND PLENUM APPLICATION SCHEDULE
1. NOTE: Apply duct lagging where indicated on drawings.
2. Service: Round, supply-air ducts, concealed.
   a. Material: Glass fiber blanket.
   b. Thickness: 2 inches.
   c. Minimum "R" value: 8.
   d. Jacket: Foil and paper.
   e. Vapor Retarder Required: Yes.
3. Service: Round, return-air ducts, concealed.
   a. Material: Glass fiber blanket.
   b. Thickness: 2 inches.
   c. Minimum "R" value: 8.
   d. Jacket: Foil and paper.
   e. Vapor Retarder Required: No.
4. Service: Round, outside-air ducts, concealed.
   a. Material: Glass fiber blanket
   b. Thickness: 2 inches.
   c. Minimum "R" value: 8.
   d. Jacket: Foil and paper.
   e. Vapor Retarder Required: Yes.
5. Service: Rectangular, supply-air ducts, concealed.
   a. Material: Glass fiber blanket
   b. Thickness: 2 inches.
   c. Minimum "R" value: 8.
   d. Jacket: Foil and paper.
   e. Vapor Retarder Required: Yes.
6. Service: Rectangular, return-air ducts, concealed.

a. Material: Glass fiber blanket
b. Thickness: 2 inches.
c. Minimum "R" value: 8.
d. Jacket: Foil and paper.
e. Vapor Retarder Required: No.

7. Service: Rectangular, outside-air ducts, concealed.
   a. Material: Glass fiber blanket
   b. Thickness: 2 inches.
   c. Minimum "R" value: 8.
   d. Jacket: Foil and paper.
   e. Vapor Retarder Required: Yes.
8. Service: Round, supply-air ducts, exposed.
   a. Material: Glass fiber blanket
   b. Thickness: 2 inches.
   c. Minimum "R" value: 8.
   d. Jacket: Spiral-wound steel, paintable.
   e. Vapor Retarder Required: Yes.
   f. NOTE: Provide double-walled spiral ductwork in areas not concealed above ceilings. and where noted.
9. Service: Round, return-air ducts, exposed.
   a. Material: Glass fiber blanket.
   b. Thickness: 2 inches.
   c. Minimum "R" value: 8.
   d. Jacket: Spiral-wound steel, paintable.
   e. Vapor Retarder Required: No.
   f. NOTE: Provide double-walled spiral ductwork in areas not concealed above ceilings. and where noted.
10. Service: Round, outside-air ducts, exposed.
    a. Material: Glass fiber blanket.
    b. Thickness: 2 inches.
    c. Minimum "R" value: 8.
    d. Jacket: Spiral-wound steel, paintable.
    e. Vapor Retarder Required: Yes.
    f. NOTE: Provide double-walled spiral ductwork in areas not concealed above ceilings. and where noted.
11. Service: Rectangular, supply-air ducts, exposed.
    a. Material: Glass fiber board.
    b. Thickness: 2 inches.
    c. Minimum "R" value: 8.
    d. Jacket: Aluminum, painted to architects specifications.
    e. Vapor Retarder Required: Yes.
12. Service: Rectangular, return-air ducts, exposed.
    a. Material: Glass fiber board.
    b. Thickness: 2 inches.
    c. Minimum "R" value: 8.
    d. Jacket: Aluminum, painted to architects specifications.
    e. Vapor Retarder Required: No.
13. Service: Rectangular, outside-air ducts, exposed.
    a. Material: Glass fiber board.
    b. Thickness: 2 inches.
    c. Minimum "R" value: 8.

d. Jacket: Canvas, painted to architects specifications.
e. Vapor Retarder Required: Yes.

14. Service: Rectangular, range-hood exhaust ducts, concealed.
    a. Material: Calcium silicate.
    b. Thickness: 2 inches.
    c. Field-Applied Jacket: Glass cloth.
    d. Vapor Retarder Required: No.
15. Service: Rectangular, range-hood exhaust ducts, exposed.
    a. Material: Calcium silicate.
    b. Thickness: 2 inches.
    c. Field Applied Jacket: Stainless steel.
    d. Vapor Retarder Required: No.

B. OUTDOOR DUCT AND PLENUM APPLICATION SCHEDULE

1. Service: Round, supply-air ducts.
    a. Material: Glass fiber board.
    b. Thickness: 3 inches.
    c. Minimum "R" value: 12.
    d. Field-Applied Jacket: aluminum
        1) Aluminum Thickness: 0.032 inch
    e. Vapor Retarder Required: Yes.
2. Service: Round, return-air ducts.
    a. Material: Glass fiber board.
    b. Thickness: 3 inches.
    c. Minimum "R" value: 12.
    d. Field-Applied Jacket: aluminum
        1) Aluminum Thickness: 0.032 inch
    e. Vapor Retarder Required: Yes.
3. Service: Rectangular, supply-air ducts.
    a. Material: Glass fiber board.
    b. Thickness: 3 inches.
    c. Minimum "R" value: 12.
    d. Field-Applied Jacket: aluminum
        1) Aluminum Thickness: 0.032 inch
    e. Vapor Retarder Required: Yes.
4. Service: Rectangular, return-air ducts.
    a. Material: Glass fiber board.
    b. Thickness: 3 inches.
    c. Minimum "R" value: 12.
    d. Field-Applied Jacket: aluminum
        1) Aluminum Thickness: 0.032 inch
    e. Vapor Retarder Required: Yes.

END OF SECTION

SECTION 23 07 19
HVAC PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping insulation.

B. Jackets and accessories.

1.02 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

C. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.

D. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement.

E. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.

F. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

G. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.

H. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.

I. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.

J. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation.

K. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.

L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

M. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

N. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association.

O. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.03 SUBMITTALS

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

B. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum three years of experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.06 FIELD CONDITIONS

A. Maintain ambient conditions required by manufacturers of each product.

B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS

2.01 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

2.02 GLASS FIBER

A. Manufacturers:
   1. Knauf Insulation: www.knaufusa.com.
   2. Johns Manville Corporation: www.jm.com.
   3. Owens Corning Corp: www.owenscorning.com.
   4. CertainTeed Corporation: www.certainteed.com.

B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
   1. 'K' value: ASTM C177, 0.24 at 75 degrees F.
   2. Maximum service temperature: 850 degrees F.
   3. Maximum moisture absorption: 0.2 percent by volume.

C. Insulation: ASTM C547 and ASTM C795; semi-rigid, noncombustible, end grain adhered to jacket.
   1. 'K' value: ASTM C177, 0.24 at 75 degrees F.
   2. Maximum service temperature: 650 degrees F.
   3. Maximum moisture absorption: 0.2 percent by volume.

D. Vapor Barrier Jacket: White kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches.

E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

F. Vapor Barrier Lap Adhesive:
   1. Compatible with insulation.

G. Insulating Cement/Mastic:
   1. ASTM C195; hydraulic setting on mineral wool.

H. Fibrous Glass Fabric:
   1. Cloth: Untreated; 9 oz/sq yd weight.
   2. Blanket: 1.0 lb/cu ft density.
   3. Weave: 5x5.

I. Indoor Vapor Barrier Finish:
   1. Cloth: Untreated; 9 oz/sq yd weight.
   2. Vinyl emulsion type acrylic, compatible with insulation, black color.

J. Outdoor Vapor Barrier Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

K. Outdoor Breather Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

L. Insulating Cement:
   1. ASTM C449/C449M.

2.03 CELLULAR GLASS

A. Manufacturers:

1. Pittsburgh Corning Corporation: www.foamglasinsulation.com/#sle.
2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Insulation: ASTM C552, Type 1.
1. Apparent Thermal Conductivity; 'K' value: Grade 6, 0.33 at 100 degrees F.
2. Service Temperature: Up to 800 degrees F.
3. Water Vapor Permeability: 0.005 perm inch.
4. Water Absorption: 0.5 percent by volume, maximum.

2.04 HYDROUS CALCIUM SILICATE

A. Manufacturers:
1. Johns Manville Corporation: www.jm.com/#sle.
2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Insulation: ASTM C533 and ASTM C795; rigid molded, asbestos free, gold color.
1. 'K' value: 2 and C518; 0.40 at 300 degrees F, when tested in accordance with 2 or 1.
2. Maximum service temperature: 1200 degrees F.
3. Density: 15 lb/cu ft.

C. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

D. Insulating Cement:
1. ASTM C449/C449M.

2.05 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturer:
1. Aeroflex USA, Inc; Aerocel Ultra-Low Perm (ULP): www.aeroflexusa.com/#sle.
2. Armacell LLC: www.armacell.us.
3. K-Flex USA LLC; K-Flex Titan: www.kflexusa.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 3; use molded tubular material wherever possible.
1. Minimum Service Temperature: -40 degrees F.
2. Maximum Service Temperature: 220 degrees F.
3. Connection: Waterproof vapor barrier adhesive.

C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

2.06 JACKETS

A. PVC Plastic.
1. Manufacturers:
a. Johns Manville Corporation: www.jm.com/#sle.
b. Substitutions: See Section 01 60 00 - Product Requirements.
2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
a. Minimum Service Temperature: 0 degrees F.
b. Maximum Service Temperature: 150 degrees F.
c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
d. Thickness: 10 mil.
e. Connections: Brush on welding adhesive.
3. Covering Adhesive Mastic:
a. Compatible with insulation.

B. Aluminum Jacket: ASTM B209 (ASTM B209M) formed aluminum sheet.
1. Thickness: 0.016 inch sheet.
2. Finish: Smooth.

3. Joining: Longitudinal slip joints and 2 inch laps.
4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
5. Metal Jacket Bands: 3/8 inch wide; 0.010 inch thick stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that piping has been tested before applying insulation materials.

B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Exposed Piping: Locate insulation and cover seams in least visible locations.

D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.

E. Glass fiber insulated pipes conveying fluids below ambient temperature:
1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.

F. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.

G. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.

H. Glass fiber insulated pipes conveying fluids above ambient temperature:
1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

I. Inserts and Shields:
1. Application: Piping 1-1/2 inches diameter or larger.
2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
3. Insert location: Between support shield and piping and under the finish jacket.
4. Insert configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
5. Insert material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.

J. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 84 00.

K. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping. Provide two coats of UV resistant finish for flexible elastomeric cellular insulation without jacketing.

L. Heat Traced Piping: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

3.03 SCHEDULE

A. PIPING INSULATION SCHEDULES
   1. General: Abbreviations used in the following schedules include:
      a. Field Applied Jackets: P - PVC, K-Foil and Paper, A - Aluminum, SS - Stainless Steel.
      b. Piping Sizes: NPS - Nominal Pipe Size.

B. INTERIOR PIPING APPLICATION SCHEDULE
   1. Service: Equipment drains, overflows, and condensate drains.
      a. Operating Temperature: 45 to 75 deg F.
      b. Insulation Material: Flexible elastomeric.
      c. Insulation Thickness: 0.5 inch.
      d. Jacket: None.
      e. Vapor Retarder Required: Yes.
      f. Finish: None.
   2. Service: Chilled-water and dual-temperature supply and return.
      a. Operating Temperature: 40 to 185 deg F.
      b. Insulation Material: Mineral fiber or glass fiber
      c. Insulation Thickness: Apply the following insulation thicknesses:
         1) Pipe, 1” or less: 1.5 inch.
         2) Pipe, 1 ¼” and up: 1.5 inch.
         3) Pipe, 4” and up: 2.0 inch.
      d. Jacket: None.
      e. Vapor Retarder Required: Yes.
      f. Finish: none
   3. Service: Refrigerant suction, liquid, and hot-gas piping.
      a. Operating Temperature: 35 to 140 deg F.
      b. Insulation Material: Flexible elastomeric.
      c. Insulation Thickness: Apply the following insulation thicknesses:
         1) Pipe, 1” or less: 1.0 inch.
         2) Pipe, 1-1/4” and up: 1.5 inch.
      d. Jacket: None.
      e. Vapor Retarder Required: Yes.
      f. Finish: None.
   4. Service: Heating hot-water supply and return.
      a. Operating Temperature: 100 to 200 deg F.
      b. Insulation Material: Mineral fiber or glass fiber.
      c. Insulation Thickness: Apply the following insulation thicknesses:
         1) Pipe, 1” or less: 1.5 inch.
         2) Pipe, 1-1/4” to 4”: 1.5 inch.
         3) Pipe, 4” and up: 2.0 inch.
      d. Jacket: None.
      e. Vapor Retarder Required: No.
      f. Finish: None.
   5. Low Pressure Steam Supply Piping and Steam Condensate Piping:
      a. Operating Temperature: 200 to 275 deg F
      b. Insulation Material: Mineral Fiber or Calcium Silicate
      c. Insulation Thickness
         1) Pipe Diameter < 1" = 2"
         2) 1-1/4" < Pipe Diameter < 4" = 2-1/2"
         3) Pipe Diameter > 4" = 3"

d. Jacket: Aluminum
e. Finish: None

C. EXTERIOR PIPING INSULATION APPLICATION SCHEDULE

D. Service: Refrigerant suction, liquid, and hot gas piping.
1. Operating Temperature: 35 to 140 deg F.
2. Insulation Material: Flexible elastomeric.
3. Insulation Thickness: Apply the following insulation thicknesses:
a. Pipe, 1” or less: 1.0 inch.
b. Pipe, 1-1/4” to 2”: 1.5 inch.
c. Pipe, 2-1/2” and up: 1.5 inch.
4. Jacket: Aluminum.
5. Vapor Retarder Required: Yes.
6. Finish: None.

E. Service: Chilled-water and dual temperature supply and return.
1. Operating Temperature: 35 to 250 deg F.
2. Insulation Material: Cellular glass, with jacket.
3. Insulation Thickness: Apply the following insulation thicknesses:
a. Pipe, Any pipe size: 2.0 inch.
4. Field-Applied Jacket: Aluminum.
5. Vapor Retarder Required: Yes.
6. Finish: None.

F. Service: Heating hot-water supply and return.
1. Operating Temperature: 100 to 250 deg F.
2. Insulation Material: Mineral fiber
3. Insulation Thickness: Apply the following insulation thicknesses:
a. Pipe, 1” or less: 2.0 inch.
b. Pipe, 1-1/4” to 4”: 3.0 inch.
c. Pipe, 5” and up: 4.0 inch.
4. Field-Applied Jacket: Aluminum.
5. Vapor Retarder Required: No.
6. Finish: None.

END OF SECTION

SECTION 23 09 13
INSTRUMENTATION AND CONTROL DEVICES FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thermostats, Temperature Sensors.

B. Automatic dampers.

C. Control Valves and Actuators

D. Damper operators.

E. Miscellaneous accessories.

1.02 RELATED REQUIREMENTS

A. Section 23 21 13 - Hydronic Piping: Installation of control valves, flow switches, temperature sensor sockets, gage taps.

B. Section 23 33 00 - Air Duct Accessories: Installation of automatic dampers.

C. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

D. Section 23 09 23 - Direct-Digital Control System for HVAC.

E. Section 23 09 93 - Sequence Of Operations

1.03 REFERENCE STANDARDS

A. Input/Output Sensors:

B. AMCA 500-D - Laboratory Methods of Testing Dampers for Rating.

C. ANSI/FCI 70-2 - Control Valve Seat Leakage.

D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

E. ASTM B32 - Standard Specification for Solder Metal.

F. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

G. ASTM D1693 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.

H. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

I. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association.

J. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.

C. Shop Drawings: Indicate complete operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system.

D. Manufacturer's Instructions: Provide for all manufactured components.

E. Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors.
   1. Revise shop drawings to reflect actual installation and operating sequences.

F. Operation and Maintenance Data: Include inspection period, cleaning methods, recommended cleaning materials, and calibration tolerances.

G. Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors.
   1. Revise shop drawings to reflect actual installation and operating sequences.

H. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner s name and registered with manufacturer.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design system under direct supervision of a Professional Engineer experienced in design of this work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 EQUIPMENT - GENERAL

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

2.02 CONTROL PANELS

A. Unitized cabinet type for each system under automatic control with relays and controls mounted in cabinet and temperature indicators, pressure gauges, pilot lights, push buttons and switches flush on cabinet panel face.

B. NEMA 250, general purpose utility enclosures with enamelled finished face panel.

C. Provide common keying for all panels.

2.03 CONTROL VALVES

A. Ball Valves and Actuators:
   1. Service: Use for brine (30 percent glycol), chilled water, hot water, or steam at 15 to 25 psig (104.4 to 172.4).
   2. Flow Characteristic: Include 2-way and 3-way diverting operation configured to fail normally closed (NC).
   3. Replacements in Kind: Provide pressure-independent type.
   4. Rangeability: 500 to 1.
   5. ANSI Rating: Class 150.
   6. Leakage: Class IV (0.1 percent of rated capacity) per ANSI/FCI 70-2.
   7. Body Size:
      a. Under 2-1/2 inches:
         1) Connection: NPT.

2) Materials:
   (a) Body: Brass.
   (b) Flanges: Ductile iron.
   (c) Ball: Chrome-plated brass.
   (d) Stem: Nickel-plated brass.
   (e) Seat: Graphite-reinforced PTFE with EPDM O-Ring backing.
   (f) Stem Seal: EPDM O-Rings.
   (g) Flow Control Disk: Thermoplastic synthetic-resin.

b. 2-1/2 inches and Above:
   1) Connection Type: Flanged.
   2) Materials:
      (a) Body: Brass.
      (b) Flanges: Ductile iron.
      (c) Ball: 300 series stainless steel.
      (d) Stem: 300 series stainless steel.
      (e) Seat: Graphite-reinforced PTFE with EPDM O-Ring backing.
      (f) Stem Seal: EPDM O-Rings.
      (g) Flow Control Disk: Thermoplastic synthetic-resin.

c. Service Temperature:
   1) Fluid Side: 0 to 284 degrees F liquid or 25 psig steam.
   2) Ambient Side: From minus 4 to 122 degrees F.

8. Actuator Requirements:
   a. Assembly: Factory-mounted.
   b. Input: 0 to 5 VDC configured for proportional control.
   c. Accessories: Provide with valve position indicator and manual override.

B. Pressure Independent Balancing and Control Valves:
   1. Application: Fan Coils,radiant units, chilled beams, and other terminal units.,
   2. Pressure independent balancing and control valves shall combine the functions of control, balancing, presetting, measuring, shut-off and differential pressure control in one valve body to maintain full controllability at any opening positions of the control part regardless of any pressure variations in other parts of the systems through the lifecycle of heating and cooling systems.
   3. Manufacturers
      a. IMI-TA/Tour & Andersson/TA Hydronics Model COMPACT-P or approved equal by Owner and Engineer. Application for approval required at least 10 days prior to bid opening.
   4. Design
      a. The valve shall have an in-built linear control valve characteristic, best suited for on-off control.
      b. The valve shall have flow balancing, isolation, a two-way control valve and differential pressure regulator in the same body.
      c. The valve shall have an integrated differential pressure controller to maintain full controllability at any opening of the control part regardless of pressure changes in the system up to the max Dp rating of the valve (58 psi).
      d. The valve isolation for system maintenance should be achieved by the control actuator or through the in-built dial position.
      e. The valve internals shall have a plug and seat for balancing and controlling flow from the regulated position.
      f. The valve should be able to have an in-built manual adjustment to preset maximum flow values in the field in a conventional manner. The adjustment mechanism should be covered with the actuator during the operation to prevent tampering.

g. The valve shall have a capability of bypassing DP controller to enable measurement of available head.
h. The valve shall have a capability to measure the flow, temperature, pressure drop and available head directly through the standard pressure and temperature ports available on the front side of the valve body.
i. The pressure independent balancing and control valve for small terminal units shall have a startup pressure of no more than 2.2 psi (1/2" and ¾") and no more than 3.7 psi (1" and 1 ¼").
j. The pressure independent balancing and control valve for small terminal units shall require no maintenance and shall not include replaceable cartridges.
k. The valves shall be available with a Normally Open or Normally Closed on-off actuator (IMI-TA Model. EMO-T) having a M30 X 1.5 threads on the actuator-locking nut. (Normally closed modulating actuator (IMI-TA Model. EMO-TM) may be installed directly on the valve via the M30 X 1.5 threads if desired.)
l. The valve shall have availability of different connections like female NPT and female SWT connections available via a union connection nut.

5. Size:
   a. Pressure Independent Balancing and Control valve shall be available in following sizes and connections:
      1) Valve size ½" - Connections ½" FPT/SWT
      2) Valve size ¾" - Connections ½" FPT/SWT, ¾" FPT/SWT
      3) Valve size 1" - Connections ½" FPT/SWT, ¾" FPT/SWT, 1" FPT/SWT
      4) Valve size 1 ¼" - Connections 1" FPT/SWT, 1 ¼" FPT/SWT
6. Material and Construction
   a. The valve body and the self-sealing pressure test points shall be made of a dezincification resistant alloy
   b. The insert and plug shall consists of Stainless Steel and/or Ametal® material
   c. The return spring shall be stainless steel
   d. The valve insert shall be dezincification resistant alloy (Ametal®) and PPS (polyphenylsulphide)
   e. The valve spindle shall be of Stainless Steel
   f. The valve shall be fitted with two standard PT test points.
7. Testing and Ratings
   a. Tests- Valves shall be leak proof and tested at 85 psi of air.
   b. Ratings
   c. The valves shall be rated for a pressure class of PN 16 (230 psi) at 32°F to 176 °F
8. Installation
   a. Install in accordance with manufacturer's instructions.
9. Measuring and Verification
   a. Flow shall be measured at each combined control and balancing valve for small terminal units, through the available P/T ports on the body and the use of IMI-TA balancing instrument Model TA-SCOPE by having the actuator fully open.
10. Packaging
    a. The valves and actuators shall be shipped in individual boxes combined in a single package box.

C. Butterfly Pattern:

2.04 DAMPERS

A. Performance: Test in accordance with AMCA 500-D.

B. Frames: Galvanized steel, welded or riveted with corner reinforcement, minimum 12 gage.

C. Blades: Galvanized steel, maximum blade size 8 inches wide, 48 inches long, minimum 22 gage, attached to minimum 1/2 inch shafts with set screws.

D. Blade Seals: Synthetic elastomeric inflatable mechanically attached, field replaceable.

E. Jamb Seals: Spring stainless steel.

F. Shaft Bearings: Oil impregnated sintered bronze.

G. Linkage Bearings: Oil impregnated sintered bronze.

H. Leakage: Less than one percent based on approach velocity of 2000 ft/min and 4 inches wg.

I. Maximum Pressure Differential: 6 inches wg.

J. Temperature Limits: -40 to 200 degrees F.

2.05 DAMPER OPERATORS

A. General: Provide smooth proportional control with sufficient power for air velocities 20 percent greater than maximum design velocity and to provide tight seal against maximum system pressures. Provide spring return for two position control and for fail safe operation.
   1. Provide sufficient number of operators to achieve unrestricted movement throughout damper range.
   2. Provide one operator for maximum 36 sq ft damper section.

B. Electric Operators:
   1. Spring return, adjustable stroke motor having oil immersed gear train, with auxiliary end switch.

2.06 INPUT/OUTPUT SENSORS

A. Temperature Sensors:
   1. Room temperature sensors shall be field-installed flat plate sensors with no possible adjustment or display. VRF unit controllers shall be mounted above the ceiling at the unit and a flat-plate temperature sensor is to be extended and wall-mounted within the space by the BAS contractor. Security screws shall be used in institutional settings as deemed necessary by the design engineer. ATC contractor shall coordinate requirements with the design engineer during the submittal process. Provide insulated base. Following sensing elements are acceptable:
      a. Sensing element - Platinum RTD, Thermistor, or integrated circuit, +/- 0.8°F accuracy at calibration point.
   2. Single point duct temperature sensor shall consist of sensing element, junction box for wiring connections and gasket to prevent air leakage or vibration noise. Temperature range as required for resolution indicated in paragraph A. Sensor probe shall be 316 stainless steel.
      a. Sensing element - Platinum RTD, Thermistor, or integrated circuit, +/- 0.8°F accuracy at calibration point.
   3. Averaging duct temperature sensor shall consist of an averaging element, junction box for wiring connections and gasket to prevent air leakage. Provide enough sensors to give one lineal foot of sensing element for each square foot of cooling coil face area. Temperature range as required for resolution indicated in paragraph A.
      a. Sensing element - Platinum RTD, Thermistor, or integrated circuit, +/- 0.8°F accuracy at calibration point.
   4. Liquid immersion temperature sensor shall include stainless steel thermowell, sensor and connection head for wiring connections.
      a. Sensing element for chilled water applications - Platinum RTD, Thermistor, or integrated circuit, +/- 0.8°F accuracy at calibration point. Temperature range shall be as required for resolution indicated in paragraph A.

b. Sensing element for non-chilled water applications - Platinum RTD, +/- 0.2°F accuracy at calibration point. Temperature range shall be as required for resolution of no worse than 0.1°F.

5. Room SensorsCovers: Locking with slide-bar set point adjustment, and concealed setpoint, without thermometer.

B. Humidity Sensors:

1. Duct Mounted Sensor: Voltage type encased in a die-cast metal, weather-proof housing.
   a. Input Power, Voltage Type: Class 2; 12-30 VDC/24 VAC, 15mA max.
   b. Input Power, mA Type: Class 2; Loop powered 12-30 VDC only, 30 mA max.
   c. Output Voltage type: 3-wire observed polarity.
   d. Output mA type: 2-wire, not polarity sensitive (clipped and capped).
   e. Humidity:
      1) HS Element: Digitally profiled thin-film capacitive.
      2) Accuracy 1 percent at 10 to 90 percent relative humidity at 77 degrees F, multi-point calibration, NIST traceable.
         (a) Plus/minus 1 percent at 20-40 percent RH in mA output mode; (multi-point calibration, NIST traceable).
      3) Scaling: 0-100 percent RH.
   f. Temperature Effect:
      1) Duct Mounted: Plus/minus 0.18 percent per degree F.
      2) Outdoor Mounted: 4-20mA version: (0.0013x%RHx(TdegreeC-25)).
   g. Hysteresis: 1.5 percent typical.
   h. Linearity: Included in accuracy specification.
   i. Reset Rate: 24 hours.
   j. Stability: Plus/minus 1 percent @ 68 degrees F (20 degrees C) annually, for two years.
   k. Temperature Monitoring:
      1) Temperature Transmitter Output: Digital, 4-20mA (clipped & capped) or 0-5V/0-10V output.
         (a) HO Transmitter Accuracy: Plus/minus 2.3 degrees F.
         (b) HD Transmitter Accuracy: Plus/minus 1.0 degree F.
   l. Operating Environment:
      1) Operating Humidity Range: 0 to 100 percent RH noncondensing.
      2) Operating Temperature Range: Minus 40 degrees F to 122 degrees F.
2. Wall Mounted Sensor: Voltage type encased in a High impact ABS plastic housing.
   a. Input Power, Voltage Type: Class 2; 12-24 VDC/24 VAC.
3. Elements: Accurate within 5 percent full range with linear output.
4. Room Sensors: With locking cover , span of 10 to 60 percent relative humidity.
5. Duct and Outside Air Sensors: With element guard and mounting plate, range of 0 - 100 percent relative humidity.

C. Damper Position Indication: Potentiometer mounted in enclosure with adjustable crank arm assembly connected to damper to transmit 0 - 100 percent damper travel.

D. Equipment Operation Sensors:

1. Status Inputs for Fans: Differential pressure switch with adjustable range of 0 to 5 inches wg.
2. Status Inputs for Pumps: Differential pressure switch piped across pump with adjustable pressure differential range of 8 to 60 psi.
3. Status Inputs for Electric Motors: Current sensing relay with current transformers, adjustable and set to 175 percent of rated motor current.

E. Carbon Dioxide Level Sensors:

1. Wall or duct-mounted as required by control sequence or plans.
2. Demand-control ventilation sensor for measuring and transmitting CO2 levels ranging from 0-2,000 ppm.
3. Single-beam, dual-wavelength design with five-year stability for calibration..
4. Proportional output, 4-20 mA signal.

2.07 THERMOSTATS

A. Line Voltage Thermostats:
   1. Integral manual On/Off/Auto selector switch, single or two pole as required.
   2. Dead band: Maximum 2 degrees F.
   3. Cover: Locking with set point adjustment, with thermometer.
   4. Rating: Motor load.

B. Outdoor Reset Thermostat:
   1. Remote bulb or bimetal rod and tube type, proportioning action with adjustable throttling range, adjustable setpoint.
   2. Scale range: -10 to 70 degrees F.

C. Airstream Thermostats:
   1. Remote bulb or bimetallic rod and tube type, proportional action with adjustable setpoint in middle of range and adjustable throttling range.
   2. Averaging service remote bulb element: 7.5 feet.

D. Electric Low Limit Duct Thermostat:
   1. Snap acting, single pole, single throw, manual reset switch that trips if temperature sensed across any 12 inches of bulb length is equal to or below setpoint,

E. Electric High Limit Duct Thermostat:
   1. Snap acting, single pole, single throw, manual reset switch that trips if temperature sensed across any 12 inches of bulb length is equal to or above setpoint,
   2. Bulb length: Minimum 20 feet.
   3. Provide one thermostat for every 20 sq ft of coil surface.

F. Fire Thermostats:
   1. UL labeled, factory set in accordance with NFPA 90A.
   2. Normally closed contacts, manual reset.

G. Heating/Cooling Valve Top Thermostats:
   1. Proportional acting for proportional flow, molded rubber diaphragm, remote bulb liquid filled element, direct and reverse acting at differential pressure to 25 psig, cast housing with position indicator and adjusting knob.

2.08 TRANSMITTERS

A. Pressure Transmitters:
   1. One pipe direct acting indicating type for gas, liquid, or steam service, range suitable for system, proportional electronic output.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that systems are ready to receive work.

C. Beginning of installation means installer accepts existing conditions.

D. Sequence work to ensure installation of components is complementary to installation of similar components in other systems.

E. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

F. Ensure installation of components is complementary to installation of similar components.

G. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check and verify location of thermostats with plans and room details before installation. Locate 48 inches above floor. Align with lighting switches, CO2 sensors, and humidistats. Refer to Section 26 27 26.

C. Mount freeze protection thermostats using flanges and element holders.

D. Mount outdoor reset thermostats and outdoor sensors indoors, with sensing elements outdoors with sun shield.

E. Provide separable sockets for liquids and flanges for air bulb elements.

F. Provide thermostats in aspirating boxes in front entrances, gymnasiums, high security areas, and where indicated.

G. Provide guards on thermostats in entrance vestibules, gymnasiums, and corridors..

H. Provide mixing dampers of opposed blade construction arranged to mix streams. Provide separate minimum outside air damper section adjacent to return air dampers with separate damper motor.

I. Provide isolation (two position) dampers of parallel blade construction.

J. Install damper motors on outside of duct in warm areas. Do not install motors in locations at outdoor temperatures.

K. Mount control panels adjacent to associated equipment on vibration free walls or free standing angle iron supports. One cabinet may accommodate more than one system in same equipment room. Provide engraved plastic nameplates for instruments and controls inside cabinet and engraved plastic nameplates on cabinet face.

L. Install "hand/off/auto" selector switches to override automatic interlock controls when switch is in "hand" position.

M. Provide conduit and electrical wiring in accordance with Section 26 27 17.

3.03 MAINTENANCE

A. See Section 01 70 00 - Execution Requirements, for additional requirements relating to maintenance service.

B. Provide service and maintenance of control system for two years from Date of Substantial Completion.

C. Provide complete service of controls systems, including call backs, and submit written report of each service call.

END OF SECTION

SECTION 23 09 23
DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. System Description
B. Operator Interface
C. Controllers
D. Power Supplies and Line Filtering
E. System Software
F. Controller Software
G. HVAC Control Programs
H. Chiller Control Programs
I. Control equipment.
J. Software.

1.02 RELATED REQUIREMENTS

A. Section 23 09 13 - Instrumentation and Control Devices for HVAC.
B.

1.03 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code.

1.04 SYSTEM DESCRIPTION

A. Automatic temperature control field monitoring and control system using field programmable micro-processor based units manufactured by Schneider Electric Controls and provided by SNE Building Systems.
B. Base system on distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on token passing network, with central and remote hardware, software, and interconnecting wire and conduit.
C. Include computer software and all hardware, operator input/output devices, control units, local area networks (LAN), sensors, control devices, actuators.
D. Controls for variable air volume terminals, radiation, reheat coils, unit heaters, fan coils, and the like when directly connected to the control units. Individual terminal unit control is specified in Section 23 09 13.
E. Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment, power transformers and electrical feeds, and other apparatus and accessories required to operate mechanical systems, and to perform functions specified.
F. Include installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data for each system component and software module.
C. Shop Drawings:
   1. Indicate trunk cable schematic showing programmable control unit locations, and trunk data conductors.

2. List connected data points, including connected control unit and input device.
3. Indicate system graphics indicating monitored systems, data (connected and calculated) point addresses, and operator notations. Provide demonstration diskette containing graphics.
4. Show system configuration with peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.
5. Indicate description and sequence of operation of operating, user, and application software.

D. Manufacturer's Instructions: Indicate manufacturer's installation instructions for all manufactured components.

E. Project Record Documents: Record actual locations of control components, including control units, thermostats, and sensors.
1. Revise shop drawings to reflect actual installation and operating sequences.
2. Include submittals data in final "Record Documents" form.

F. Operation and Maintenance Data:
1. Include interconnection wiring diagrams complete field installed systems with identified and numbered, system components and devices.
2. Include keyboard illustrations and step-by-step procedures indexed for each operator function.
3. Include inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.

G. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner s name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with NFPA 70.

B. Design system software under direct supervision of a Professional Engineer experienced in design of this Work and licensed at the State in which the Project is located.

C. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum 10 years documented experience.

D. Installer Qualifications: Company specializing in performing the work of this section 5 years documented experience approved by manufacturer.

E. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.07 PRE-INSTALLATION MEETING

A. Convene one week before starting work of this Section.

B. Require attendance of parties directly affecting the work of this Section.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Substantial Completion.

C. Provide five year manufacturer's warranty for field programmable micro-processor based units.

1.09 MAINTENANCE SERVICE

A. Provide service and maintenance of energy management and control systems for one years from Date of Substantial Completion.

B. Provide four complete inspections per year, two in each season, to inspect, calibrate, and adjust controls as required, and submit written reports.

C. Provide complete service of systems, including call backs. Make minimum of 4 complete normal inspections of approximately 4 hours duration in addition to normal service calls to inspect, calibrate, and adjust controls, and submit written reports.

1.10 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

1.11 PROTECTION OF SOFTWARE RIGHTS

A. Prior to delivery of software, the Owner and the party providing the software will enter into a software license agreement with provisions for the following:
   1. Limiting use of software to equipment provided under these specifications.
   2. Limiting copying.
   3. Preserving confidentiality.
   4. Prohibiting transfer to a third party.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Schneider Electric; by SNE Building Systems- 29 Kripes Rd East Granby Ct, 06026:

B. Substitutions: Not Permitted.

2.02 SYSTEM DESCRIPTION

A. Automatic temperature control field monitoring and control system using field programmable micro-processor based units with communications to district-wide Building Management System.

B. Base system on distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on token passing network, with central and remote hardware, software, and interconnecting wire and conduit.

C. Include computer software and hardware, operator input/output devices, control units, local area networks (LAN), sensors, control devices, actuators.

D. Controls for variable air volume terminals, radiation, reheat coils, unit heaters, fan coils, and the like when directly connected to the control units. Individual terminal unit control is specified in Section 23 09 13.

E. Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories required to operate mechanical systems, and to perform functions specified.

F. Include installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

2.03 CONTROLLER

A. BUILDING CONTROLLERS
   1. Building Level Controller Requirements
      a. Manage global strategies by one or more, independent, standalone, microprocessor based controllers.
      b. Provide sufficient memory to support controller's operating system, database, and programming requirements.
      c. Share data between networked controllers.
      d. Controller operating system manages input and output communication signals allowing distributed controllers to share real and virtual object information and allowing for central monitoring and alarms.
      e. Utilize real-time clock for scheduling.
      f. Continuously check processor status and memory circuits for abnormal operation.

g. Controller to assume predetermined failure mode and generate alarm notification upon detection of abnormal operation.
h. Communication with other network devices to be based on assigned protocol.

2. Communication:
   a. Controller to reside on a BACnet network using ISO 8802-3 (ETHERNET) Data Link/Physical layer protocol.
   b. Perform routing when connected to a network of custom application and application specific controllers.
   c. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
3. Anticipated Environmental Ambient Conditions:
   a. Outdoors and/or in Wet Ambient Conditions:
      1) Mount within waterproof enclosures.
      2) Rated for operation at 40 to 150 degrees F.
   b. Conditioned Space:
      1) Mount within dustproof enclosures.
      2) Rated for operation at 32 to 120 degrees F.
4. Provisions for Serviceability:
   a. Diagnostic LEDs for power, communication, and processor.
   b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
5. Memory: In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
6. Power and Noise Immunity:
   a. Maintain operation at 90 to 110 percent of nominal voltage rating.
   b. Perform orderly shutdown below 80 percent of nominal voltage.
   c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W. at 3 feet.

B. INPUT/OUTPUT INTERFACE
1. Hardwired inputs and outputs tie into the DDC system through building, custom application, or application specific controllers.
2. All Input/Output Points:
   a. Protect controller from damage resulting from any point short-circuiting or grounding and from voltage up to 24 volts of any duration.
   b. Provide universal type for building and custom application controllers where input or output is software designated as either binary or analog type with appropriate properties.
3. Binary Inputs:
   a. Allow monitoring of On/Off signals from remote devices.
   b. Provide wetting current of 12 mA minimum, compatible with commonly available control devices and protected against the effects of contact bounce and noise.
   c. Sense dry contact closure with power provided only by the controller.
4. Pulse Accumulation Input Objects: Conform to all requirements of binary input objects and accept up to 10 pulses per second.
5. Analog Inputs:
   a. Allow for monitoring of low voltage 0 to 10 VDC, 4 to 20 mA current, or resistance signals (thermistor, RTD).
   b. Compatible with and field configurable to commonly available sensing devices.
6. Binary Outputs:
   a. Used for On/Off operation or a pulsed low-voltage signal for pulse width modulation control.

b. Outputs provided with three position (On/Off/Auto) override switches.
c. Status lights for building and custom application controllers to be selectable for normally open or normally closed operation.

7. Analog Outputs:
   a. Monitoring signal provides a 0 to 10 VDC or a 4 to 20 mA output signal for end device control.
   b. Provide status lights and two position (AUTO/MANUAL) switch for building and custom application controllers with manually adjustable potentiometer for manual override on building and custom application controllers.
   c. Drift to not exceed 0.4 percent of range per year.
8. Tri State Outputs:
   a. Coordinate two binary outputs to control three point, floating type, electronic actuators without feedback.
   b. Limit the use of three point, floating devices to the following zone and terminal unit control applications:
      1) VAV or duct terminal units.
      2) Duct mounted heating coils.
      3) Zone dampers.
      4) Radiation.
   c. Control algorithms run the zone actuator to one end of its stroke once every 24 hours for verification of operator tracking.
9. System Object Capacity:
   a. System size to be expandable to twice the number of input output objects required by providing additional controllers, including associated devices and wiring.
   b. Hardware additions or software revisions for the installed operator interfaces are not to be required for future, system expansions.

2.04 POWER SUPPLIES AND LINE FILTERING

A. Power Supplies:
   1. Provide UL listed control transformers with Class 2 current limiting type or over-current protection in both primary and secondary circuits for Class 2 service as required by the NEC.
   2. Limit connected loads to 80 percent of rated capacity.
   3. Match DC power supply to current output and voltage requirements.
   4. Unit to be full wave rectifier type with output ripple of 5.0 mV maximum peak to peak.
   5. Regulation to be 1 percent combined line and load with 100 microsecond response time for 50 percent load changes.
   6. Provide over-voltage and over-current protection to withstand a 150 percent current overload for 3 seconds minimum without trip-out or failure.
   7. Operational Ambient Conditions: 32 to 120 degrees F.
   8. EM/RF meets FCC Class B and VDE 0871 for Class B and MIL-STD 810 for shock and vibration.
   9. Line voltage units UL recognized and CSA approved.

B. Power Line Filtering:
   1. Provide external or internal transient voltage and surge suppression component for all workstations and controllers.
   2. Minimum surge protection attributes:
      a. Dielectric strength of 1000 volts minimum.
      b. Response time of 10 nanoseconds or less.
      c. Transverse mode noise attenuation of 65 dB or greater.
      d. Common mode noise attenuation of 150 dB or greater at 40 to 100 Hz.

2.05 CONTROL UNITS

A. Units: Modular in design and consisting of processor board with programmable RAM memory, local operator access and display panel, and integral interface equipment.

B. Battery Backup: For minimum of 48 hours for complete system including RAM without interruption, with automatic battery charger.

C. Control Units Functions:
   1. Monitor or control each input/output point.
   2. Completely independent with hardware clock/calendar and software to maintain control independently.
   3. Acquire, process, and transfer information to operator station or other control units on network.
   4. Accept, process, and execute commands from other control unit's or devices or operator stations.
   5. Access both data base and control functions simultaneously.
   6. Record, evaluate, and report changes of state or value that occur among associated points. Continue to perform associated control functions regardless of status of network.
   7. Perform in stand-alone mode:
      a. Start/stop.
      b. Duty cycling.
      c. Automatic Temperature Control.
      d. Demand control via a sliding window, predictive algorithm.
      e. Event initiated control.
      f. Calculated point.
      g. Scanning and alarm processing.
      h. Full direct digital control.
      i. Trend logging.
      j. Global communications.
      k. Maintenance scheduling.

D. Global Communications:
   1. Broadcast point data onto network, making that information available to all other system control units.
   2. Transmit any or all input/output points onto network for use by other control units and utilize data from other control units.

E. Input/Output Capability:
   1. Discrete/digital input (contact status).
   2. Discrete/digital output.
   3. Analog input.
   4. Analog output.
   5. Pulse input (5 pulses/second).
   6. Pulse output (0-655 seconds in duration with 0.01 second resolution).

F. Monitor, control, or address data points. Mix shall include analog inputs, analog outputs, pulse inputs, pulse outputs and discrete inputs/outputs, as required. Install control unit's with minimum 30 percent spare capacity.

G. Point Scanning: Set scan or execution speed of each point to operator selected time from 1 to 250 seconds.

H. Upload/Download Capability: Download from or upload to operator station. Upload/Download time for entire control unit database maximum 10 seconds on hard wired LAN, or 60 seconds over voice grade phone lines.

I. Test Mode Operation: Place input/output points in test mode to allow testing and developing of control algorithms on line without disrupting field hardware and controlled environment. In test mode:
   1. Inhibit scanning and calculation of input points. Issue manual control to input points (set analog or digital input point to operator determined test value) from work station.
   2. Control output points but change only data base state or value; leave external field hardware unchanged.
   3. Enable control actions on output points but change only data base state or value.

J. Local display and adjustment panel: Portable control unit, containing digital display, and numerical keyboard. Display and adjust:
   1. Input/output point information and status.
   2. Controller set points.
   3. Controller tuning constants.
   4. Program execution times.
   5. High and low limit values.
   6. Limit differential.
   7. Set/display date and time.
   8. Control outputs connected to the network.
   9. Automatic control outputs.
   10. Perform control unit diagnostic testing.
   11. Points in "Test" mode.

2.06 LOCAL AREA NETWORK (LAN)

A. Provide communication between control units over local area network (LAN).

B. LAN Capacity: Not less than 100 stations or nodes.

C. Break in Communication Path: Alarm and automatically initiate LAN reconfiguration.

D. LAN Data Speed: Minimum 19.2 Kb.

E. Communication Techniques: Allow interface into network by multiple operation stations and by auto-answer/auto-dial modems. Support communication over telephone lines utilizing modems.

F. Transmission Median: Fiber optic or single pair of solid 24 gauge twisted, shielded copper cable.

G. Network Support: Time for global point to be received by any station, shall be less than 3 seconds. Provide automatic reconfiguration if any station is added or lost. If transmission cable is cut, reconfigure two sections with no disruption to system's operation, without operator intervention.

2.07 SYSTEM SOFTWARE

A. Operating System:
   1. Concurrent, multi-tasking capability.
      a. Common Software Applications Supported: Microsoft Excel.
   2. System Graphics:
      a. Allow up to 10 graphic screens, simultaneously displayed for comparison and monitoring of system status.
      b. Animation displayed by shifting image files based on object status.
      c. Provide method for operator with password to perform the following:
         1) Move between, change size, and change location of graphic displays.
         2) Modify on-line.
         3) Add, delete, or change dynamic objects consisting of:
            (a) Analog and binary values.
            (b) Dynamic text.

(c) Static text.
(d) Animation files.

3. Custom Graphics Generation Package:
   a. Create, modify, and save graphic files and visio format graphics in PCX formats.
   b. HTML graphics to support web browser compatible formats.
   c. Capture or convert graphics from AutoCAD.
4. Standard HVAC Graphics Library:
   a. HVAC Equipment:
   b. Ancillary Equipment:

B. Workstation System Applications:
1. Automatic System Database Save and Restore Functions:
   a. Current database copy of each Building Controller is automatically stored on hard disk.
   b. Automatic update occurs upon change in any system panel.
   c. In the event of database loss in any system panel, the first workstation to detect the loss automatically restores the database for that panel unless disabled by the operator.
2. Manual System Database Save and Restore Functions by Operator with Password Clearance:
   a. Save database from any system panel.
   b. Clear a panel database.
   c. Initiate a download of a specified database to any system panel.
3. Software provided allows system configuration and future changes or additions by operators under proper password protection.
4. On-line Help:
   a. Context-sensitive system assists operator in operation and editing.
   b. Available for all applications.
   c. Relevant screen data provided for particular screen display.
   d. Additional help available via hypertext.
5. Security:
   a. Operator log-on requires user name and password to view, edit, add, or delete data.
   b. System security selectable for each operator.
   c. System supervisor sets passwords and security levels for all other operators.
   d. Operator passwords to restrict functions accessible to viewing and/or changing system applications, editor, and object.
   e. Automatic, operator log-off results from keyboard or mouse inactivity during user-adjustable, time period.
   f. All system security data stored in encrypted format.
6. System Diagnostics:
   a. Operations Automatically Monitored:
      1) Workstations.
      2) Printers.
      3) Modems.
      4) Network connections.
      5) Building management panels.
      6) Controllers.
   b. Device failure is annunciated to the operator.
7. Alarm Processing:
   a. All system objects are configurable to "alarm in" and "alarm out" of normal state.
   b. Configurable Objects:
      1) Alarm limits.

2) Alarm limit differentials.
3) States.
4) Reactions for each object.

8. Alarm Messages:
   a. Descriptor: English language.
   b. Recognizable Features:
      1) Source.
      2) Location.
      3) Nature.
9. Configurable Alarm Reactions by Workstation and Time of Day:
   a. Logging.
   b. Printing.
   c. Starting programs.
   d. Displaying messages.
   e. Dialing out to remote locations.
   f. Paging.
   g. Providing audible annunciation.
   h. Displaying specific system graphics.
10. Custom Trend Logs:
    a. Definable for any data object in the system including interval, start time, and stop time.
    b. Trend Data:
       1) Sampled and stored on the building controller panel.
       2) Archivable on hard disk.
       3) Retrievable for use in reports, spreadsheets and standard database programs.
       4) Archival on LAN accessible storage media including hard disk, tape, Raid array drive, and virtual cloud environment.
       5) Protected and encrypted format to prevent manipulation, or editing of historical data and event logs.
11. Alarm and Event Log:
    a. View all system alarms and change of states from any system location.
    b. Events listed chronologically.
    c. Operator with proper security acknowledges and clears alarms.
    d. Alarms not cleared by operator are archived to the workstation hard disk.
12. Object, Property Status and Control:
    a. Provide a method to view, edit if applicable, the status of any object and property in the system.
    b. Status Available by the Following Methods:
       1) Menu.
       2) Graphics.
       3) Custom Programs.
13. Reports and Logs:
    a. Reporting Package:
       1) Allows operator to select, modify, or create reports.
       2) Definable as to data content, format, interval, and date.
       3) Archivable to hard disk.
    b. Real-time logs available by type or status such as alarm, lockout, normal, etc.
    c. Stored on hard disk and readily accessible by standard software applications, including spreadsheets and word processing.
    d. Set to be printed on operator command or specific time(s).
14. Reports:

a. Standard:
   1) Objects with current values.
   2) Current alarms not locked out.
   3) Disabled and overridden objects, points and SNVTs.
   4) Objects in manual or automatic alarm lockout.
   5) Objects in alarm lockout currently in alarm.
   6) Logs:
      (a) Alarm History.
      (b) System messages.
      (c) System events.
      (d) Trends.
b. Custom:
   1) Daily.
   2) Weekly.
   3) Monthly.
   4) Annual.
   5) Time and date stamped.
   6) Title.
   7) Facility name.
c. Tenant Override:
   1) Monthly report showing total, requested, after-hours HVAC and lighting services on a daily basis for each tenant.
   2) Annual report showing override usage on a monthly basis.
d. Electrical, Fuel, and Weather:
   1) Electrical Meter(s):
      (a) Monthly showing daily electrical consumption and peak electrical demand with time and date stamp for each meter.
      (b) Annual summary showing monthly electrical consumption and peak demand with time and date stamp for each meter.
   2) Fuel Meter(s):
      (a) Monthly showing daily natural gas consumption for each meter.
      (b) Annual summary showing monthly consumption for each meter.
   3) Weather:
      (a) Monthly showing minimum, maximum, average outdoor air temperature and heating/cooling degree-days for the month.

C. Workstation Applications Editors:
   1. Provide editing software for all system applications at the PC workstation.
   2. Downloaded application is executed at controller panel.
   3. Full screen editor for each application allows operator to view and change:
      a. Configuration.
      b. Name.
      c. Control parameters.
      d. Set-points.
   4. Scheduling:
      a. Monthly calendar indicates schedules, holidays, and exceptions.
      b. Allows several related objects to be scheduled and copied to other objects or dates.
      c. Start and stop times adjustable from master schedule.
   5. Custom Application Programming:
      a. Create, modify, debug, edit, compile, and download custom application programming during operation and without disruption of all other system applications.
      b. Programming Features:

1) English oriented language, based on BASIC, FORTRAN, C, or PASCAL syntax allowing for free form programming.
2) Alternative language graphically based using appropriate function blocks suitable for all required functions and amenable to customizing or compounding.
3) Insert, add, modify, and delete custom programming code that incorporates word processing features such as cut/paste and find/replace.
4) Allows the development of independently, executing, program modules designed to enable and disable other modules.
5) Debugging/simulation capability that displays intermediate values and/or results including syntax/execution error messages.
6) Support for conditional statements (IF/THEN/ELSE/ELSE-F) using compound Boolean (AND, OR, and NOT) and/or relations (EQUAL, LESS THAN, GREATER THAN, NOT EQUAL) comparisons.
7) Support for floating-point arithmetic utilizing plus, minus, divide, times, square root operators; including absolute value; minimum/maximum value from a list of values for mathematical functions.
8) Language consisting of resettable, predefined, variables representing time of day, day of the week, month of the year, date; and elapsed time in seconds, minutes, hours, and days where the variable values cab be used in IF/THEN comparisons, calculations, programming statement logic, etc.
9) Language having predefined variables representing status and results of the system software enables, disables, and changes the set points of the controller software.

2.08 CONTROLLER SOFTWARE

A. All applications reside and operate in the system controllers and editing of all applications occurs at the operator workstation.

B. System Security:
   1. User access secured via user passwords and user names.
   2. Passwords restrict user to the objects, applications, and system functions as assigned by the system manager.
   3. User Log On/Log Off attempts are recorded.
   4. Automatic Log Off occurs following the last keystroke after a user defined delay time.

C. Object or Object Group Scheduling:
   1. Weekly Schedules Based on Separate, Daily Schedules:
      a. Include start, stop, optimal stop, and night economizer.
      b. 10 events maximum per schedule.
      c. Start/stop times adjustable for each group object.

D. Provide standard application for equipment coordination and grouping based on function and location to be used for scheduling and other applications.

E. Alarms:
   1. Binary object is set to alarm based on the operator specified state.
   2. Analog object to have high/low alarm limits.
   3. All alarming is capable of being automatically and manually disabled.
   4. Alarm Reporting:
      a. Operator determines action to be taken for alarm event.
      b. Alarms to be routed to appropriate workstation.
      c. Reporting Options:

F. Maintenance Management: System monitors equipment status and generates maintenance messages based upon user-designated run-time limits.

G. Sequencing: Application software based upon specified sequences of operation in Section 23 09 93.

H. PID Control Characteristics:
   1. Direct or reverse action.
   2. Anti-windup.
   3. Calculated, time-varying, analog value, positions an output or stages a series of outputs.
   4. User selectable controlled variable, set-point, and PED gains.

I. Staggered Start Application:
   1. Prevents all controlled equipment from simultaneously restarting after power outage.
   2. Order of equipment startup is user selectable.

J. Energy Calculations:
   1. Accumulated instantaneous power or flow rates are converted to energy use data.
   2. Algorithm calculates a rolling average and allows window of time to be user specified in minute intervals.
   3. Algorithm calculates a fixed window average with a digital input signal from a utility meter defining the start of the window period that in turn synchronizes the fixed-window average with that used by the power company.

K. Anti-Short Cycling:
   1. All binary output objects protected from short-cycling.
   2. Allows minimum on-time and off-time to be selected.

L. On-Off Control with Differential:
   1. Algorithm allows binary output to be cycled based on a controlled variable and set-point.
   2. Algorithm to be direct-acting or reverse-acting incorporating an adjustable differential.

M. Run-Time Totalization:
   1. Totalize run-times for all binary input objects.
   2. Provides operator with capability to assign high run-time alarm.

2.09 OPERATING SYSTEM SOFTWARE

A. Input/Output Capability From Operator Station:
   1. Request display of current values or status in tabular or graphic format.
   2. Command selected equipment to specified state.
   3. Initiate logs and reports.
   4. Change analog limits.
   5. Add, delete, or change points within each control unit or application routine.
   6. Change point input/output descriptors, status, alarm descriptors, and engineering unit descriptors.
   7. Add new control units to system.
   8. Modify and set up maintenance scheduling parameters.
   9. Develop, modify, delete or display full range of color graphic displays.
   10. Automatically archive select data even when running third party software.
   11. Provide capability to sort and extract data from archived files and to generate custom reports.
   12. Support two printer operations.
      a. Alarm printer: Print alarms, operator acknowledgements, action messages, system alarms, operator sign-on and sign-off.
      b. Data printer: Print reports, page prints, and data base prints.
   13. Select daily, weekly or monthly as scheduled frequency to synchronize time and date in digital control units. Accommodate daylight savings time adjustments.
   14. Print selected control unit data base.

B. Operator System Access: Via software password with minimum 30 access levels at work station and minimum 3 access levels at each control unit.

C. Data Base Creation and Support: Changes shall utilize standard procedures. Control unit shall automatically check work station data base files upon connection and verify data base match. Minimum capability shall include:
   1. Add and delete points.
   2. Modify any point parameter.
   3. Change, add, or delete English language descriptors.
   4. Add, modify, or delete alarm limits.
   5. Add, modify, or delete points in start/stop programs, trend logs, etc.
   6. Create custom relationship between points.
   7. Create or modify DDC loops and parameters.
   8. Create or modify override parameters.
   9. Add, modify, and delete any applications program.
   10. Add, delete, develop, or modify dynamic color graphic displays.

D. Dynamic Color Graphic Displays:
   1. Utilizes custom symbols or system supported library of symbols.
   2. Sixteen (16) colors.
   3. Sixty (60) outputs of real time, live dynamic data per graphic.
   4. Dynamic graphic data.
   5. 1,000 separate graphic pages.
   6. Modify graphic screen refresh rate between 1 and 60 seconds.

E. Operator Station:
   1. Accept data from LAN as needed without scanning entire network for updated point data.
   2. Interrogate LAN for updated point data when requested.
   3. Allow operator command of devices.
   4. Allow operator to place specific control units in or out of service.
   5. Allow parameter editing of control units.
   6. Store duplicate data base for every control unit and allow down loading while system is on line.
   7. Control or modify specific programs.
   8. Develop, store and modify dynamic color graphics.
   9. Provide data archiving of assigned points and support overlay graphing of this data utilizing up to four (4) variables.

F. Alarm Processing:
   1. Off normal condition: Cause alarm and appropriate message, including time, system, point descriptor, and alarm condition. Select alarm state/value and which alarms shall cause automatic dial-out.
   2. Critical alarm or change-of-state: Display message, stored on disk for review and sort, or print.
   3. Print on line changeable message, up to 100 characters in length, for each alarm point specified.
   4. Display alarm reports on video. Display multiple alarms in order of occurrence.
   5. Define time delay for equipment start-up or shutdown.
   6. Allow unique routing of specific alarms.
   7. Operator specifies if alarm requires acknowledgement.
   8. Continue to indicate unacknowledged alarms after return to normal.
   9. Alarm notification:
      a. Automatic print.
      b. Display indicating alarm condition.

c. Selectable audible alarm indication.

G. Event Processing: Automatically initiate commands, user defined messages, take specific control actions or change control strategy and application programs resulting from event condition. Event condition may be value crossing operator defined limit, change-of-state, specified state, or alarm occurrence or return to normal.

H. Automatic Restart: Automatically restart field equipment on restoration of power. Provide time delay between individual equipment restart and time of day start/stop.

I. Messages:
1. Automatically display or print user-defined message subsequent to occurrence of selected events.
2. Compose, change, or delete any message.
3. Display or log any message at any time.
4. Assign any message to any event.

J. Reports:
1. Manually requested with time and date.
2. Long term data archiving to hard disk.
3. Automatic directives to download to transportable media such as floppy diskettes for storage.
4. Data selection methods to include data base search and manipulation.
5. Data extraction with mathematical manipulation.
6. Data reports shall allow development of XY curve plotting, tabular reports (both statistical and summary), and multi-point timed based plots with not less than four (4) variables displayed.
7. Generating reports either normally at operator direction, or automatically under work station direction.
8. Reports may either manually displayed or printed, or may be printed automatically on daily, weekly, monthly, yearly or scheduled basis.
9. Include capability for statistical data manipulation and extraction.
10. Provide capability to generate four types of reports: Statistical detail reports, summary reports, trend graphic plots, x-y graphic plots.

K. Parameter Save/Restore: Store most current operating system, parameter changes, and modifications on disk or diskette.

L. Data Collection:
1. Automatically collect and store in disk files.
2. Daily electrical energy consumption, peak demand, and time of peak demand for up to electrical meters over 2 year period.
3. Daily consumption for up to 30 meters over a 2 year period.
4. Daily billable electrical energy consumption and time for up to 1024 zones over a 10 year period.
5. Provide archiving of stored data for use with system supplied custom reports.

M. Graphic Display: Support graphic development on work station with software features:
1. Page linking.
2. Generate, store, and retrieve library symbols.
3. Single or double height characters.
4. Sixty (60) dynamic points of data per graphic page.
5. Pixel level resolution.
6. Animated graphics for discrete points.
7. Analog bar graphs.
8. Display real time value of each input or output line diagram fashion.

N. Maintenance Management:
   1. Run time monitoring, per point.
   2. Maintenance scheduling targets with automatic annunciation, scheduling and shutdown.
   3. Equipment safety targets.
   4. Display of maintenance material and estimated labor.
   5. Target point reset, per point.

O. Advisories:
   1. Summary which contains status of points in locked out condition.
   2. Continuous operational or not operational report of interrogation of system hardware and programmable control units for failure.
   3. Report of power failure detection, time and date.
   4. Report of communication failure with operator device, field interface unit, point, programmable control unit.

2.10 LOAD CONTROL PROGRAMS

A. General: Support inch-pounds and SI (metric) units of measurement.

B. Demand Limiting:
   1. Monitor total power consumption per power meter and shed associated loads automatically to reduce power consumption to an operator set maximum demand level.
   2. Input: Pulse count from incoming power meter connected to pulse accumulator in control unit.
   3. Forecast demand (kW): Predicted by sliding window method.
   4. Automatically shed loads throughout the demand interval selecting loads with independently adjustable on and off time of between one and 255 minutes.
   5. Demand Target: Minimum of 3 per demand meter; change targets based upon (1) time, (2) status of pre-selected points, or (3) temperature.
   6. Load: Assign load shed priority, minimum "ON" time and maximum "OFF" time.
   7. Limits: Include control band (upper and lower limits).
   8. Output advisory if loads are not available to satisfy required shed amount, advise shed requirements and requiring operator acknowledgement.

C. Duty Cycling:
   1. Periodically stop and start loads, based on space temperature, and according to various On/Off patterns.
   2. Modify off portion of cycle based on operator specified comfort parameters. Maintain total cycle time by increasing on portion of cycle by same amount that off portion is reduced.
   3. Set and modify following parameters for each individual load.
      a. Minimum and maximum Off time.
      b. On/Off time in one minute increments.
      c. Time period from beginning of interval until load can be cycled.
      d. Manually override the DCC program and place a load in an On or Off state.
      e. Cooling Target Temperature and Differential.
      f. Heating Target Temperature and Differential.
      g. Cycle off adjustment.

D. Automatic Time Scheduling:
   1. Self-contained programs for automatic start/stop/scheduling of building loads.
   2. Support up to seven (7) normal day schedules, seven (7) "special day" schedules and two (2) temporary day schedules.
   3. Special days schedule shall support up to 30 unique date/duration combinations.
   4. Any number of loads assigned to any time program; each load can have individual time program.

5. Each load assigned at least 16 control actions per day with 1 minute resolution.
6. Time schedule operations may be:
    a. Start.
    b. Optimized Start.
    c. Stop.
    d. Optimized Stop.
    e. Cycle.
    f. Optimized Cycle.
7. Minimum of 30 holiday periods up to 100 days in length may be specified for the year.
8. Create temporary schedules.
9. Broadcast temporary "special day" date and duration.

E. Start/Stop Time Optimization:
1. Perform optimized start/stop as function of outside conditions, inside conditions, or both.
2. Adaptive and self-tuning, adjusting to changing conditions unattended.
3. For each point under control, establish and modify:
    a. Occupancy period.
    b. Desired temperature at beginning of occupancy period.
    c. Desired temperature at end of occupancy period.

F. Night Setback/Setup Program: Reduce heating space temperature setpoint or raise cooling space temperature setpoint during unoccupied hours; in conjunction with scheduled start/stop and optimum start/stop programs.

G. Calculated Points: Define calculations and totalization computed from monitored points (analog/digital points), constants, or other calculated points.
1. Employ arithmetic, algebraic, Boolean, and special function operations.
2. Treat calculated values like any other analog value, use for any function that a "hard wired point" might be used.

H. Event Initiated Programming: Event may be initiated by any data point, causing series of controls in a sequence.
1. Define time interval between each control action between 0 to 3600 seconds.
2. Output may be analog value.
3. Provide for "skip" logic.
4. Verify completion of one action before proceeding to next. If not verified, program shall be able to skip to next action.

I. Direct Digital Control: Each control unit shall provide Direct Digital Control software so that the operator may customize control strategies and sequences of operation by defining the appropriate control loop algorithms and choosing the optimum loop parameters.
1. Control loops: Defined using "modules" that are analogous to standard control devices.
2. Output: Paired or individual digital outputs for pulse-width modulation, and analog outputs, as required.
3. Firmware:
    a. PID with analog or pulse-width modulation output.
    b. Floating control with pulse-width modulated outputs.
    c. Two-position control.
    d. Primary and secondary reset schedule selector.
    e. Hi/Lo signal selector.
    f. Single pole double throw relay.
    g. Single pole double throw time delay relay with delay before break, delay before make and interval time capabilities.
4. Direct Digital Control loops: Downloaded upon creation or on operator request. On sensor failure, program shall execute user defined failsafe output.

5. Display: Value or state of each of the lines which interconnect DDC modules.

J. Fine Tuning Direct Digital Control PID or floating loops:
1. Display information:
   a. Control loop being tuned
   b. Input (process) variable
   c. Output (control) variable
   d. Setpoint of loop
   e. Proportional band
   f. Integral (reset) Interval
   g. Derivative (rate) Interval
2. Display format: Graphic, with automatic scaling; with input and output variable superimposed on graph of "time" vs "variable".

K. Trend logging:
1. Each control unit will store samples of control unit's data points.
2. Update file continuously at discretely assignable intervals.
3. Automatically initiate upload request and then store data on hard disk.
4. Time synchronize sampling at operator specified times and intervals with sample resolution of one minute.
5. Co-ordinate sampling with on/off state of specified point.
6. Display trend samples on work station in graphic format. Automatically scale trend graph with minimum 60 samples of data in plot of time vs data.

2.11 HVAC CONTROL PROGRAMS

A. General:
1. Support Inch-pounds and SI (metric) units of measurement.
2. Identify each HVAC Control system.

B. Optimal Run Time:
1. Control start-up and shutdown times of HVAC equipment for both heating and cooling.
2. Base on occupancy schedules, outside air temperature, seasonal requirements, and interior room mass temperature.
3. Start-up systems by using outside air temperature, room mass temperatures, and adaptive model prediction for how long building takes to warm up or cool down under different conditions.
4. Use outside air temperature to determine early shut down with ventilation override.
5. Analyze multiple building mass sensors to determine seasonal mode and worse case condition for each day.
6. Operator commands:
   a. Define term schedule
   b. Add/delete fan status point.
   c. Add/delete outside air temperature point.
   d. Add/delete mass temperature point.
   e. Define heating/cooling parameters.
   f. Define mass sensor heating/cooling parameters.
   g. Lock/unlock program.
   h. Request optimal run time control summary.
   i. Request optimal run time mass temperature summary.
   j. Request HVAC point summary.
   k. Request HVAC saving profile summary.
7. Control Summary:
   a. HVAC Control system begin/end status.
   b. Optimal run time lock/unlock control status.

c. Heating/cooling mode status.
d. Optimal run time schedule.
e. Start/Stop times.
f. Selected mass temperature point ID.
g. Optimal run time system normal start times.
h. Occupancy and vacancy times.
i. Optimal run time system heating/cooling mode parameters.

8. Mass temperature summary:
   a. Mass temperature point type and ID.
   b. Desired and current mass temperature values.
   c. Calculated warm-up/cool-down time for each mass temperature.
   d. Heating/cooling season limits.
   e. Break point temperature for cooling mode analysis.
9. HVAC point summary:
   a. Control system identifier and status.
   b. Point ID and status.
   c. Outside air temperature point ID and status.
   d. Mass temperature point ID and point.
   e. Calculated optimal start and stop times.
   f. Period start.

C. Supply Air Reset:
1. Monitor heating and cooling loads in building spaces, terminal reheat systems, both hot deck and cold deck temperatures on dual duct and multizone systems, single zone unit discharge temperatures.
2. Adjust discharge temperatures to most energy efficient levels satisfying measured load by:
   a. Raising cooling temperatures to highest possible value.
   b. Reducing heating temperatures to lowest possible level.
3. Operator commands:
   a. Add/delete fan status point.
   b. Lock/unlock program.
   c. Request HVAC point summary.
   d. Add/Delete discharge controller point.
   e. Define discharge controller parameters.
   f. Add/delete air flow rate.
   g. Define space load and load parameters.
   h. Request space load summary.
4. Control summary:
   a. HVAC control system status (begin/end).
   b. Supply air reset system status.
   c. Optimal run time system status.
   d. Heating and cooling loop.
   e. High/low limits.
   f. Deadband.
   g. Response timer.
   h. Reset times.
5. Space load summary:
   a. HVAC system status.
   b. Optimal run time status.
   c. Heating/cooling loop status.
   d. Space load point ID.
   e. Current space load point value.

f. Control heat/cool limited.
g. Gain factor.
h. Calculated reset values.
i. Fan status point ID and status.
j. Control discharge temperature point ID and status.
k. Space load point ID and status.
l. Air flow rate point ID and status.

D. Enthalpy Switchover:
1. Calculate outside and return air enthalpy using measured temperature and relative humidity; determine energy expended and control outside and return air dampers.
2. Operator commands:
a. Add/delete fan status point.
b. Add/delete outside air temperature point.
c. Add/delete discharge controller point.
d. Define discharge controller parameters.
e. Add/delete return air temperature point.
f. Add/delete outside air dew point/humidity point.
g. Add/delete return air dew point/humidity point.
h. Add/delete damper switch.
i. Add/delete minimum outside air.
j. Add/delete atmospheric pressure.
k. Add/delete heating override switch.
l. Add/delete evaporative cooling switch.
m. Add/delete air flow rate.
n. Define enthalpy deadband.
o. Lock/unlock program.
p. Request control summary.
q. Request HVAC point summary.
3. Control summary:
a. HVAC control system begin/end status.
b. Enthalpy switchover optimal system status.
c. Optimal return time system status.
d. Current outside air enthalpy.
e. Calculated mixed air enthalpy.
f. Calculated cooling cool enthalpy using outside air.
g. Calculated cooling cool enthalpy using mixed air.
h. Calculated enthalpy difference.
i. Enthalpy switchover deadband.
j. Status of damper mode switch.

2.12 PROGRAMMING APPLICATION FEATURES

A. Trend Point:
1. Sample up to 150 points, real or computed, with each point capable of collecting 100 samples at intervals specified in minutes, hours, days, or month.
2. Output trend logs as line graphs or bar graphs. Output graphic on terminal, with each point for line and bar graphs designated with a unique pattern, vertical scale either actual values or percent of range, and horizontal scale time base. Print trend logs up to 12 columns of one point/column.

B. Alarm Messages:
1. Allow definition of minimum of 100 messages, each having minimum length of 100 characters for each individual message.

2. Assign alarm messages to system messages including point's alarm condition, point's off-normal condition, totalized point's warning limit, hardware elements advisories.
3. Output assigned alarm with "message requiring acknowledgement".
4. Operator commands include define, modify, or delete; output summary listing current alarms and assignments; output summary defining assigned points.

C. Weekly Scheduling:
1. Automatically initiate equipment or system commands, based on preselected time schedule for points specified.
2. Provide program times for each day of week, per point, with one minute resolution.
3. Automatically generate alarm output for points not responding to command.
4. Provide for holidays, minimum of 366 consecutive holidays.
5. Operator commands:
   a. System logs and summaries.
   b. Start of stop point.
   c. Lock or unlock control or alarm input.
   d. Add, delete, or modify analog limits and differentials.
   e. Adjust point operation position.
   f. Change point operational mode.
   g. Open or close point.
   h. Enable/disable, lock/unlock, or execute interlock sequence or computation profile.
   i. Begin or end point totalization.
   j. Modify totalization values and limits.
   k. Access or secure point.
   l. Begin or end HVAC or load control system.
   m. Modify load parameter.
   n. Modify demand limiting and duty cycle targets.
6. Output summary: Listing of programmed function points, associated program times, and respective day of week programmed points by software groups or time of day.

D. Interlocking:
1. Permit events to occur, based on changing condition of one or more associated master points.
2. Binary contact, high/low limit of analog point or computed point shall be capable of being utilized as master. Same master may monitor or command multiple slaves.
3. Operator commands:
   a. Define single master/multiple master interlock process.
   b. Define logic interlock process.
   c. Lock/unlock program.
   d. Enable/disable interlock process.
   e. Execute terminate interlock process.
   f. Request interlock type summary.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that conditioned power supply is available to the control units and to the operator work station. Verify that field end devices, wiring, and pneumatic tubing is installed prior to installation proceeding.

3.02 INSTALLATION

A. Install all Owner-provided equipment along with all contractor-provided equipment as required to provide a complete, fully functional building automation system.

B. Install control units and other hardware in position on permanent walls where not subject to excessive vibration.

C. Install software in control units and in operator work station. Implement all features of programs to specified requirements and appropriate to sequence of operation. Refer to Section 23 09 93.

D. Provide with 120v AC, 15 amp dedicated emergency power circuit to each programmable control unit.

E. Provide conduit and electrical wiring in accordance with Section 26 27 17. Electrical material and installation shall be in accordance with appropriate requirements of .

F. Ensure that all components necessary to execute the sequences of operation are coordinated and installed by all contractors.

3.03 MANUFACTURER'S FIELD SERVICES

A. Start and commission systems. Allow sufficient time for start-up and commissioning prior to placing control systems in permanent operation.

B. Provide service engineer to instruct Owner's representative in operation of systems plant and equipment for 2 day period.

C. Provide basic operator training for 4 persons on data display, alarm and status descriptors, requesting data, execution of commands and request of logs. Include a minimum of 8 hours dedicated instructor time. Provide training on site.

3.04 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate complete and operating system to Owner.

3.05 SCHEDULES

A. Input/Output Schedule:
   1. Point Description:
   2. Digital Input:
      a. Demand Meter (kW):
      b. Auxiliary Contact:
      c. Switches:
         1) Switch Closing:
         2) Flow Switch:
         3) Optical:
      d. Current:
      e. Pressure:
   3. Digital Output:
      a. Control Relay:
      b. Solenoid:
      c. Contactor:
   4. Analog Input:
      a. Temperature:
      b. Relative Humidity:
      c. Pressure/Vacuum:
      d. Filter:
      e. Flow:
      f. Current:
      g. Liquid Level:
      h. Photocell:
   5. Analog Output:
      a. Pneumatic Transducer:

b. 4-20 ma Module:
c. 0-16 v DC:

6. Alarm:

B. Input/Output Schedule:
1. Point Description:
2. Inputs:
a. Temperature:
b. Relative Humidity:
c. Pressure:
d. Flow:
e. Level:
f. Position:
g. Energy:
h. Power:
3. Outputs:
a. Status:
b. Alarm:
c. Pneumatic Position:
d. Electronic Position:
e. Set Point Adjust:
f. Start/Stop:
g. Off/Low/High:
4. Software Features:
a. PID Control (DDC):
b. High Limit:
c. Low Limit:
d. Run Time Totalization:
e. Consumption Totalization:
f. Program Start/Stop:
g. Load Shed:
h. Duty Cycle:
i. Enthalpy Switchover:
j. Optimal Run Time:
k. Supply Air Reset:
l. O.A. Interlock:
m. O.A. Temperature Reset:
n. Free Cooling Mode:
o. Warm-up Mode:
p. Boiler Interlock:
q. Chiller Sequencing:
r. Energy Calculation:

C. Alarm Schedule:
1. High Limit: A1.
2. Low Limit: A2.
3. Run Time: A3.
4. Maintenance: A4.
5. Status: A5.
6. Override: A6.
7. Freeze: A7.

8. Low Pressure: A8.

END OF SECTION

SECTION 23 21 13
HYDRONIC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hydronic system requirements.

B. Equipment drains and overflows.

C. Heating water piping, above grade.

D. Chilled water piping, above grade.

E. Pipe hangers and supports.

F. Unions, flanges, mechanical couplings, and dielectric connections.

G. Valves:
   1. Gate valves.
   2. Globe or angle valves.
   3. Ball valves.
   4. Plug valves.
   5. Butterfly valves.
   6. Check valves.

1.02 REFERENCE STANDARDS

A. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators.

B. ASME B16.3 - Malleable Iron Threaded Fittings; The American Society of Mechanical Engineers.

C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

E. ASME B31.5 - Refrigeration Piping and Heat Transfer Components.

F. ASME B31.9 - Building Services Piping.

G. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers.

H. ASME B31.5 - Refrigeration Piping and Heat Transfer Components; The American Society of Mechanical Engineers.

I. ASME B31.9 - Building Services Piping; The American Society of Mechanical Engineers (ANSI/ASME B31.9).

J. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

K. ASTM A183 - Standard Specification for Carbon Steel Track Bolts and Nuts.

L. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

M. ASTM B32 - Standard Specification for Solder Metal.

N. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

O. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).

P. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

Q. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).

R. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

S. ASTM D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.

T. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.

U. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

V. ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications.

W. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

X. AWS A5.8/A5.8M - Specification for Filler Metals for Brazing and Braze Welding.

Y. AWS A5.8/A5.8M - Specification for Filler Metals for Brazing and Braze Welding; American Welding Society.

Z. AWS D1.1/D1.1M - Structural Welding Code - Steel.

AA. AWWA C606 - Grooved and Shouldered Joints.

AB. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

1.03 SYSTEM DESCRIPTION

A. Where more than one piping system material is specified, ensure system components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

B. Use unions, flanges, and couplings downstream of valves and at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.

C. Use non-conducting dielectric connections whenever jointing dissimilar metals.

D. Provide pipe hangers and supports in accordance with ASME B31.9 unless indicated otherwise.

E. Use gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

F. Use globe or butterfly valves for throttling, bypass, or manual flow control services.

G. Use 3/4 inch gate or ball valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment. Pipe to nearest floor drain.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Include data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalogue information. Indicate valve data and ratings.

C. Welders Certificate: Include welders certification of compliance with ASME BPVC-IX.

D. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.

E. Project Record Documents: Record actual locations of valves.

F. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with minimum 3 years of experience.

C. Welder Qualifications: Certify in accordance with ASME BPVC-IX.

1.06 REGULATORY REQUIREMENTS

A. Conform to ASME B31.9 code for installation of piping system.

B. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.

C. Provide certificate of compliance from authority having jurisdiction, indicating approval of welders.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS

2.01 HYDRONIC SYSTEM REQUIREMENTS

A. Comply with ASME B31.9 and applicable federal, state, and local regulations.

B. Piping: Provide piping, fittings, hangers and supports as required, as indicated, and as follows:
   1. Where more than one piping system material is specified, provide joining fittings that are compatible with piping materials and ensure that the integrity of the system is not jeopardized.
   2. Use non-conducting dielectric connections whenever jointing dissimilar metals.
   3. Grooved mechanical joints may be used in accessible locations only.
      a. Accessible locations include those exposed on interior of building, in pipe chases, and in mechanical rooms, aboveground outdoors, and as approved by Architect.
      b. Grooved mechanical connections and joints comply with AWWA C606.
         1) Ductile Iron: Comply with ASTM A536, Grade 65-45-12.
         2) Steel: Comply with ASTM A106/A106M, Grade B or ASTM A53/A53M.
      c. Use rigid joints unless otherwise indicated.
      d. Use gaskets of molded synthetic rubber with central cavity, pressure responsive configuration and complying with ASTM D2000, Grade 2CA615A15B44F17Z for circulating medium up to maximum 230 degrees F or Grade M3BA610A15B44Z for circulating medium up to maximum 200 degrees F.
      e. Provide steel coupling nuts and bolts complying with ASTM A183.
   4. Provide pipe hangers and supports in accordance with ASME B31.9 or MSS SP-58 unless indicated otherwise.

C. Pipe-to-Valve and Pipe-to-Equipment Connections: Use flanges or unions to allow disconnection of components for servicing; do not use direct welded, soldered, or threaded connections.

D. Valves: Provide valves where indicated and as follows:

1. Provide drain valves where indicated, and if not indicated provide at least at main shut-off, low points of piping, bases of vertical risers, and at equipment. Use 3/4 inch gate valves with cap; pipe to nearest floor drain.
2. Isolate equipment using butterfly valves with lug end flanges or grooved mechanical couplings.
3. For throttling, bypass, or manual flow control services, use globe, ball, or butterfly valves.
4. For throttling and isolation service in chilled and condenser water systems, use only butterfly valves.
5. In heating water, chilled water, or condenser water systems, butterfly valves may be used interchangeably with gate and globe valves.
6. For shut-off and to isolate parts of systems or vertical risers, use gate, ball, or butterfly valves.

2.02 HEATING WATER PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M, Schedule 40, black, using one of the following joint types:
   1. Welded Joints: ASTM A234/A234M, wrought steel welding type fittings; AWS D1.1/D1.1M welded.
   2. Grooved Joints: AWWA C606 grooved pipe, fittings of same material, and mechanical couplings.
   3. Fittings: ASTM B 16.3, malleable iron or ASTM A 234/A 234M, wrought steel welding type fittings.

B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), drawn, using one of the following joint types:
   1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22 solder wrought copper fittings.
      a. Solder: ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.
      b. Braze: AWS A5.8M/A5.8 BCuP copper/silver alloy.
      c. Braze: 1 BCuP copper/silver alloy.
   2. Tee Connections: Mechanically extracted collars with notched and dimpled branch tube.
   3. Mechanical Press Sealed Fittings: Double pressed type complying with ASME B16.22, utilizing EPDM, nontoxic synthetic rubber sealing elements.
      a. Manufacturers:
         1) Grinnell Products, a Tyco Business: www.grinnell.com.
         2) Viega LLC: www.viega.com/#sle.
         3) Substitutions: See Section 01 60 00 - Product Requirements.
   4. Joints: Solder, lead free, 95-5 tin-antimony, or tin and silver.

2.03 CHILLED WATER PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M, Schedule 40, black; using one of the following joint types:
   1. Welded Joints: ASTM A234/A234M, wrought steel welding type fittings; AWS D1.1/D1.1M welded.
   2. Grooved Joints: AWWA C606 grooved pipe, fittings of same material, and mechanical couplings.

B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), hard drawn; using one of the following joint types:
   1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22, solder wrought copper fittings.
      a. Solder: ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.
      b. Braze: AWS A5.8M/A5.8 BCuP copper/silver alloy.
   2. Grooved Joints: AWWA C606 grooved tube, fittings of same material, and copper-tube-dimension mechanical couplings.
   3. Tee Connections: Mechanically extracted collars with notched and dimpled branch tube.

4. Mechanical Press Sealed Fittings: Double pressed type complying with ASME B16.22, utilizing EPDM, nontoxic synthetic rubber sealing elements.
   a. Manufacturers:
      1) Grinnell Products: www.grinnell.com/#sle.
      2) Viega LLC: www.viega.us/#sle.
      3) Substitutions: See Section 01 60 00 - Product Requirements.

2.04 EQUIPMENT DRAINS AND OVERFLOWS

A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), drawn; using one of the following joint types:
   1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22 solder wrought copper fittings; ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.
   2. Grooved Joints: AWWA C606 grooved pipe, fittings of same material, and mechanical couplings.
   3. Joints: Solder, lead free, ASTM B 32, HB alloy (95-5 tin-antimony), or tin and silver.

B. PVC Pipe: ASTM D1785, Schedule 40, or ASTM D2241, SDR 21 or 26.
   1. Fittings: ASTM D2466 or D2467, PVC.
   2. Joints: Solvent welded in accordance with ASTM D2855.

2.05 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.

B. Conform to ASME B31.9.

C. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch: Malleable iron, adjustable swivel, split ring.

D. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.

E. Hangers for Hot Pipe Sizes 2 to 4 Inches: Carbon steel, adjustable, clevis.

F. Hangers for Hot Pipe Sizes 6 Inches and Over: Adjustable steel yoke, cast iron roll, double hanger.

G. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

H. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 Inches and Over: Steel channels with welded spacers and hanger rods, cast iron roll.

I. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.

J. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.

K. Wall Support for Hot Pipe Sizes 6 Inches and Over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron roll.

L. Vertical Support: Steel riser clamp.

M. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

N. Floor Support for Hot Pipe Sizes to 4 Inches: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

O. Floor Support for Hot Pipe Sizes 6 Inches and Over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.

P. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

Q. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.

R. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.06 UNIONS, FLANGES, MECHANICAL COUPLINGS, AND DIELECTRIC CONNECTIONS

A. Unions for Pipe 2 Inches and Under:
   1. Ferrous Piping: 150 psig malleable iron, threaded.
   2. Copper Pipe: Bronze, soldered joints.

B. Flanges for Pipe Over 2 Inches:
   1. Ferrous Piping: 150 psig forged steel, slip-on.
   2. Copper Piping: Bronze.
   3. Gaskets: 1/16 inch thick preformed neoprene.

C. Grooved and Shouldered Pipe End Couplings:
   1. Dimensions and Testing: In accordance with AWWA C606.
   2. Mechanical Couplings: Comply with ASTM F1476.
   3. Housing Clamps: Malleable iron galvanized to engage and lock, designed to permit some angular deflection, contraction, and expansion.
   4. Gasket Material: EPDM suitable for operating temperature range from -30 degrees F to 230 degrees F.
   5. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
   6. When pipe is field grooved, provide coupling manufacturer's grooving tools.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.07 GATE VALVES

A. Manufacturers:
   1. Conbraco Industries: www.apollovalves.com.
   2. Nibco, Inc: www.nibco.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Up To and Including 2 Inches:
   1. Bronze body, bronze trim, screwed bonnet, non-rising stem, lockshield stem, inside screw with backseating stem, solid wedge disc, alloy seat rings, solder or threaded ends.

C. Over 2 Inches:
   1. Iron body, bronze trim, bolted bonnet, rising stem, handwheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged ends.

2.08 GLOBE OR ANGLE VALVES

A. Manufacturers:
   1. Conbraco Industries: www.apollovalves.com.
   2. Nibco, Inc: www.nibco.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Up To and Including 2 Inches:
   1. Bronze body, bronze trim, screwed bonnet, rising stem and handwheel, inside screw with backseating stem, renewable composition disc and bronze seat, solder or threaded ends.

C. Over 2 Inches:
   1. Iron body, bronze trim, bolted bonnet, rising stem, handwheel, outside screw and yoke, rotating plug-type disc with renewable seat ring and disc, flanged ends.

2.09 BALL VALVES

A. Manufacturers:
   1. Apollo Valves: www.apollovalves.com/#sle.
   2. Conbraco Industries: www.apollovalves.com.
   3. Grinnell Products: www.grinnell.com/#sle.
   4. Nibco, Inc: www.nibco.com.
   5. Victaulic Company: www.victaulic.com.
   6. Viega LLC: www.viega.us/#sle.
   7. Milwaukee Valve Company: www.milwaukeevalve.com.
   8. Substitutions: See Section 01 60 00 - Product Requirements.

B. Up To and Including 2 Inches:
   1. Bronze one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle with balancing stops, solder ends with union.

C. Over 2 Inches:
   1. Ductile iron body, chrome plated stainless steel ball, teflon or Virgin TFE seat and stuffing box seals, lever handle or gear operated, flanged ends, rated to 800 psi.

2.10 PLUG VALVES

A. Manufacturers:
   1. Conbraco Industries: www.apollovalves.com.
   2. Nibco, Inc: www.nibco.com.
   3. Victaulic Company: www.victaulic.com.
   4. Milwaukee Valve Company: www.milwaukeevalve.com.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Up To and Including 2 Inches:
   1. Bronze body, bronze tapered plug, 40 percent port opening, non-lubricated, teflon packing, threaded ends.
   2. Operator: One plug valve wrench for every ten plug valves minimum of one.

C. Over 2 Inches:
   1. Cast iron body and plug, 40 percent port opening, pressure lubricated, teflon packing, flanged ends.
   2. Operator: Each plug valve with a wrench with set screw.

2.11 BUTTERFLY VALVES

A. Manufacturers:
   1. Apollo Valves: www.apollovalves.com/#sle.
   2. Hammond Valve: www.hammondvalve.com.
   3. Crane Co.: www.cranevalve.com.
   4. Grinnell Products: www.grinnell.com/#sle.
   5. Victaulic Company: www.victaulic.com.
   6. Milwaukee Valve Company: www.milwaukeevalve.com.
   7. Victaulic Company: www.victaulic.com/#sle.
   8. Substitutions: See Section 01 60 00 - Product Requirements.

B. Body: Cast or ductile iron with resilient replaceable EPDM seat, wafer, lug, or grooved ends, extended neck.

C. Disc: Construct of aluminum bronze, chrome plated ductile iron, stainless steel, ductile iron with EPDM enscapsulation, or Buna-N enscapsulation.

D. Body: Cast or ductile iron with resilient replaceable EPDM seat, wafer or lug ends, extended neck.

E. Disc: Aluminum bronze.

F. Stem: Stainless steel with stem offset from the centerline to provide full 360 degree circumferential setting.

G. Operator: Infinite position lever handle with memory stop.

2.12 SWING CHECK VALVES

A. Manufacturers:
   1. Hammond Valve: www.hammondvalve.com.
   2. Nibco, Inc: www.nibco.com.
   3. Victaulic Company: www.victaulic.com.
   4. Milwaukee Valve Company: www.milwaukeevalve.com.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Up To and Including 2 Inches:
   1. Bronze body, bronze trim, bronze rotating swing disc, with composition disc, solder or threaded ends.

C. Over 2 Inches:
   1. Iron body, bronze trim, stainless steel, bronze, or bronze faced rotating swing disc, renewable disc and seat, flanged or grooved ends.
   2. Iron body, bronze trim, bronze or bronze faced rotating swing disc, renewable disc and seat, flanged ends.

2.13 SPRING LOADED CHECK VALVES

A. Manufacturers:
   1. Hammond Valve: www.hammondvalve.com.
   2. Crane Co.: www.cranevalve.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.
   4. Victaulic Company: www.victaulic.com.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Iron body, bronze trim, split plate, hinged with stainless steel spring, resilient seal bonded to body, wafer or threaded lug ends.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Prepare pipe for grooved mechanical joints as required by coupling manufacturer.

C. Remove scale and dirt on inside and outside before assembly.

D. Prepare piping connections to equipment using jointing system specified.

E. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

F. After completion, fill, clean, and treat systems. Refer to Section 23 25 00 for additional requirements.

3.02 INSTALLATION

A. All equipment drain and overflow piping concealed behind walls or exposed to exterior is to be provided as copper.

B. Install in accordance with manufacturer's instructions.

C. Install heating water, glycol, chilled water, condenser water, and engine exhaust piping to requirements. Install chilled water piping to ASME B31.5 requirements.

D. Route piping in orderly manner, parallel to building structure, and maintain gradient.

E. Install piping to conserve building space and to avoid interfere with use of space.

F. Group piping whenever practical at common elevations.

G. Sleeve pipe passing through partitions, walls and floors.

H. Slope piping and arrange to drain at low points.

I. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 22 05 16.

J. Inserts:
   1. Provide inserts for placement in concrete formwork.
   2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
   3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
   4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
   5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

K. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.9, ASTM F708, or MSS SP-58.
   2. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
   3. Place hangers within 12 inches of each horizontal elbow.
   4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
   5. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
   6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
   7. Provide copper plated hangers and supports for copper piping.
   8. Prime coat exposed steel hangers and supports. Refer to Section 09 90 00. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

L. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 23 07 19.

M. Provide access where valves and fittings are not exposed.

N. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welds.

O. Prepare unfinished pipe, fittings, supports, and accessories, ready for finish painting. Refer to Section 09 90 00.

P. Install valves with stems upright or horizontal, not inverted.

3.03 PIPE MATERIAL SCHEDULES

A. Equipment Drains & Overflows, All Sizes.
   1. Interior, exposed to view & concealed behind walls above inaccessible ceilings: Copper
   2. Interior, concealed above accessible ceilings: PVC
   3. Exterior: Copper

B. Chilled Water Piping, Above Grade.
   1. Up to and including 2": Copper
   2. 2-1/2": Copper or Steel

3. Over 2-1/2": Steel

C. Heating Water Piping, Above Grade.
1. Up to and including 2": Copper
2. 2-1/2": Copper or Steel
3. Over 2-1/2": Steel

3.04 PIPE HANGER SCHEDULES

A. Hanger Spacing for Copper Tubing.
1. 1/2 inch and 3/4 inch: Maximum span, 5 feet; minimum rod size, 1/4 inch.
2. 1 inch: Maximum span, 6 feet; minimum rod size, 1/4 inch.
3. 1-1/2 inch and 2 inch: Maximum span, 8 feet; minimum rod size, 3/8 inch.
4. 2-1/2 inch: Maximum span, 9 feet; minimum rod size, 3/8 inch.
5. 3 inch: Maximum span, 10 feet; minimum rod size, 3/8 inch.
6. 4 inch: Maximum span, 12 feet; minimum rod size, 1/2 inch.
7. 6 inch: Maximum span, 14 feet; minimum rod size, 1/2 inch.
8. 8 inch: Maximum span, 16 feet; minimum rod size, 5/8 inch.
9. 10 inch: Maximum span, 18 feet; minimum rod size, 3/4 inch.
10. 12 inch: Maximum span, 19 feet; minimum rod size, 7/8 inch.

B. Hanger Spacing for Steel Piping.
1. 1/2 inch, 3/4 inch, and 1 inch: Maximum span, 7 feet; minimum rod size, 1/4 inch.
2. 1-1/4 inches: Maximum span, 8 feet; minimum rod size, 3/8 inch.
3. 1-1/2 inches: Maximum span, 9 feet; minimum rod size, 3/8 inch.
4. 2 inches: Maximum span, 10 feet; minimum rod size, 3/8 inch.
5. 2-1/2 inches: Maximum span, 11 feet; minimum rod size, 3/8 inch.
6. 3 inches: Maximum span, 12 feet; minimum rod size, 3/8 inch.
7. 4 inches: Maximum span, 14 feet; minimum rod size, 1/2 inch.
8. 6 inches: Maximum span, 17 feet; minimum rod size, 1/2 inch.
9. 8 inches: Maximum span, 19 feet; minimum rod size, 5/8 inch.
10. 10 inches: Maximum span, 20 feet; minimum rod size, 3/4 inch.
11. 12 inches: Maximum span, 23 feet; minimum rod size, 7/8 inch.
12. 14 inches: Maximum span, 25 feet; minimum rod size, 1 inch.
13. 16 inches: Maximum span, 27 feet; minimum rod size, 1 inch.
14. 18 inches: Maximum span, 28 feet; minimum rod size, 1-1/4 inch.
15. 20 inches: Maximum span, 30 feet; minimum rod size, 1-1/4 inch.

C. Hanger Spacing for Plastic Piping.
1. 1/2 inch: Maximum span, 42 inches; minimum rod size, 1/4 inch.
2. 3/4 inch: Maximum span, 45 inches; minimum rod size, 1/4 inch.
3. 1 inch: Maximum span, 51 inches; minimum rod size, 1/4 inch.
4. 1-1/4 inches: Maximum span, 57 inches; minimum rod size, 3/8 inch.
5. 1-1/2 inches: Maximum span, 63 inches; minimum rod size, 3/8 inch.
6. 2 inches: Maximum span, 69 inches; minimum rod size, 3/8 inch.
7. 3 inches: Maximum span, 7 feet; minimum rod size, 3/8 inch.
8. 4 inches: Maximum span, 8 feet; minimum rod size, 1/2 inch.
9. 6 inches: Maximum span, 10 feet; minimum rod size, 1/2 inch.
10. 8 inches: Maximum span, 11 feet; minimum rod size, 5/8 inch.
11. 10 inches: Maximum span, 13 feet; minimum rod size, 3/4 inch.
12. 12 inches: Maximum span, 14 feet; minimum rod size, 7/8 inch.
13. 14 inches: Maximum span, 15 feet; minimum rod size, 1 inch.
14. 16 inches: Maximum span, 16 feet; minimum rod size, 1 inch.

15. 18 inches: Maximum span, 18 feet; minimum rod size, 1-1/4 inch.

END OF SECTION

SECTION 23 21 14
HYDRONIC SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air vents.

B. Strainers.

C. Suction diffusers.

D. Pump connectors.

E. Combination pump discharge valves.

F. Balancing valves.

G. Pump suction fittings.

H. Flow indicators and controls.

I. Relief valves.

1.02 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide product data for manufactured products and assemblies required for this project. Include component sizes, rough-in requirements, service sizes, and finishes. Include product description, model and dimensions.

C. Certificates: Inspection certificates for pressure vessels from authority having jurisdiction.

D. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.

E. Project Record Documents: Record actual locations of flow controls.

F. Maintenance Data: Include installation instructions, assembly views, lubrication instructions, and replacement parts list.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS

2.01 AIR VENTS

A. Manufacturers:
   1. Armstrong International, Inc: www.armstronginternational.com/#sle.
   2. ITT Bell & Gossett: www.bellgossett.com/#sle.
   3. Taco, Inc: www.taco-hvac.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Manual Type: Short vertical sections of 2 inch diameter pipe to form air chamber, with 1/8 inch brass needle valve at top of chamber.

C. Float Type:
   1. Brass or semi-steel body, copper, polypropylene, or solid non-metallic float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.
   2. Cast iron body and cover, float, bronze pilot valve mechanism suitable for system operating temperature and pressure; with isolating valve.

D. Washer Type:
   1. Brass with hygroscopic fiber discs, vent ports, adjustable cap for manual shut-off, and integral spring loaded ball check valve.

E. Maximum Fluid Pressure: 150 psi.

F. Maximum Fluid Temperature: 250 degrees F.

2.02 STRAINERS

A. Manufacturers:
   1. Armstrong International, Inc: www.armstronginternational.com/#sle.
   2. Green Country Filtration: greencountryfiltration.com.
   3. WEAMCO: www.weamco.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Size 2 inch and Under:
   1. Screwed brass or iron body for 175 psi working pressure, Y pattern with 1/32 inch stainless steel perforated screen.

C. Size 2-1/2 inch to 4 inch:
   1. Flanged iron body for 175 psi working pressure, Y pattern with 3/64 inch stainless steel perforated screen.

D. Size 5 inch and Larger:
   1. Flanged iron body for 175 psi working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

2.03 SUCTION DIFFUSERS

A. Manufacturers:
   1. ITT Bell & Gossett: www.bellgossett.com/#sle.
   2. Anvil International, Inc: www.anvilintl.com.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fitting: Angle pattern, cast-iron body, threaded for 2 inch and smaller, flanged for 2-1/2 inch and larger, rated for 175 psi working pressure, with inlet vanes, cylinder strainer with 3/16 inch diameter openings, disposable 5/32 inch mesh strainer to fit over cylinder strainer, 20 mesh start up screen, and permanent magnet located in flow stream and removable for cleaning.

C. Fitting: Angle pattern, cast-iron body, threaded for 2 inch and smaller, flanged for 2-1/2 inch and larger, rated for 175 psi working pressure, with inlet vanes, cylinder strainer with 3/16 inch diameter openings, disposable fine mesh strainer to fit over cylinder strainer, and permanent magnet located in flow stream and removable for cleaning.

D. Accessories: Adjustable foot support, blowdown tapping in bottom, gage tapping in side.

2.04 PUMP CONNECTORS

A. Manufacturers:
   1. Ferguson Enterprises Inc: www.fnw.com/#sle.
   2. The Metraflex Company; Vane Flex: www.metraflex.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Flexible Connectors: Flanged, braided type with wetted components of stainless steel, sized to match piping.
   1. Maximum Allowable Working Pressure: 175 psig at 120 degrees F.
   2. Accommodate the Following:
      a. Angular Rotation: 15 degrees.
      b. Force developed by 1.5 times specified maximum allowable operating pressure.
   3. End Connections: Same as specified for pipe jointing.
   4. Provide pump connector with integral vanes to reduce turbulent flow.
   5. Provide necessary accessories including, but not limited to, swivel joints.

2.05 COMBINATION PUMP DISCHARGE VALVES

A. Manufacturers:
   1. Crane Co.: www.cranevalve.com/#sle.
   2. Taco, Inc: www.taco-hvac.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Valves: Straight or angle pattern, flanged cast-iron valve body with bolt-on bonnet for 175 psi operating pressure, non-slam check valve with spring-loaded bronze disc and seat, stainless steel stem, and calibrated adjustment permitting flow regulation.

2.06 BALANCING VALVES

A. Manufacturers:
   1. Armstrong International, Inc: www.armstronginternational.com/#sle.
   2. ITT Bell & Gossett: www.bellgossett.com/#sle.
   3. Taco, Inc: www.taco-hvac.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Size 2 inch and Smaller:
   1. Provide ball or globe style with flow balancing, flow measurement, and shut-off capabilities, memory stops, minimum of two metering ports and NPT threaded or soldered connections.
   2. Metal construction materials consist of bronze or brass.
   3. Non-metal construction materials consist of Teflon, EPDM, or engineered resin.

C. Size 2.5 inch and Larger:
   1. Provide ball, globe, or butterfly style with flow balancing, flow measurement, and shut-off capabilities, memory stops, minimum of two metering ports and flanged, grooved, or weld end connections.
   2. Valve body construction materials consist of cast iron, carbon steel, or ductile iron.
   3. Internal components construction materials consist of brass, aluminum bronze, bronze, Teflon, EPDM, NORYL, or engineered resin.

2.07 RELIEF VALVES

A. Manufacturers:
   1. Armstrong International, Inc: www.armstronginternational.com/#sle.
   2. ITT Bell & Gossett: www.bellgossett.com/#sle.
   3. Conbraco Industries: www.apollovalves.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labelled.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install specialties in accordance with manufacturer's instructions.

B. Where large air quantities can accumulate, provide enlarged air collection standpipes.

C. Provide manual air vents at system high points and as indicated.

D. For automatic air vents in ceiling spaces or other concealed locations, provide vent tubing to nearest drain.

E. Provide pump suction fitting on suction side of base mounted centrifugal pumps . Remove temporary strainers after cleaning systems.

F. Provide combination pump discharge valve on discharge side of base mounted centrifugal pumps .

G. Support pump fittings with floor mounted pipe and flange supports.

H. Provide relief valves on pressure tanks, low pressure side of reducing valves, heat exchangers, and expansion tanks.

I. Select system relief valve capacity so that it is greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment.

J. Pipe relief valve outlet to nearest floor drain.

K. Where one line vents several relief valves, make cross sectional area equal to sum of individual vent areas.

END OF SECTION

SECTION 23 22 13
STEAM AND STEAM CONDENSATE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe and pipe fittings.

B. Pipe hangers and supports.

C. Steam piping system.

D. Steam condensate piping system.

1.02 RELATED REQUIREMENTS

A. Section 08 31 00 - Access Doors and Panels.

B. Section 09 91 23 - Interior Painting.

C. Section 23 05 53 - Identification for HVAC Piping and Equipment.

D. Section 23 07 19 - HVAC Piping Insulation.

E. Section 23 22 14 - Steam and Condensate Heating Specialties.

F. Section 23 25 00 - HVAC Water Treatment: Pipe cleaning.

1.03 REFERENCE STANDARDS

A. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300.

B. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

C. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

D. ASME B31.1 - Power Piping.

E. ASME B31.9 - Building Services Piping.

F. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

G. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

H. ASTM B32 - Standard Specification for Solder Metal.

I. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

J. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).

K. AWS D1.1/D1.1M - Structural Welding Code - Steel.

L. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

1.04 SYSTEM DESCRIPTION

A. When more than one piping system material is selected, ensure systems components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, unions, and couplings for servicing are consistently provided.

B. Use unions and flanges downstream of valves and at equipment or apparatus connections. Use dielectric unions where joining dissimilar materials. Do not use direct welded or threaded connections.

C. Provide pipe hangers and supports in accordance with ASME B31.9 or MSS SP-58 unless indicated otherwise.

D. Use ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

E. Use gate or ball valves for throttling, bypass, or manual flow control services.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories. Provide manufacturers catalogue information. Indicate valve data and ratings.

C. Welders Certificate: Include welders certification of compliance with ASME BPVC-IX.

D. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.

E. Project Record Documents: Record actual locations of valves.

F. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Valve Repacking Kits: One for each type and size of valve.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Welder Qualifications: Certified in accordance with ASME BPVC-IX.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labelling in place. Inspect for damage.

B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Conform to ASME B31.9 and ASME B31.1 code for installation of piping system.

B. Provide certificate of compliance from Authority Having Jurisdiction indicating approval of welders.

C. Welding Materials and Procedures: Conform to ASME BPVC-IX and applicable state labor regulations.

2.02 LOW PRESSURE STEAM PIPING (15 PSIG MAXIMUM)

A. Steel Pipe: ASTM A53/A53M, Schedule 80, black.
   1. Fittings: ASME B16.3 malleable iron Class 150, or ASTM A234/A234M wrought steel.
   2. Joints: Threaded, or AWS D1.1/D1.1M welded.

B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), drawn.
   1. Fittings: ASME B16.18, cast brass, or ASME B16.22 wrought copper.
   2. Joints: Solder, lead free, ASTM B32, HB alloy (95-5 tin-antimony), or tin and silver.

2.03 LOW PRESSURE STEAM CONDENSATE PIPING

A. Steel Pipe: ASTM A53/A53M, Schedule 80, black.
   1. Fittings: ASME B16.3 malleable iron Class 150, or ASTM A234/A234M wrought steel.
   2. Joints: Threaded, or AWS D1.1/D1.1M welded.

B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), drawn.
   1. Fittings: ASME B16.18, cast brass, or ASME B16.22, wrought copper.

2. Joints: Solder, lead free, ASTM B32, HB alloy (95-5 tin-antimony), or tin and silver.

2.04 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.

B. Hangers for Pipe Sizes 2 to 4 Inches: Carbon steel, adjustable, clevis.

C. Hangers for Pipe Sizes 6 Inches and Over: Adjustable steel yoke, cast iron roll, double hanger.

D. Multiple or Trapeze Hangers for Pipe Sizes to 4 inches: Steel channels with welded spacers and hanger rods.

E. Multiple or Trapeze Hangers for Pipe Sizes 6 Inches and Over: Steel channels with welded spacers and hanger rods; cast iron roll and stand.

F. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.

G. Wall Support for Pipe Sizes 4 to 5 Inches: Welded steel bracket and wrought steel clamp.

H. Wall Support for Pipe Sizes 6 Inches and Over: Welded steel bracket and wrought steel clamp; adjustable steel yoke and cast iron roll.

I. Vertical Support: Steel riser clamp.

J. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.

K. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.05 UNIONS, FLANGES, AND COUPLINGS

A. Unions for Pipe 2 Inches and Under:
   1. Ferrous Piping: 150 psig galvanized malleable iron, threaded.
   2. Copper Pipe: Bronze, soldered joints.

B. Flanges for Pipe Over 2 Inches:
   1. Ferrous Piping: 150 psig forged steel, slip-on.
   2. Copper Piping: Bronze.
   3. Gaskets: 1/16 inch thick preformed non-asbestos graphite fiber.

C. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges or unions.

D. Keep open ends of pipe free from scale and dirt. Whenever work is suspended during construction protect open ends with temporary plugs or caps.

E. After completion, fill, clean, and treat systems. Refer to Section 23 25 00.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient.

C. Install piping to conserve building space and avoid interference with use of space.

D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

E. Inserts:
   1. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
   2. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
   3. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

F. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.9.
   2. Place hangers within 12 inches of each horizontal elbow.
   3. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
   4. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
   5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
   6. Provide copper plated hangers and supports for copper piping.
   7. Prime coat exposed steel hangers and supports. Refer to Section 09 91 23. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

G. Provide clearance for installation of insulation and access to valves and fittings.

H. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 08 31 00.

I. Slope steam piping one inch in 40 feet in direction of flow. Use eccentric reducers to maintain bottom of pipe level.

J. Slope steam condensate piping one inch in 40 feet. Provide drip trap assembly at low points and before control valves. Run condensate lines from trap to nearest condensate receiver. Provide loop vents over trapped sections.

K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welds.

L. Prepare unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Section 09 91 23.

M. Install valves with stems upright or horizontal, not inverted.

3.03 SCHEDULES

A. Hanger Spacing for Copper Tubing.
   1. 1/2 inch and 3/4 inch: Maximum span, 5 feet; minimum rod size, 1/4 inch.
   2. 1 inch: Maximum span, 6 feet; minimum rod size, 1/4 inch.
   3. 1-1/2 inch and 2 inch: Maximum span, 8 feet; minimum rod size, 3/8 inch.
   4. 2-1/2 inch: Maximum span, 9 feet; minimum rod size, 3/8 inch.
   5. 3 inch: Maximum span, 10 feet; minimum rod size, 3/8 inch.
   6. 4 inch: Maximum span, 12 feet; minimum rod size, 1/2 inch.
   7. 6 inch: Maximum span, 14 feet; minimum rod size, 1/2 inch.
   8. 8 inch: Maximum span, 16 feet; minimum rod size, 5/8 inch.
   9. 10 inch: Maximum span, 18 feet; minimum rod size, 3/4 inch.
   10. 12 inch: Maximum span, 19 feet; minimum rod size, 7/8 inch.

B. Hanger Spacing for Steel Steam Piping.
   1. 1/2 inch: Maximum span, 8 feet; minimum rod size, 1/4 inch.

2. 3/4 inch and 1 inch: Maximum span, 9 feet; minimum rod size, 1/4 inch.
3. 1-1/4 inches: Maximum span, 11 feet; minimum rod size, 3/8 inch.
4. 1-1/2 inches: Maximum span, 12 feet; minimum rod size, 3/8 inch.
5. 2 inches: Maximum span, 13 feet; minimum rod size, 3/8 inch.
6. 2-1/2 inches: Maximum span, 14 feet; minimum rod size, 3/8 inch.
7. 3 inches: Maximum span, 15 feet; minimum rod size, 3/8 inch.
8. 4 inches: Maximum span, 17 feet; minimum rod size, 1/2 inch.
9. 6 inches: Maximum span, 21 feet; minimum rod size, 1/2 inch.
10. 8 inches: Maximum span, 24 feet; minimum rod size, 5/8 inch.
11. 10 inches: Maximum span, 26 feet; minimum rod size, 3/4 inch.

C. Hanger Spacing for Steel Steam Condensate Piping.
1. 1/2 inch, 3/4 inch, and 1 inch: Maximum span, 7 feet; minimum rod size, 1/4 inch.
2. 1-1/4 inches: Maximum span, 8 feet; minimum rod size, 3/8 inch.
3. 1-1/2 inches: Maximum span, 9 feet; minimum rod size, 3/8 inch.
4. 2 inches: Maximum span, 10 feet; minimum rod size, 3/8 inch.
5. 2-1/2 inches: Maximum span, 11 feet; minimum rod size, 3/8 inch.
6. 3 inches: Maximum span, 12 feet; minimum rod size, 3/8 inch.
7. 4 inches: Maximum span, 14 feet; minimum rod size, 1/2 inch.
8. 6 inches: Maximum span, 17 feet; minimum rod size, 1/2 inch.
9. 8 inches: Maximum span, 19 feet; minimum rod size, 5/8 inch.
10. 10 inches: Maximum span, 20 feet; minimum rod size, 3/4 inch.

END OF SECTION

SECTION 23 22 14
STEAM AND CONDENSATE HEATING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Steam traps.

B. Steam air vents.

C. Steam safety valves.

D. Steam condensate meters.

1.02 RELATED REQUIREMENTS

A. Section 23 07 16 - HVAC Equipment Insulation.

B. Section 23 07 19 - HVAC Piping Insulation.

C. Section 23 22 13 - Steam and Steam Condensate Piping.

D. Section 23 52 23 - Cast-Iron Boilers.

E. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.

B. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels.

C. ASME B31.9 - Building Services Piping.

D. ASTM A105/A105M - Standard Specification for Carbon Steel Forgings for Piping Applications.

E. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data:
   1. Provide for manufactured products and assemblies required for this project.
   2. Include product description, model, dimensions, component sizes, rough-in requirements, service sizes, and finishes.
   3. Submit schedule indicating manufacturer, model number, size, location, rated capacity, load served, and features for each specialty.
   4. Include electrical characteristics and connection requirements.

C. Manufacturer's Installation Instructions: Indicate application, selection, and hookup configuration. Include pipe and accessory elevations.

D. Operation and Maintenance Data: Include installation instructions, servicing requirements, and recommended spare parts lists.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Pump Seals: One set for each type and size of pump.
   3. Steam Trap Service Kits: One for each type and size.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with State and Local requirements for the installation of boilers and pressure vessels.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum three years of documented experience.

C. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS

2.01 STEAM TRAPS

A. Manufacturers:
   1. Armstrong International, Inc: www.armstronginternational.com/#sle.
   2. Marshall Engineered Products Company: www.mepcollc.com.
   3. Spirax-Sarco: www.spiraxsarco.com/us.

B. Steam Trap Applications:
   1. Use Float and Thermostatic Traps for:
      a. Steam separators.
      b. Flash tanks.
      c. Main headers.
      d. Branch lines.

C. Steam Trap Performance:
   1. Select to handle minimum of two times maximum condensate load of apparatus served.
   2. Pressure Differentials:
      a. Low Pressure Systems (15 psi maximum): 2 psi.

D. Float and Thermostatic Traps: ASTM A126 cast iron or semi-steel body and bolted cover, stainless steel or bronze bellows type air vent, stainless steel or copper float, stainless steel lever and valve assembly
   1. Rating: 15 psi WSP.
   2. Features: Access to internal parts without disturbing piping, bottom drain plug.
   3. Accessories: Gage glass with shut-off cocks.

2.02 STEAM AIR VENTS

A. Manufacturers:
   1. Armstrong International, Inc: www.armstronginternational.com/#sle.
   2. Bell and Gossett, a xylem brand: www.bellgossett.com.
   3. Spirax-Sarco: www.spiraxsarco.com/us.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. 125 psi WSP: Balanced pressure type; cast brass body and cover; access to internal parts without disturbing piping; stainless steel bellows, stainless steel valve and seat.

2.03 SAFETY RELIEF VALVES

A. Manufacturers:
   1. Armstrong International, Inc: www.armstronginternational.com/#sle.
   2. ITT McDonnell & Miller, a xylem brand: www.mcdonnellmiller.com.
   3. Spirax-Sarco: www.spiraxsarco.com/us.

B. Valve: Bronze body, stainless steel valve spring, stem, and trim, direct pressure actuated, capacities ASME certified and labelled.

C. Accessories: Drip pan elbow.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install steam and steam condensate piping and specialties in accordance with ASME B31.9.

B. Install specialties in accordance with manufacturer's instructions.

C. Steam Traps:
   1. Provide minimum 3/4 inch size on steam mains and branches.
   2. Install with union or flanged connections at both ends.
   3. Provide gate valve and strainer at inlet, and gate valve and check valve at discharge.
   4. Provide minimum 10 inch long, line size dirt pocket between apparatus and trap.

D. Remove thermostatic elements from steam traps during temporary and trial usage, and until system has been operated and dirt pockets cleaned of sediment and scale.

E. Rate relief valves for pressure upstream of pressure reducing station, for full operating capacity. Set relief at maximum 20 percent above reduced pressure.

F. Terminate relief valves to outdoors. Provide drip pan elbow with drain connection to nearest floor drain.

G. When several relief valve vents are connected to a common header, header cross section area shall equal sum of individual vent outlet areas.

END OF SECTION

SECTION 23 23 00
REFRIGERANT PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping.
B. Refrigerant.
C. Moisture and liquid indicators.
D. Valves.
E. Strainers.
F. Check valves.
G. Pressure relief valves.
H. Filter-driers.
I. Solenoid valves.
J. Expansion valves.
K. Receivers.
L. Flexible connections.

1.02 REFERENCE STANDARDS

A. AHRI 495 - Performance Rating of Refrigerant Liquid Receivers.
B. AHRI 710 - Performance Rating of Liquid-Line Driers.
C. AHRI 730 (I-P) - Flow Capacity Rating of Suction Line Filters and Suction Line Filter Driers.
D. AHRI 750 - Thermostatic Refrigerant Expansion Valves.
E. AHRI 760 - Performance Rating of Solenoid Valves for Use With Volatile Refrigerants.
F. ASHRAE Std 15 - Safety Standard for Refrigeration Systems.
G. ASHRAE Std 34 - Designation and Safety Classification of Refrigerants.
H. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels.
I. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators.
J. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
K. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
L. ASME B31.5 - Refrigeration Piping and Heat Transfer Components.
M. ASME B31.9 - Building Services Piping.
N. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
O. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
P. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
Q. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).
R. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.

S. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

T. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

U. AWS D1.1/D1.1M - Structural Welding Code - Steel.

V. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

W. MSS SP-69 - Pipe Hangers and Supports - Selection and Application; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc..

X. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc..

Y. UL 429 - Electrically Operated Valves.

1.03 SYSTEM DESCRIPTION

A. Where more than one piping system material is specified ensure system components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

B. Provide pipe hangers and supports in accordance with MSS SP-69 unless indicated otherwise.

C. Liquid Indicators:
   1. Use line size liquid indicators in main liquid line leaving condenser.
   2. If receiver is provided, install in liquid line leaving receiver.
   3. Use line size on leaving side of liquid solenoid valves.

D. Valves:
   1. Use service valves on suction and discharge of compressors.
   2. Use gage taps at compressor inlet and outlet.
   3. Use gage taps at hot gas bypass regulators, inlet and outlet.
   4. Use check valves on compressor discharge.
   5. Use check valves on condenser liquid lines on multiple condenser systems.

E. Refrigerant Charging (Packed Angle) Valve: Use in liquid line between receiver shut-off valve and expansion valve.

F. Strainers:
   1. Use line size strainer upstream of each automatic valve.
   2. Where multiple expansion valves with integral strainers are used, use single main liquid line strainer.
   3. On steel piping systems, use strainer in suction line.
   4. Use shut-off valve on each side of strainer.

G. Pressure Relief Valves: Use on ASME receivers and pipe to outdoors.

H. Filter-Driers:
   1. Use a filter-drier immediately ahead of liquid-line controls, such as thermostatic expansion valves, solenoid valves, and moisture indicators.
   2. Use a filter-drier on suction line just ahead of compressor.
   3. Use sealed filter-driers in lines smaller than 1/2 inch outside diameter.
   4. Use sealed filter-driers in low temperature systems.
   5. Use sealed filter-driers in systems utilizing hermetic compressors.
   6. Use replaceable core filter-driers in lines of 1/2 inch outside diameter or greater.
   7. Use replaceable core liquid-line filter-driers in systems utilizing receivers.
   8. Use filter-driers for each solenoid valve.

I. Solenoid Valves:

1. Use in liquid line of systems operating with single pump-out or pump-down compressor control.
2. Use in liquid line of single or multiple evaporator systems.
3. Use in oil bleeder lines from flooded evaporators to stop flow of oil and refrigerant into the suction line when system shuts down.

J. Receivers:
1. Use on systems five tons and larger, sized to accommodate pump down charge.
2. Use on systems with long piping runs.

K. Flexible Connectors: Utilize at or near compressors where piping configuration does not absorb vibration.

1.04 SUBMITTALS

A. Product Data: Provide general assembly of specialties, including manufacturers catalogue information. Provide manufacturers catalog data including load capacity.

B. Shop Drawings: Indicate schematic layout of system, including equipment, critical dimensions, and sizes.

C. Design Data: Submit design data indicating pipe sizing. Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers.

D. Test Reports: Indicate results of leak test, acid test.

E. Manufacturer's Installation Instructions: Indicate support, connection requirements, and isolation for servicing.

F. Submit welders certification of compliance with ASME (BPV IX) or AWS D1.1.

G. Project Record Documents: Record exact locations of equipment and refrigeration accessories on record drawings.

H. Maintenance Data: Include instructions for changing cartridges, assembly views, spare parts lists.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum five years of documented experience.

B. Design piping system under direct supervision of a Professional Engineer experienced in design of this type of work.

C. Design piping system under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.06 REGULATORY REQUIREMENTS

A. Conform to ASME B31.9 for installation of piping system.

B. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.

C. Welders Certification: In accordance with ASME (BPV IX) or AWS D1.1.

D. Products Requiring Electrical Connection: Listed and classified by UL, as suitable for the purpose indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store piping and specialties in shipping containers with labeling in place.

B. Protect piping and specialties from entry of contaminating material by leaving end caps and plugs in place until installation.

C. Dehydrate and charge components such as piping and receivers, seal prior to shipment, until connected into system.

1.08 MAINTENANCE PRODUCTS

A. See Section 01 6000 - Product Requirements, for additional provisions.

B. Provide two refrigeration oil test kits each containing everything required to conduct one test.

C. Provide two filter-dryer cartridges of each type.

PART 2 PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Filter-Driers:
   1. Use a filter-drier immediately ahead of liquid-line controls, such as thermostatic expansion valves, solenoid valves, and moisture indicators.

2.02 REGULATORY REQUIREMENTS

2.03 PIPING

A. Copper Tube: ASTM B280, H58 hard drawn .
   1. Fittings: ASME B16.22 wrought copper.
   2. Joints: Braze, AWS A5.8 BCuP silver/phosphorus/copper alloy.

B. Copper Tube to 7/8 inch OD: ASTM B88 (ASTM B88M), Type K (A), annealed.
   1. Fittings: ASME B16.26 cast copper.
   2. Joints: Flared.

C. Pipe Supports and Anchors:
   1. Conform to ASTM F 708, MSS SP-58, MSS SP-69, and MSS SP-89.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch: Carbon steel adjustable swivel, split ring.
   3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
   4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
   5. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
   6. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
   7. Vertical Support: Steel riser clamp.
   8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
   10. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.
   11. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.04 REFRIGERANT

A. Refrigerant: See Schedules

2.05 MOISTURE AND LIQUID INDICATORS

A. Manufacturers:
   1. Henry Technologies: www.henrytech.com/#sle.
   2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com/#sle.
   3. Sporlan Valve Company: www.sporlan.com/#sle.

B. Indicators: Single or Doubleport type, UL listed, with copper or brass body, flared or solder ends, sight glass, color coded paper moisture indicator with removable element cartridge and plastic cap; for maximum temperature of 200 degrees F and maximum working pressure of 500 psi.

2.06 VALVES

A. Manufacturers:
   1. Hansen Technologies Corporation: www.hantech.com/#sle.
   2. Henry Technologies: www.henrytech.com/#sle.
   3. Danfoss Flomatic: www.flomatic.com/#sle.

B. Diaphragm Packless Valves:
   1. UL listed, globe or angle pattern, forged brass body and bonnet, phosphor bronze and stainless steel diaphragms, rising stem and handwheel, stainless steel spring, nylon seat disc, solder or flared ends, with positive backseating; for maximum working pressure of 500 psi and maximum temperature of 275 degrees F.

C. Packed Angle Valves:
   1. Forged brass or nickel plated forged steel, forged brass seal caps with copper gasket, rising stem and seat with backseating, molded stem packing, solder or flared ends; for maximum working pressure of 500 psi and maximum temperature of 275 degrees F.

D. Ball Valves:
   1. Two piece bolted forged brass body with teflon ball seals and copper tube extensions, brass bonnet and seal cap, chrome plated ball, stem with neoprene ring stem seals; for maximum working pressure of 500 psi and maximum temperature of 300 degrees F.

E. Service Valves:
   1. Forged brass body with copper stubs, brass caps, removable valve core, integral ball check valve, flared or solder ends, for maximum pressure of 500 psi.

2.07 STRAINERS

A. Straight Line or Angle Line Type:
   1. Brass or steel shell, steel cap and flange, and replaceable cartridge, with screen of stainless steel wire or monel reinforced with brass; for maximum working pressure of 430 psi.

B. Straight Line, Non-Cleanable Type:
   1. Steel shell, copper plated fittings, stainless steel wire screen, for maximum working pressure of 500 psi.

2.08 CHECK VALVES

A. Manufacturers:
   1. Hansen Technologies Corporation: www.hantech.com/#sle.
   2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com/#sle.
   3. Sporlan Valve Company: www.sporlan.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Globe Type:
   1. Cast bronze or forged brass body, forged brass cap with neoprene seal, brass guide and disc holder, phosphor-bronze or stainless steel spring, teflon seat disc; for maximum temperature of 300 degrees F and maximum working pressure of 500 psi.

C. Straight Through Type:
   1. Brass body and disc, phosphor-bronze or stainless steel spring, neoprene seat; for maximum working pressure of 500 psi and maximum temperature of 200 degrees F.

2.09 PRESSURE REGULATORS

A. Manufacturers:
   1. Hansen Technologies Corporation: www.hantech.com/#sle.
   2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com/#sle.
   3. Sporlan Valve Company: www.sporlan.com/#sle.

4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Brass body, stainless steel diaphragm, direct acting, adjustable over 0 to 80 psi range, for maximum working pressure of 450 psi.

2.10 PRESSURE RELIEF VALVES

A. Manufacturers:
1. Hansen Technologies Corporation: www.hantech.com/#sle.
2. Henry Technologies: www.henrytech.com/#sle.
3. Sherwood Valve/Harsco Corporation: www.sherwoodvalve.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Straight Through or Angle Type: Brass body and disc, neoprene seat, factory sealed and stamped with ASME UV and National Board Certification NB, selected to ASHRAE Std 15, with standard setting of 425 psi, adjusted to meet system requirements.

2.11 FILTER-DRIERS

A. Manufacturers:
1. Flow Controls Division of Emerson Electric: www.emersonflowcontrols.com/#sle.
2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com/#sle.
3. Sporlan Valve Company: www.sporlan.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Performance:
1. Flow Capacity - Liquid Line: As indicated in schedule, minimum, rated in accordance with AHRI 710.
2. Flow Capacity - Suction Line: As indicated in schedule, minimum, rated in accordance with AHRI 730 (I-P).
3. Water Capacity: As indicated in schedule, rated in accordance with AHRI 710.
4. Pressure Drop: 2 psi, As indicated in schedule, maximum, when operating at full connected evaporator capacity.
5. Design Working Pressure: As indicated in schedule or 350 psi, minimum.

C. Cores: Molded or loose-fill molecular sieve desiccant compatible with refrigerant, activated alumina, activated charcoal, and filtration to 40 microns; of construction that will not pass into refrigerant lines.

D. Construction: UL listed.
1. Replaceable Core Type: Steel shell with removable cap.
2. Sealed Type: Copper shell.
3. Connections: As specified for applicable pipe type.

2.12 SOLENOID VALVES

A. Manufacturers:
1. Flow Controls Division of Emerson Electric: www.emersonflowcontrols.com/#sle.
2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com/#sle.
3. Sporlan Valve Company: www.sporlan.com/#sle.

B. Valve: AHRI 760, pilot operated, copper or brass body and internal parts, synthetic seat, stainless steel stem and plunger assembly (permitting manual operation in case of coil failure), integral strainer, with flared, solder, or threaded ends; for maximum working pressure of 500 psi.

C. Coil Assembly: UL 429, UL listed, replaceable with molded electromagnetic coil, moisture and fungus proof, with surge protector and color coded lead wires, integral junction box with pilot light.

D. Electrical Characteristics: per drawings.

2.13 EXPANSION VALVES

A. Manufacturers:
   1. Flow Controls Division of Emerson Electric: www.emersonflowcontrols.com/#sle.
   2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com/#sle.
   3. Sporlan Valve Company: www.sporlan.com/#sle.

B. Angle or Straight Through Type: AHRI 750; design suitable for refrigerant, brass body, internal or external equalizer, mechanical pressure limit (maximum operating pressure MOP feature), adjustable superheat setting, replaceable inlet strainer, with replaceable capillary tube and remote sensing bulb and remote bulb well.

C. Selection: Evaluate refrigerant pressure drop through system to determine available pressure drop across valve. Select valve for maximum load at design operating pressure and minimum 10 degrees F superheat. Select to avoid being undersized at full load and excessively oversized at part load.

2.14 ELECTRONIC EXPANSION VALVES

A. Manufacturers:
   1. Danfoss Automatic Controls: www.danfoss.com.
   2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com/#sle.
   3. Sporlan Valve Company: www.sporlan.com/#sle.

B. Valve:
   1. Brass body with flared or solder connection, needle valve with floating needle and machined seat, stepper motor drive.
   2. Capacity: per drawings.
   3. Electrical Characteristics: per drawings.

C. Evaporation Control System:
   1. Electronic microprocessor based unit in enclosed case, proportional integral control with adaptive superheat, maximum operating pressure function, preselection allowance for electrical defrost and hot gas bypass.
   2. Electrical Characteristics: per drawings.

D. Refrigeration System Control: Electronic microprocessor based unit in enclosed case, with proportional integral control of valve, on/off thermostat, air temperature alarm (high and low), solenoid valve control, liquid injection adaptive superheat control, maximum operating pressure function, night setback thermostat, timer for defrost control.

2.15 RECEIVERS

A. Manufacturers:
   1. Henry Technologies: www.henrytech.com/#sle.
   2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com/#sle.
   3. Sherwood Valve/Harsco Corporation: www.sherwoodvalve.com/#sle.

B. Internal Diameter 6 inch and Smaller:
   1. AHRI 495, UL listed, steel, brazed; 400 psi maximum pressure rating, with tappings for inlet, outlet, and pressure relief valve.

C. Internal Diameter Over 6 inch:
   1. AHRI 495, welded steel, tested and stamped in accordance with ASME (BPV VIII, 1); 400 psi with tappings for liquid inlet and outlet valves, pressure relief valve, and magnetic liquid level indicator.

2.16 FLEXIBLE CONNECTORS

A. Manufacturers:
   1. Circuit Hydraulics, Ltd: www.circuit-hydraulics.co.uk.

2. Flexicraft Industries: www.flexicraft.com/#sle.
3. Penflex: www.penflex.com/#sle.

B. Corrugated stainless steel or bronze hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for maximum working pressure of 500 psi.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

A. Install refrigeration specialties in accordance with manufacturer's instructions.

B. Route piping in orderly manner, with plumbing parallel to building structure, and maintain gradient.

C. Install piping to conserve building space and avoid interference with use of space.

D. Group piping whenever practical at common elevations and locations. Slope piping one percent in direction of oil return.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Inserts:
1. Provide inserts for placement in concrete formwork.
2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut flush with top of or recessed into and grouted flush with slab.

G. Pipe Hangers and Supports:
1. Install in accordance with ASTM F 708 and MSS SP-89.
2. Support horizontal piping as scheduled.
3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
4. Place hangers within 12 inches of each horizontal elbow.
5. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
7. Provide copper plated hangers and supports for copper piping.

H. Arrange piping to return oil to compressor. Provide traps and loops in piping, and provide double risers as required. Slope horizontal piping 0.40 percent in direction of flow.

I. Provide clearance for installation of insulation and access to valves and fittings.

J. Provide access to concealed valves and fittings. Coordinate size and location of access doors with Section 08 31 00.

K. Flood piping system with nitrogen when brazing.

L. Where pipe support members are welded to structural building frame, brush clean, and apply one coat of zinc rich primer to welding.

M. Prepare unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Section 09 90 00.

N. Insulate piping and equipment; refer to Section and Section 22 07 16.

O. Follow ASHRAE Std 15 procedures for charging and purging of systems and for disposal of refrigerant.

P. Provide replaceable cartridge filter-driers, with isolation valves and valved bypass.

Q. Locate expansion valve sensing bulb immediately downstream of evaporator on suction line.

R. Provide external equalizer piping on expansion valves with refrigerant distributor connected to evaporator.

S. Install flexible connectors at right angles to axial movement of compressor, parallel to crankshaft.

T. Fully charge completed system with refrigerant after testing.

U. Provide electrical connection to solenoid valves. Refer to Section 26 27 17.

3.03 FIELD QUALITY CONTROL

A. Test refrigeration system in accordance with ASME B31.5.

B. Pressure test system with dry nitrogen to 200 psi. Perform final tests at 27 inches vacuum and 200 psi using electronic leak detector. Test to no leakage.

C. Prepare test and inspection reports for review by Cx agent.

3.04 SCHEDULES

A. Hanger Spacing for Copper Tubing.
   1. 1/2 inch, 5/8 inch, and 7/8 inch OD: Maximum span, 5 feet; minimum rod size, 3/8 inch.
   2. 1-1/8 inch OD: Maximum span, 6 feet; minimum rod size, 3/8 inch.
   3. 1-3/8 inch OD: Maximum span, 7 feet; minimum rod size, 3/8 inch.
   4. 1-5/8 inch OD: Maximum span, 8 feet; minimum rod size, 3/8 inch.
   5. 2-1/8 inch OD: Maximum span, 8 feet; minimum rod size, 3/8 inch.
   6. 2-5/8 inch OD: Maximum span, 9 feet; minimum rod size, 3/8 inch.
   7. 3-1/8 inch OD: Maximum span, 10 feet; minimum rod size, 3/8 inch.
   8. 3-5/8 inch OD: Maximum span, 11 feet; minimum rod size, 1/2 inch.
   9. 4-1/8 inch OD: Maximum span, 12 feet; minimum rod size, 1/2 inch.

B. Hanger Spacing for Steel Piping.
   1. 1/2 inch, 3/4 inch, and 1 inch: Maximum span, 7 feet; minimum rod size, 3/8 inch.
   2. 1-1/4 inches: Maximum span, 8 feet; minimum rod size, 3/8 inch.
   3. 1-1/2 inches: Maximum span, 9 feet; minimum rod size, 3/8 inch.
   4. 2 inches: Maximum span, 10 feet; minimum rod size, 3/8 inch.
   5. 2-1/2 inches: Maximum span, 11 feet; minimum rod size, 3/8 inch.
   6. 3 inches: Maximum span, 12 feet; minimum rod size, 3/8 inch.
   7. 4 inches: Maximum span, 12 feet; minimum rod size, 1/2 inch.

END OF SECTION

SECTION 23 31 00
HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flexible ducts.

B. Metal ductwork.

C. Casing and plenums.

D. Duct cleaning.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

B. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

C. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

F. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.

G. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.

H. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.

I. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual; Sheet Metal and Air Conditioning Contractors' National Association.

J. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.

K. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors.

L. IECC 2012 - International Energy Conservation Code - Duct construction standards, leakage testing

1.03 PERFORMANCE REQUIREMENTS

A. No variation of duct configuration or sizes permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for duct materials and duct connections.

C. Shop Drawings: Indicate duct fittings, particulars such as gages, sizes, welds, and configuration prior to start of work for all systems.

D. MANDATORY Test Reports: Pressure test all new ductwork. Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual.

1. Utilize standard equation CL=F/P^0.65 where CL = Leakage Class, F= Measured leakage rate in CFM per 100 square feet of duct surface, and P = Static Pressure of the test. Leakage class shall not exceed 16 for rectangular duct or 8 for round duct.

E. Perform preliminary duct leakage testing and report to Engineer upon occupation of each phase prior to demolition work but work may only proceed following satisffactory review of duct leakage test reports by the Engineer.

F. Manufacturer's Certificate: Certify that installation of glass fiber ductwork meet or exceed recommended fabrication and installation requirements.

G. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum five years of documented experience.

1.06 REGULATORY REQUIREMENTS

A. Construct ductwork to NFPA 90A, NFPA 90B, and NFPA 96 standards.

1.07 FIELD CONDITIONS

A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 PRODUCTS

2.01 DUCT ASSEMBLIES

2.02 MATERIALS

A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G90/Z275 coating.

B. Stainless Steel for Ducts: ASTM A 240/A 240M, Type 304.

C. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
   1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
   2. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.

D. Gasket Tape: Provide butyl rubber gasket tape for a flexible seal between transfer duct connector (TDC), transverse duct flange (TDF), applied flange connections, and angle rings connections.

E. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

F. Insulated Flexible Ducts:
   1. Two ply vinyl film supported by helically wound spring steel wire; fiberglass insulation; aluminized vapor barrier film.
      a. Pressure Rating: 10 inches WG positive and 1.0 inches WG negative.
      b. Maximum Velocity: 4000 fpm.
      c. Temperature Range: -10 degrees F to 160 degrees F.

G. Stainless Steel Ducts: ASTM A 666, Type 304.

H. All Ducts: Galvanized steel, unless otherwise indicated.

I. Low Pressure Supply (Heating Systems): 2 inch w.g. pressure class, galvanized steel.

J. Low Pressure Supply (System with Cooling Coils): 2 inch w.g. pressure class, galvanized steel.

K. Medium and High Pressure Supply (All VAV Primary Supply Duct between AHU and VAV Terminal Unit): 2 inch w.g. pressure class, galvanized steel.

L. Return and Relief: 1 inch w.g. pressure class, galvanized steel.

M. General Exhaust: 1 inch w.g. pressure class, galvanized steel.

2.03 DUCTWORK FABRICATION

A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards and as indicated.

B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide turning vanes. .

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

E. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA HVAC Duct Construction Standards.

F. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Joints shall be minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.

G. Provide standard 45 degree lateral wye takeoffs unless otherwise indicated where 90 degree conical tee connections may be used.

H. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.04 MANUFACTURED DUCTWORK AND FITTINGS

A. Manufacture in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gages,reinforcing, and sealing for operating pressures indicated.

B. Double Wall Insulated Round Ducts: Round spiral lockseam duct with paintable galvanized steel outer wall, perforated galvanized steel inner wall; fitting with solid inner wall. Provide paint in color selected by architect.
   1. Manufacture in accordance with SMACNA HVAC Duct Construction Standards.
   2. Insulation:
      a. Thickness: 2 inch.
      b. Material: Fiberglass, with mylar coating between insulation and perforated liner.

C. Transverse Duct Connection System: SMACNA "J" rated rigidly class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips.

2.05 FLEXIBLE DUCTS

A. Flexible Air Ducts:
   1. UL 181, Class 1, multiple layers of aluminum laminate supported by helically wound spring steel wire.
   2. Insulation: Fiberglass insulation with aluminized vapor barrier film.
   3. Pressure Rating: From 10 in-wc positive to 1 in-wc negative.
   4. Maximum Velocity: 4,000 fpm.
   5. Temperature Range: Minus 20 to 210 degrees F.

2.06 CASINGS

A. Fabricate casings in accordance with SMACNA HVAC Duct Construction Standards and construct for operating pressures indicated.

B. Minimum Fabrication Requirements:
   1. Fabricate acoustic plenum or casing with reinforcing turned inward.
   2. Provide 16-gauge, 0.059-inch sheet steel back facing and 22-gauge, 0.029-inch perforated sheet steel front facing with 3/32 inch diameter holes on 5/32 inch centers.
   3. Construct panels 3 inches thick, packed with 4.5 pcf minimum glass fiber insulation media, on inverted channel of 16-gauge, 0.059-inch sheet steel.
   4. Mount floor-mounted plenum or casings on 4-inch high concrete curbs. At floor, rivet panels on 8-inch centers to angles. Where floors are acoustically insulated, provide liner of galvanized 18-gauge, 0.052-inch expanded metal mesh supported at 12-inch centers, turned up 12 inches at sides with sheet metal shields.

C. Access Doors:
   1. Install hinged access doors where indicated or required for access to equipment for cleaning and inspection.
   2. Reinforce door frames with steel angles tied to horizontal and vertical plenum supporting angles.
   3. Provide clear wire glass observation ports, minimum 6 by 6 inch size.

D. Mount floor mounted casings on 4 inch high concrete curbs. At floor, rivet panels on 8 inch centers to angles. Where floors are acoustically insulated, provide liner of 18 gage galvanized expanded metal mesh supported at 12 inch centers, turned up 12 inches at sides with sheet metal shields.

E. Mount floor mounted casings on 4 inch high concrete curbs. At floor, rivet panels on 8 inch centers to angles. Where floors are acoustically insulated, provide liner of 18 gage galvanized expanded metal mesh supported at 12 inch centers, turned up 12 inches at sides with sheet metal shields.

F. Reinforce door frames with steel angles tied to horizontal and vertical plenum supporting angles. Install hinged access doors where indicated or required for access to equipment for cleaning and inspection.
   1. Provide clear wire glass observation ports, minimum 6 X 6 inch size.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install, support, and seal ducts in accordance with SMACNA HVAC Duct Construction Standards.

B. Install in accordance with manufacturer's instructions.

C. During construction, provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering the ductwork system.

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

E. Flexible Ducts: Connect to metal ducts with adhesive plus sheet metal screws.

F. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.

G. Install and seal metal and flexible ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

H. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with

spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.

I. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

J. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of air flow.

K. Use double nuts and lock washers on threaded rod supports.

L. Tape joints of PVC coated metal ductwork with PVC tape.

M. Connect terminal units to supply ducts with one foot maximum length of flexible duct. Do not use flexible duct to change direction.

N. Connect diffusers or light troffer boots to low pressure ducts with 5 feet maximum length of flexible duct held in place with strap or clamp.

O. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws.

P. Set plenum doors 6 to 12 inches above floor. Arrange door swings so that fan static pressure holds door in closed position.

Q. Use stainless steel for ductwork exposed to view and stainless steel or carbon steel for ducts where concealed.

R. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

S. At exterior wall louvers, seal duct to louver frame and install blank-out panels as required.

3.02 CLEANING AND TESTING

A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

B. Clean duct systems with high power vacuum machines. Protect equipment that could be harmed by excessive dirt with filters, or bypass during cleaning. Provide adequate access into ductwork for cleaning purposes.

C. Conduct required duct-leakage testing as defined within this specification and otherwise noted in the contract documents.

3.03 SCHEDULES

A. Ductwork Material:
   1. Low Pressure Supply (Heating Systems): Steel.
   2. Low Pressure Supply (System with Cooling Coils): Steel.
   3. Medium and High Pressure Supply: Steel.
   4. Return and Relief: Steel.
   5. General Exhaust: Steel.
   6. Outside Air Intake: Steel.
   7. Exposed round ductwork: Double-wall spiral.

B. Ductwork Pressure Class:
   1. Supply (Heating Systems): 2 inch.
   2. Supply (System with Cooling Coils): 2 inch.
   3. Return and Relief: 1 inch.
   4. General Exhaust: 1 inch.
   5. Outside Air Intake: 1 inch.

END OF SECTION

SECTION 23 33 00
AIR DUCT ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air turning devices/extractors.
B. Backdraft dampers.
C. Combination fire and smoke dampers.
D. Duct access doors.
E. Duct test holes.
F. Fire dampers.
G. Flexible duct connections.
H. Smoke dampers.
I. Volume control dampers.

1.02 REFERENCE STANDARDS

A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.
B. NFPA 92 - Standard for Smoke Control Systems.
C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.
D. UL 33 - Safety Heat Responsive Links for Fire-Protection Service.
E. UL 555 - Standard for Fire Dampers.
F. UL 555S - Standard for Smoke Dampers.

1.03 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide for shop fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements.
C. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers.
D. Project Record Drawings: Record actual locations of access doors and test holes.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect dampers from damage to operating linkages and blades.

PART 2 PRODUCTS

2.01 AIR TURNING DEVICES/EXTRACTORS

A. Manufacturers:
   1. Krueger: www.krueger-hvac.com/#sle.
   2. PCI Industries, Inc; Pottorff Brand : www.portorff.com.
   3. Ruskin Company: www.ruskin.com/#sle.
   4. Titus: www.titus-hvac.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Multi-blade device with radius blades attached to pivoting frame and bracket, steel construction, with push-pull operator strap.

2.02 BACKDRAFT DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com/#sle.
   2. Nailor Industries Inc: www.nailor.com/#sle.
   3. PCI Industries, Inc; Pottorff Brand : www.portorff.com.
   4. Ruskin Company: www.ruskin.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.

2.03 COMBINATION FIRE AND SMOKE DAMPERS

A. Manufacturers:
   1. Lloyd Industries, Inc.: www.firedamper.com/#sle.
   2. Louvers & Dampers, Inc, a brand of Mestek, Inc: www.louvers-dampers.com/#sle.
   3. Nailor Industries, Inc: www.nailor.com/#sle.
   4. Pottorff: www.pottorff.com/#sle.
   5. Ruskin Company: www.ruskin.com/#sle.
   6. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with NFPA 90A, UL 555, UL 555S, and as indicated.

C. Provide factory sleeve and collar for each damper.

D. Multiple Blade Dampers: Fabricate with 16 gage, 0.0598 inch galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, stainless steel jamb seals, 1/8 by 1/2 inch plated steel concealed linkage, stainless steel closure spring, blade stops, and lock, and 1/2 inch actuator shaft.

E. Operators: UL listed and labelled spring return electric type suitable for 120 volts, single phase, 60 Hz. Provide end switches to indicate damper position. Locate damper operator on interior of duct and link to damper operating shaft.

F. Electro Thermal Link: Fusible link melting at 165 degrees F; 120 volts, single phase, 60 Hz; UL listed and labeled.

2.04 DUCT ACCESS DOORS

A. Manufacturers:
   1. Acudor Products Inc: www.acudor.com/#sle.
   2. Nailor Industries Inc: www.nailor.com/#sle.
   3. Ruskin Company: www.ruskin.com/#sle.
   4. SEMCO Incorporated: www.semcoinc.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabrication: Rigid and close-fitting of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ducts, install minimum 1 inch thick insulation with sheet metal cover.
   1. Less Than 12 inches Square: Secure with sash locks.
   2. Up to 18 inches Square: Provide two hinges and two sash locks.
   3. Up to 24 x 48 inches: Three hinges and two compression latches with outside and inside handles.
   4. Larger Sizes: Provide an additional hinge.

C. Access doors with sheet metal screw fasteners are not acceptable.

2.05 DUCT TEST HOLES

A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

2.06 FIRE DAMPERS

A. Manufacturers:
   1. Lloyd Industries, Inc: www.firedamper.com/#sle.
   2. Louvers & Dampers, Inc, a brand of Mestek, Inc: www.louvers-dampers.com/#sle.
   3. Nailor Industries, Inc: www.nailor.com/#sle.
   4. Pottorff: www.pottorff.com/#sle.
   5. Ruskin Company: www.ruskin.com/#sle.
   6. Ward Industries, a brand of Hart and Cooley, Inc: www.wardind.com/#sle.
   7. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with NFPA 90A and UL 555, and as indicated.

C. Curtain Type Dampers: Galvanized steel with interlocking blades. Provide stainless steel closure springs and latches for horizontal installations. Configure with blades out of air stream except for 1.0 inch pressure class ducts up to 12 inches in height.

D. Fusible Links: UL 33, separate at 160 degrees F with adjustable link straps for combination fire/balancing dampers.

2.07 FLEXIBLE DUCT CONNECTIONS

A. Fabricate in accordance with SMACNA (DCS) and as indicated.

B. Flexible Duct Connections: Fabric crimped into metal edging strip.
   1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd.
      a. Net Fabric Width: Approximately 2 inches wide.
   2. Metal: 3 inches wide, 24 gage, 0.0239 inch thick galvanized steel.

C. Leaded Vinyl Sheet: Minimum 0.55 inch thick, 0.87 lbs per sq ft, 10 dB attenuation in 10 to 10,000 Hz range.

D. Maximum Installed Length: 14 inch.

2.08 SMOKE DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc, a brand of Mestek, Inc: www.louvers-dampers.com/#sle.
   2. Nailor Industries, Inc: www.nailor.com/#sle.
   3. Ruskin Company: www.ruskin.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with NFPA 90A and UL 555S, and as indicated.

C. Dampers: UL Class 1 v-groove blade type smoke damper, normally closed automatically operated by electric actuator.

D. Electro Thermal Link: Fusible link melting at 165 degrees F; 120 volts, single phase, 60 Hz; UL listed and labeled.

2.09 VOLUME CONTROL DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com/#sle.

2. Nailor Industries Inc: www.nailor.com/#sle.
3. NCA, a brand of Metal Industries Inc: www.ncamfg.com/#sle.
4. PCI Industries, Inc; Pottorff Brand : www.portorff.com.
5. Ruskin Company: www.ruskin.com/#sle.
6. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with SMACNA (DCS) and as indicated.

C. Splitter Dampers:
1. Material: Same gage as duct to 24 inches size in either direction, and two gages heavier for sizes over 24 inches.
2. Blade: Fabricate of single thickness sheet metal to streamline shape, secured with continuous hinge or rod.
3. Operator: Minimum 1/4 inch diameter rod in self aligning, universal joint action, flanged bushing with set screw .

D. Single Blade Dampers: Fabricate for duct sizes up to 6 x 30 inch.

E. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.

F. End Bearings: Except in round ducts 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon, thermoplastic elastomer, or sintered bronze bearings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 31 00 for duct construction and pressure class.

B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.

C. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access, and as indicated. Provide 4 x 4 inch for balancing dampers only. Review locations prior to fabrication.

D. Provide duct test holes where indicated and required for testing and balancing purposes.

E. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire rated components, and where required by Authorities Having Jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.

F. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.

G. Demonstrate re-setting of fire dampers to Owner's representative.

H. At all fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.

I. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.

J. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.

K. Use splitter dampers only where indicated.

L. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION

SECTION 23 34 13
AXIAL HVAC FANS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mixed flow fans.

1.02 REFERENCE STANDARDS

A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings.

B. AMCA (DIR) - (Directory of) Products Licensed Under AMCA International Certified Ratings Program.

C. AMCA 99 - Standards Handbook.

D. AMCA 204 - Balance Quality and Vibration Levels for Fans.

E. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating.

F. AMCA 300 - Reverberant Room Method for Sound Testing of Fans.

G. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data.

H. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on axial fans and accessories, including fan curves with specified operating point plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.

C. Shop Drawings: Indicate assembly of axial fans and accessories including fan curves with specified operating point plotted, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.

D. Manufacturer's Instructions: Indicate installation instructions.

E. Maintenance Materials: Furnish the following for the Owner's use in the maintenance of the project.
   1. See Section 01 60 00 - Product Requirements for additional provisions.
   2. Extra Fan Belts: One set for each individual fan.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect motors, shafts, and bearings from weather and construction dust.

1.06 FIELD CONDITIONS

A. Do not use permanent fans for ventilation during construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Loren Cook Company: www.lorencook.com/#sle.

B. PennBarry, Division of Air Systems Components: www.pennbarry.com/#sle.

C. Twin City Fan & Blower: www.tcf.com/#sle.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MIXED FLOW FANS

A. Performance Requirements:
   1. Performance Ratings: AMCA 210 or AMCA 204 certified, bearing respective rating seal.
   2. Sound Ratings: AMCA 301, tested to AMCA 300, bearing respective sound ratings seal.
   3. Fabrication: Comply with AMCA 99.
   4. Performance Base: Sea level conditions.
   5. Temperature Limit: Maximum 300 degrees F.

B. Hub and Impeller:
   1. Airfoil Impeller Blades: Adjustable die-cast aluminum alloy glass reinforced polyester resin.
   2. Hub: Die-cast aluminum alloy or cast iron hub or with belt drive of spun, welded steel, bored and keyed to shaft; to facilitate indexing of blade angle with automatic adjustment stops.
   3. Controllable Pitch Assemblies: Incorporate ball bearing counterbalanced blade and variable pitch assembly into hub with mechanical link to casing exterior mounted actuator, or pneumatic or electric actuator incorporated within hub.
   4. Cast Components: X-ray components after fabrication and statically and dynamically balance assembly before attachment to motor or shaft.

C. Casing:
   1. Fabricate casing of 1/4 inch steel for fans 40 inch in diameter and smaller and 3/8 inch steel for larger fans.
   2. Continuously weld, with inlet and outlet flange connections, and motor or shaft supports. Incorporate flow straightening guide vanes for fans specified for static pressures greater than 1 in-wc.
   3. Finish with one coat enamel applied to interior and exterior.

D. Bearings and Drives:
   1. Bearings: Heavy-duty pillow block type, self-aligning, grease-lubricated ball bearings, with ABMA STD 9, L-10 life at 50,000 hours.
   2. Shafts: Hot rolled steel, ground and polished, with keyway; protectively coated with lubricating oil.
   3. V-Belt Drive:
      a. Type: Cast iron or steel sheaves, dynamically balanced, and keyed.
      b. Motors Rated at 15 hp and Lower: Variable and adjustable pitch sheave so required rpm can be reached with sheaves set at mid-position.
      c. Motor Rated at 20 hp or Higher: Fixed sheave, matched belt, and drive at manufacturer recommended rating or minimum of 1.5 times motor nameplate rating.

E. Belt Guard: Fabricate to SMACNA (DCS); 0.106 inch thick, 3/4 inch diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.

F. Lubrication: Extend lubrication fittings to outside of casing.

G. Accessories:
   1. Access Doors: Shaped to fit casing with quick opening latches and gaskets.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install with resilient mountings and flexible electrical leads; see Sections 23 05 48 and 26 27 17.

C. Install flexible connections specified in Section 23 33 00 between axial fan inlet and discharge ductwork. Ensure metal bands of connectors are parallel with a minimum one inch flex between ductwork and axial fan while running.

D. Install fan restraining snubbers; see Section 23 05 48. Adjust snubbers to prevent tension in flexible connectors when fan is operating.

E. Provide sheaves required for final air balance.

F. Provide floor mounted axial fans fitted with reinforced legs. Provide ceiling suspended units with support brackets bolted to casing flange.

3.02 SCHEDULES - SEE DRAWINGS

END OF SECTION

SECTION 23 34 23
HVAC POWER VENTILATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof ventilators.

B. Ceiling exhaust fans.

C. Upblast roof exhausters.

D. Inline centrifugal fans and blowers.

E. Utility vent blowers.

1.02 REFERENCE STANDARDS

A. AMCA 99 - Standards Handbook.

B. AMCA 204 - Balance Quality and Vibration Levels for Fans.

C. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating.

D. AMCA (DIR) - [Directory of] Products Licensed Under AMCA International Certified Ratings Program; Air Movement and Control Association International, Inc..

E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans.

F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data.

G. NEMA MG 1 - Motors and Generators.

H. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.

I. UL 705 - Power Ventilators.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.

C. Manufacturer's Instructions: Indicate installation instructions.

D. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum 5 years of documented experience.

B. Kitchen Range Hood Exhaust Fans: Comply with requirements of NFPA 96.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 FIELD CONDITIONS

A. Permanent ventilators may be used for ventilation during construction only after ductwork is clean, filters are in place, bearings have been lubricated, and fan has been test run under observation.

1.06 EXTRA MATERIALS

A. See Section 01 60 00 - Product Requirements, for additional provisions.

B. Supply two sets of belts for each fan.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Greenheck: www.greenheck.com/#sle.

B. Loren Cook Company: www.lorencook.com/#sle.

C. PennBarry: www.pennbarry.com/#sle.

D. Twin City Fan & Blower: www.tcf.com/#sle.

E. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 POWER VENTILATORS - GENERAL

A. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.

B. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.

C. Sound Ratings: AMCA 301, tested to AMCA 300, and bearing AMCA Certified Sound Rating Seal.

D. Fabrication: Conform to AMCA 99.

E. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.03 ROOF VENTILATORS

A. Product Requirements:
   1. Performance Ratings: Determined in accordance with AMCA 210 .
   2. Sound Ratings: AMCA 301, tested to AMCA 300.
   3. Fabrication: Conform to AMCA 99.
   4. UL Compliance: UL listed and labeled, designed, manufactured, and tested in accordance with UL 705.

B. Performance and Model: As indicated on drawings.
   1. Motor: Refer to Section 23 05 13. Provide all exhaust fans with EC motors except where noted to be belt driven on schedule.

C. Fan Unit: V-belt or direct driven as indicated, with spun aluminum housing; resilient mounted motor; 1/2 inch mesh, 0.62 inch thick aluminum wire birdscreen; square base to suit roof curb with continuous curb gaskets.

D. Shunt Trip Breakers: Provide for each fan of 2,000 CFM or greater for interlock with Fire Alarm system.

E. Backdraft Damper: Motor actuated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings, blades linked, and line voltage motor drive, power open, spring return. Provide wire whip and j-box to open damper upon fan activation. If vendor-supplied wire whip and j-box are not an available option, the electrical contractor may provide interlocking power to motorized backdraft damper at the Engineer's discretion.

F. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

2.04 UPBLAST ROOF EXHAUSTERS

A. Belt Drive Fan:
   1. Fan Wheel:
      a. Type: Non-overloading, backward inclined centrifugal.
      b. Material: Aluminum, statically and dynamically balanced.

2. Motors:
3. Housing:
   a. Construct of heavy gauge aluminum including curb cap, windband, and motor compartment.
   b. Rigid internal support structure.
   c. One-piece fabricated or fully welded curb-cap base to windband for leak proof construction.
   d. Construct drive frame assembly of heavy gauge steel, mounted on vibration isolators.
   e. Provide breather tube for fresh air motor cooling and wiring.

B. Shafts and Bearings:
1. Fan Shaft:
   a. Ground and polished steel with anti-corrosive coating.
   b. First critical speed at least 25 percent over maximum cataloged operating speed.
2. Bearings:
   a. Permanently sealed or pillow block type.
   b. Minimum L10 life in excess of 100,000 hours (equivalent to L50 average life of 500,000 hours), at maximum cataloged operating speed.
   c. 100 percent factory tested.

C. Drive Assembly:
1. Belts, pulleys, and keys oversized for a minimum of 150 percent of driven horsepower.
2. Belts: Static free and oil resistant.
3. Fully machined cast iron type, keyed and securely attached to the wheel and motor shafts.
4. Motor pulley adjustable for final system balancing.
5. Readily accessible for maintenance.

D. Roof Curb: 16 inch high self-flashing of galvanized steel with continuously welded seams, built-in cant strips, insulation and curb bottom, curb bottom, ventilated double wall, and factory installed nailer strip.

E. Drain Trough: Allows for single-point drainage of water, grease, and other residues.

2.05 UTILITY VENT BLOWERS

A. Direct Drive Fan:
1. Fan Wheel:
   a. Type: Non-overloading, backward inclined centrifugal.
   b. Material: Aluminum, statically and dynamically balanced.
2. Motors: All motors shall be EC motors unless shown as belt drive on schedule
3. Housing:
   a. Construct of heavy gauge aluminum including curb cap, windband, and motor compartment.
   b. Rigid internal support structure.
   c. One-piece fabricated or fully welded curb-cap base to windband for leak proof construction.
   d. Construct drive frame assembly of heavy gauge steel, mounted on vibration isolators.
   e. Provide breather tube for fresh air motor cooling and wiring.

B. Shafts and Bearings:
1. Fan Shaft:
   a. Ground and polished steel with anti-corrosive coating.
   b. First critical speed at least 25 percent over maximum cataloged operating speed.
2. Bearings:
   a. Permanently sealed or pillow block type.

b. Minimum L10 life in excess of 100,000 hours (equivalent to L50 average life of 500,000 hours), at maximum cataloged operating speed.
c. 100 percent factory tested.

C. Drive Assembly:
1. Belts, pulleys, and keys oversized for a minimum of 150 percent of driven horsepower.
2. Belts: Static free and oil resistant.
3. Fully machined cast iron type, keyed and securely attached to the wheel and motor shafts.
4. Motor pulley adjustable for final system balancing.
5. Readily accessible for maintenance.

D. Drain Trough: Allows for single-point drainage of water, grease, and other residues.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure roof or wall exhausters with aluminum lag screws to roof curb or structure.

C. Extend ducts to roof or wall exhausters into roof curb or structure. Counterflash duct to roof or wall opening.

D. Provide sheaves and/or fan speed adjustment as required for final air balance.

E. Install backdraft dampers on inlet to roof and wall exhausters.

F. Provide backdraft dampers on outlet from cabinet and ceiling exhauster fans and as indicated.

G. Provide fans with junction box and wire whip connected to associated motorized backdraft damper to open damper upon activation of exhaust fan.

END OF SECTION

SECTION 23 37 00
AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rectangular ceiling diffusers.

B. Perforated return air grilles.

C. Louvers:

1.02 REFERENCE STANDARDS

A. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating.

B. AMCA 511 - Certified Ratings Program Product Rating Manual for Air Control Devices.

C. AMCA 550 - Test Method for High Velocity Wind Driven Rain Resistant Louvers.

D. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Air Inlets.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

1.03 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

C. Samples: Submit one of each required air outlet and inlet type.

D. Project Record Documents: Record actual locations of air outlets and inlets.

1.04 QUALITY ASSURANCE

A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.

B. Test and rate louver performance in accordance with AMCA 500-L.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Carnes Company HVAC: www.carnes.com.

B. Krueger: www.krueger-hvac.com/#sle.

C. Price Industries: www.price-hvac.com/#sle.

D. Titus: www.titus-hvac.com/#sle.

E. Tuttle and Bailey: www.tuttleandbailey.com/#sle.

F. Pottorff: www.pottorff.com

G. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 RECTANGULAR CEILING DIFFUSERS

A. Type: Square; multi-core diffuser to discharge air in 360 degree pattern .

B. Frame: Surface mount; Snap-in; Inverted T-bar or as indicated. In plaster ceilings, provide plaster frame and ceiling frame.

C. Color: As selected by Architect from manufacturer's standard range.

D. Fabrication: Aluminum with baked enamel off-white finish.

E. Accessories: Radial opposed blade or Combination splitter as indicated and multi-louvered equalizing grid with damper adjustable from diffuser face.

2.03 PERFORATED RETURN AIR GRILLES

A. Type: Perforated face with fully adjustable pattern and removable face.

B. Frame: Surface mount; Snap-in; Inverted T-bar; or Spline type as indicated. In plaster ceilings, provide plaster frame and ceiling frame.

C. Color: As selected by Architect from manufacturer's standard range.

D. Fabrication: aluminum and baked enamel off-white finish.

2.04 LOUVERS

A. Type: 4 inch deep with blades on 45 degree slope with center baffle and return bend, heavy channel frame, 1/2 inch square mesh screen over exhaust and 1/2 inch square mesh screen over intake, dual drainable.

B. Fabrication: 12 gage, 0.1046 inch thick extruded aluminum, welded assembly, with factory prime coat finish.

C. Color: As shown on the drawings.

D. Fabrication: 12 gage thick extruded aluminum, welded assembly, with factory prime coat; baked enamel; anodized; fluoropolymer spray finish or as indicated; color to be selected.

E. Mounting: Furnish with interior flat flange; interior angle flange; exterior flat flange; exterior angle flange; screw holes in jambs; masonry strap anchors; or as indicated for installation.

2.05 GRAVITY VENTILATORS

A. Hood Intake and Relief Gravity Ventilator:
   1. General:
      a. Low silhouette for intake applications with natural gravity or negative pressure system(s).
      b. Performance ratings and factory testing to be in accordance with AMCA 511 and AMCA 550.
      c. Suitable for non-ducted applications.
      d. Equipment to bear permanently affixed manufacturer's nameplate listing model and serial number.
   2. Hood and Base:
      a. Material: Aluminum.
      b. Hood Construction: Precision formed, arched panels with interlocking seams.
      c. Vertical End Panels: Fully locked into hood end panels.
      d. Curb Cap: Pre-punched mounting holes for installation.
   3. Birdscreen:
      a. Fabricate in accordance with ASTM B221 (ASTM B221M).
      b. Construction: 1/2 inch Galvanized mesh.
      c. Horizontally mounted across hood intake area.
   4. Hood Support: Galvanized steel construction and fastened so hood can be removed completely from the base or hinged open.
   5. Options/Accessories:
      a. Roof Curbs:

1) Flat Roofs:
   (a) Welded, straight side curb with flashing flange and wood nailer.
   (b) Tabbed and riveted curb with 45 degree cant and wood nailer.
   (c) Welded curb with 45 degree cant and wood nailer.
2) Material: Aluminum.
3) Insulation Thickness: 1 inch.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.

C. Install diffusers to ductwork with air tight connection.

D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.

E. Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 09 90 00.

3.02 AIR OUTLET AND INLET SCHEDULE

A. See Drawings

END OF SECTION

SECTION 23 73 13
MODULAR CENTRAL-STATION AIR-HANDLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fan section.
B. Coil section.
C. Filter and air cleaner section.
D. Airflow measurement.
E. Multizone section.
F. Access section.
G. Indoor Air Handling Units.
H. Factory fabricated assembly of modular sections consisting of housed centrifugal or plenum fans with belt or direct drives, coils, filters, and other necessary modules to perform one or more of the functions of circulating, cleaning, heating, cooling, humidification, dehumidification, and mixing of air with construction suitable for indoor or outdoor applications.

1.02 REFERENCE STANDARDS

A. AMCA 99 - Standards Handbook.
B. ASHRAE Std 62.1 - Ventilation for Acceptable Indoor Air Quality.
C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.
D. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
E. AMCA 99 - Standards Handbook.
F. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes.
G. AMCA 300 - Test Code for Sound Rating Air Moving Devices.
H. AMCA 500 - Test Methods for Louver, Dampers, and Shutters.
I. AHRI 410 - Forced-Circulation Air-Cooling and Air-Heating Coils.
J. AHRI 430 - Central-Station Air-Handling Units.
K. AHRI 435 - Application of Central-Station Air-Handling Units.
L. ASTMB117 - Standard Practice for Operating Salt Spray Apparatus.
M. NEMA MG1 - Motors and Generators.
N. NFPA 70 - National Electrical Code.
O. SMACNA - HVAC Duct Construction Standards - Metal and Flexible.
P. UL 723 - Test for Surface Burning Characteristics of Building Materials.
Q. UL 900 - Test Performance of Air Filter Units.
R. UL 1995 - Standard for Heating and Cooling Equipment.
S. UL 94 - Test for Flammability of Plastic Materials for Parts in Devices and Appliances.
T. IBC 2000, 2003 - International Building Code.
U. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.
V. NFPA 5000 - Building Construction and Safety Code.
W. ASHRAE 90.1 Energy Code.

X. AHRI Standard 1060 - Rating Air-to-Air Heat Exchangers for Energy Recovery Ventilation Equipment.

Y. GSA 2003 Facilities Standard - 5.9 HVAC Systems and Components.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of all units with size, location and installation of service utilities.

B. Coordinate the work with other trades for installation of indoor air handling units.

C. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

D. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data:
   1. Published Literature: Indicate dimensions, weights, capacities, ratings, gages and finishes of materials, and electrical characteristics and connection requirements.
   2. Filters: Data for filter media, filter performance data, filter assembly, and filter frames.
   3. Fans: Performance and fan curves with specified operating point clearly plotted, power, RPM.
   4. Sound Power Level Data: Fan outlet and casing radiation at rated capacity.
   5. Electrical Requirements: Power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.

C. Sustainable Design Documentation: Submit manufacturer's product data on refrigerant used, showing compliance with specified requirements.

D. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.

E. Executed Warranty: Submit documentation of final executed warranty completed in Owner's name and registered with manufacturer.

F. Manufacturer's Instructions: Include installation instructions.

G. Maintenance Data: Include instructions for lubrication, filter replacement, motor and drive replacement, spare parts lists, and wiring diagrams.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Fan Belts: One set for each unit.
   3. Extra Filters: One set for each unit.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.06 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Accept products on site in factory-fabricated protective containers, with factory-installed shipping skids and lifting lugs. Inspect for damage.

B. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

C. Do not operate units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

D. Comply with ASHRAE 62, Section 5 (mold and corrosion resistant casings, filters upstream of wetted surfaces, and drain pan design).

E. Comply with ASHRAE 62, Section 7 (practices to be followed during construction and startup). Protect equipment from moisture by appropriate in-transit and on-site procedures.

F. Follow manufacturer's recommendations for handling, unloading and storage.

G. Protect, pack, and secure loose-shipped items within the air-handling units. Include detailed packing list of loose-shipped items, including illustrations and instructions for application.

H. Protect, pack and secure controls devices, motor control devices and other electronic equipment. Do not store electronic equipment in wet or damp areas even when they are sealed and secured.

I. Enclose and protect control panels, electronic or pneumatic devices, and variable frequency drives. Do not store equipment in wet or damp areas even when they are sealed and secured.

J. Seal openings to protect against damage during shipping, handling and storage.

K. Wrap indoor units with a tight sealing membrane. Wrapping membrane shall cover entire AHU during shipping and storage. Cover equipment, regardless of size or shape. Alternatively AHU must be tarped for shipment and storage.

L. Wrap equipment, including electrical components, for protection against rain, snow, wind, dirt, sun fading, road salt/chemicals, rust and corrosion. Keep equipment clean and dry.

M. Clearly mark AHU sections with unit tag number, segment sequence number, and direction of airflow. Securely affix safety-warning labels.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide minimum two year manufacturer parts and labor warranty covering repair or replacement due to defective materials or workmanship.

C. Warranty shall begin on date of substantial completion.

D. Warranty work shall be performed by manufacturer's factory-trainied and factory-employed technician.

1.09 EXTRA MATERIALS

A. Provide one set of filters for balancing, and one additional set for final turnover to owner.

B. Provide one extra set of belts, in addition to the factory-installed set.

PART 2 PRODUCTS

2.01 SEE SECTION 01 60 00 FOR ADDITIONAL REQUIREMENTS

2.02 MANUFACTURERS

A. York by Johnson Controls Inc: www.johnsoncontrols.com (Basis of Design).

B. Daikin Applied: www.daikinapplied.com.

C. Trane Inc: www.trane.com.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 GENERAL DESCRIPTION

A. Components:

1. Casing construction.
2. Fan section.
3. Coil section.
4. Filter and air cleaner section.
5. Damper section.
6. Access section.

B. Fabrication: Conform to AMCA 99 and AHRI 430.

C. Configuration: Fabricate as detailed on drawings.

D. Performance: Conform to AHRI 430.

2.04 RATINGS AND CERTIFICATIONS

A. Unit shall conform to AMCA 210 for fan performance ratings.

B. Unit shall conform to E.T.L. standards. Unit shall be ETL listed.

C. Unit sound ratings shall be reported in accordance with AHRI 260 for inlet and discharge sound power levels.

D. Unit casing radiated sound ratings shall be reported in accordance with ISO 9614 parts 1&2 and ANSI S12.12.

E. Unit shall conform to AHRI 410 for capacities, pressure drops, and selection procedures of air coils.

F. Unit shall have airflow performance certified to ANSI/AHRI 430.

G. Motors covered by the Federal Energy Policy Act (EPACT) shall meet EPACT requirements.

H. Damper performance shall comply with AMCA 500.

I. Airflow Monitoring Stations shall be rated in accordance with AMCA 611-95 and bear a Certified Ratings Seal for Airflow Measurement Performance.

J. Units shall be ISO 9001 certified.

K. Units shall be manufactured in an ISO 9002 certified facility.

L. Filter media to comply with ANSI/UL 900 listed Class I or Class II.

M. Control Wiring comply with NEC codes & ETL requirements.

N. Units shall comply with energy use AHSRAE 90.1.

2.05 UNIT CONSTRUCTION

A. Fabricate unit with heavy gauge channel posts and panels secured with mechanical fasteners. All panels, access doors, and ship sections shall be sealed with permanently applied bulb-type gasket. Shipped loose gasketing is not allowed.

B. Panels and access doors shall be constructed as a 2-inch nominal thick; thermal broke double wall assembly, injected with foam insulation with an R-value of not less than R-13.
   1. The inner liner shall be constructed of G90 galvanized steel.
   2. The outer panel shall be constructed of G90 galvanized steel.
   3. The floor plate shall be constructed as specified for the inner liner.
   4. Unit will be furnished with solid inner liners.

C. Panel deflection shall not exceed L/240 ratio at 125% of design static pressure, maximum 5 inches of positive or 6 inches of negative static pressure. Deflection shall be measured at the panel midpoint.

D. The casing leakage rate shall not exceed .5 cfm per square foot of cabinet area at 5 inches of positive static pressure or 6 inches of negative static pressure (.0025 m3/s per square meter of cabinet area at 1.24 kPa static pressure).

E. Module to module field assembly shall be accomplished with an overlapping, full perimeter internal splice joint that is sealed with bulb type gasketing on both mating modules to minimize on-site labor and meet indoor air quality standards.

F. Access doors shall be flush mounted to cabinetry, with minimum of two six inch long stainless steel piano-type hinges, latch and full size handle assembly. Access doors shall swing outward for unit sections under negative pressure. Access doors on positive pressure sections, shall have a secondary latch to relieve pressure and prevent injury upon access.

G. A 6-inch formed G60 galvanized steel base rail shall be provided by the unit manufacturer for structural rigidity and condensate trapping.. The base rail shall be constructed with 12-gauge nominal for unit sizes 003 - 035 and 10-gauge nominal for unit sizes 040 - 090. The following calculation shall determine the required height of the baserail to allow for adequate drainage. Use the largest pressure to determine base rail height. [(Negative)(Positive) static pressure (in)] (2) + 4” = required baserail height. Should the unit baserail not be factory supplied at this height, the contractor is required to supply a concrete housekeeping pad to make up the difference.

H. Construct drain pans from stainless steel with cross break and double sloping pitch to drain connection. Provide drain pans under cooling coil section. Drain connection centerline shall be a minimum of 3’’ above the base rail to aid in proper condensate trapping. Drain connections that protrude from the base rail are not acceptable. There must be a full 2’’ thickness of insulation under drain pan.

I. Marine Lights:
   1. Provide factory-mounted, water- and dust-resistant LED fixture(s) at each service section, with the following characteristics:
      a. Non-ferrous metal housing.
      b. Glass or polycarbonate lens.
      c. Factory wired to a single switch within factory provided service module.
      d. Instant on white light with minimum 8,000 hour service life.
   2. Provide factory installed service module including GFCI receptacle independent from load side; designed to receive power from single-point power source.

J. Finish:
   1. Indoor Units:
      a. Provide exterior, galvanized steel panels without paint.
      b. Color: Manufacturer's standard color.

2.06 FAN ASSEMBLIES

A. Acceptable fan assembly shall be a double width, double inlet, class II, belt-drive type housed airfoil fan dynamically balanced as an assembly, as shown in schedule. Maximum fan RPM shall be below first critical fan speed. Fan assemblies shall be dynamically balanced by the manufacturer on all three planes and at all bearing supports. Copper lubrication lines shall be provided and extend from the bearings and attached with grease fittings to the fan base assembly near access door. If not supplied at the factory, contractor shall mount copper lube lines in the field. Fan and motor shall be mounted internally on a steel base. Provide access to motor, drive, and bearings through hinged access door.

B. Fan and motor shall be mounted internally on a steel base. Factory mount motor on slide base that can be slid out the side of the unit if removal is required. Provide access to motor, drive, and bearings through hinged access door. Fan and motor assembly shall be mounted on rubber-in-shear vibration type isolators inside cabinetry.

2.07 BEARINGS, SHAFTS, AND DRIVES

A. Bearings: Basic load rating computed in accordance with AFBMA - ANSI Standards. The bearings shall be designed for service with an L-50 life of 200,000 hours and shall be a heavy duty pillow block, self-aligning, grease-lubricated ball or spherical roller bearing type.

B. Shafts shall be solid, hot rolled steel, ground and polished, keyed to shaft, and protectively coated with lubricating oil. Hollow shafts are not acceptable.

C. V-Belt drives shall be cast iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. Fixed sheaves, matched belts, and drive rated based on motor horsepower. Minimum of 2 belts shall be provided on all fans with 10 HP motors and above. Standard drive service factor minimum shall be 1.1 S.F. for 1/4 HP - 7.5 HP, 1.3 S.F. for 10 HP and larger, calculated based on fan brake horsepower.

2.08 ELECTRICAL

A. Fan motors shall be manufacturer provided and installed, Open Drip Proof, premium efficiency (meets or exceeds EPAct requirements), 1750 RPM, single speed, 200V / 60HZ / 3P. Complete electrical characteristics for each fan motor shall be as shown in schedule.

B. The air handler(s) shall be ETL and ETL-Canada listed by Intertek Testing Services, Inc. Units shall conform to bi-national standard ANSI/UL Standard 1995/CSA Standard C22.2 No. 236.

C. Wiring Termination: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclosed terminal lugs in terminal box sized to NFPA 70.

D. Manufacturer shall provide ASHRAE 90.1 Energy Efficiency equation details for individual equipment to assist Building Engineer for calculating system compliance.

E. Air handler manufacturer shall provide and mount conduit and wiring from each fan motor terminated at an external junction box.

F. Provide field-wired and mounted 120V receptacle with separate power source.

2.09 COOLING AND HEATING COILS

A. Certification: Acceptable water cooling, water heating, steam, and refrigerant coils shall be certified in accordance with AHRI Standard 410 and bear the AHRI label. Coils exceeding the scope of the manufacturer's certification and/or the range of AHRI's standard rating conditions will be considered provided the manufacturer is a current member of the AHRI Forced Circulation Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with AHRI Standard 410. Manufacturer must be ISO 9002 certified.

B. Water heating and cooling coils shall be provided. Provide access to coil(s) for service and cleaning. Enclose coil headers and return bends fully within unit casing. Unit shall be provided with coil connections that extend a minimum of 5" beyond unit casing for ease of installation. Drain and vent connections shall be provided exterior to unit casing. Coil connections must be factory sealed with grommets on interior and exterior panel liners to minimize air leakage and condensation inside panel assembly. If not factory packaged, Contractor must supply all coil connection grommets and sleeves. Coils shall be removable through side and/or top panels of unit without the need to remove and disassemble the entire section from the unit.

1. Headers shall consist of seamless copper tubing to assure compatibility with primary surface. Headers to have intruded tube holes to provide maximum brazing surface for tube to header joint, strength, and inherent flexibility. Header diameter should vary with fluid flow requirements.
2. Fins shall have a minimum thickness of 0.0075 inch aluminum plate construction. Fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tubes shall not be visible between fins.

3. Coil tubes shall be 5/8 inch OD seamless copper, 0.020 inch nominal tube wall thickness, expanded into fins, brazed at joints.
4. Coil connections shall be carbon steel, threaded connection. Connection size to be determined by manufacturer based upon the most efficient coil circuiting. Vent and drain fittings shall be furnished on the connections, exterior to the air handler. Vent connections provided at the highest point to assure proper venting. Drain connections shall be provided at the lowest point to insure complete drainage and prevent freeze-up.
5. Coil shall be furnished as an uncased galvanized steel track to allow for thermal movement and slide into a pitched track for fluid drainage.

2.10 FILTERS

A. Furnish flat panel filter section with 2-inch filter. Provide side loading and removal of filters.

B. Furnish flat filter in mixing box section with 2-inch pleated MERV 13 filter with microbial resistant Intersept coating. Provide side loading and removal of filters.

C. Filter media shall be UL 900 listed, Class I or Class II.

D. Filter Magnehelic gauge(s) shall be furnished and mounted by installing contractor.

2.11 CASING CONSTRUCTION

A. Full Perimeter Base Rail:
   1. Construct of galvanized steel.
   2. Provide base rail of sufficient height to raise unit for external trapping of condensate drain pans.
   3. Provide anchol points as required to allow for hanging or installation of unit on floor-mounted spring isolators.

B. Casing:
   1. Construct of one piece, insulated, double wall panels.
   2. Provide mid-span, no through metal, internal thermal break.
   3. Construct outer panels of galvanized steel and inner panels of galvanized steel.
   4. Casing Air Pressure Performance Requirements:
      a. Able to withstand up to 8 inches w.g. positive or negative static pressure.
      b. Not to exceed 0.0042 inches per inch deflection at 1.5 times design static pressure up to a maximum of plus 8 inches w.g. in all positive pressure sections and minus 8 inches w.g. in all negative pressure sections.

C. Access Doors:
   1. Construction, thermal and air pressure performance same as casing.
   2. Provide surface mounted handles on hinged, swing doors.

D. Unit Flooring: Construct with sufficient strength to support expected people and equipment loads associated with maintenance activities.

E. Casing Leakage: Seal joints and provide airtight access doors so that air leakage does not exceed one percent of design flow at the specified casing pressure.

F. Insulation:
   1. Provide minimum thermal thickness of 12 R throughout.
   2. Completely fill panel cavities in each direction to prevent voids and settling.
   3. Comply with NFPA 90A.

G. Drain Pan Construction:
   1. Provide cooling coil sections with an insulated, double wall, stainless steel drain pan complying with ASHRAE 62.1 for indoor air quality and sufficiently sized to collect all condensate.
   2. Slope in two planes to promote positive drainage and eliminate stagnate water conditions.

3. Locate outlet of sufficient diameter at lowest point of pan to prevent overflow at normal operating conditions.
4. Provide threaded drain connections constructed of drain pan material, extended sufficient distance beyond the base to accommodate field installed, condensate drain trapping.

H. Marine Lights:
1. Provide factory-mounted, water- and dust-resistant LED fixture(s) where indicated on drawings, with the following characteristics:
   a. Non-ferrous metal housing.
   b. Glass or polycarbonate lens.
   c. Factory wired to a single switch within factory provided service module.
   d. Instant on white light with minimum 8,000 hour service life.
2. Provide factory installed service module including GFCI receptacle independent from load side; designed to receive power from single-point power source.

I. Finish:
1. Indoor Units:
   a. Provide exterior, galvanized steel panels without paint.
   b. Color: Manufacturer's standard color.

2.12 MULTIZONE SECTION

A. Two-Deck Multizone:
1. Provide cooling coil in the lower deck and heating coil in the upper deck unless otherwise indicated in drawings.
2. Pressure drop equalization baffles balance air pressure drop through each deck.
3. Multizone Damper Construction:
   a. Double-skin airfoil design.
   b. Metal, compressible jamb seals.
   c. Extruded vinyl edge seals on each blade.
   d. Stainless steel ball bearings.
   e. Maximum Leakage: 11 cfm/sq ft at 1.0 in-wc.

2.13 ACCESS SECTION

A. Provide access at all critical components. to allow for inspection, cleaning, and maintenance of field installed components from one side only.

B. Construct access doors same as previously specified within this Section.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Bolt sections together with gaskets.

C. Isolate fan section with flexible duct connections.

D. Install flexible duct connections between fan inlet and discharge ductwork and air handling unit sections. Ensure that metal bands of connectors are parallel with minimum one inch flex between ductwork and fan while running.

E. Install assembled unit on vibration isolators. Install isolated fans with resilient mountings and flexible electrical leads. Install restraining snubbers as required. Refer to Section 23 05 48. Adjust snubbers to prevent tension in flexible connectors when fan is operating.

F. Make connections to coils with unions or flanges.

G. Hydronic Coils:
1. Hydronic Coils: Connect water supply to leaving air side of coil (counterflow arrangement).

2. Locate water supply at bottom of supply header and return water connection at top.
3. Provide manual air vents at high points complete with stop valve.
4. Ensure water coils are drainable and provide drain connection at low points.

H. Refrigerant Coils: Provide sight glass in liquid line within 12 inches of coil.

I. Insulate coil headers located outside air flow as specified for piping. Refer to Section 23 07 19.

3.02 COORDINATION

A. Coordinate with the General Contractor and affected subcontractors to ensure the specified performance is met. Coordination shall include (but is not limited to) the following:
1. Structural supports for units.
2. Size and location of concrete bases/housekeeping pads
3. Location of unit supports and roof penetrations
4. Ductwork sizes and connection locations
5. Piping size and connection/header locations
6. Interference with existing or planned ductwork, piping and wiring
7. Electrical power requirements and wire/conduit and over current protection sizes.
8. Trap height requirements

B. The Mechanical Contractor shall be responsible for costs incurred by the General Contractor, Subcontractors, and Consulting Engineers to accommodate units furnished by a manufacturer other than manufacturer named as basis of design.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Air Handling Unit Casing Field Leak-Testing
1. Perform field leakage testing on completely assembled modular AHU.
2. Determine casing air leakage rate per AHRI Standard 1350 to demonstrate a leakage class of CL(24) maximum.
3. Submit casing leakage reports to engineer with testing and balancing report.
4. Final Acceptance Requirements:
a. Use dial indicator gauges to demonstrate fan and motor are aligned.

3.04 SYSTEM STARTUP

A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

B. Provide manufacturer's field representative to perform systems startup.

C. Prepare and start equipment and systems in accordance with manufacturers' instructions and recommendations.

D. Adjust for proper operation within manufacturer's published tolerances.

3.05 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. See Section 01 79 00 - Demonstration and Training, for additional requirements.

C. Demonstrate proper operation of equipment to Owner's designated representative.

D. Demonstration: Demonstrate operation of system to Owner's personnel.
1. Use operation and maintenance data as reference during demonstration.
2. Briefly describe function, operation, and maintenance of each component.

E. Training: Train Owner's personnel on operation and maintenance of system.
1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

2. Provide minimum of one day of training.
3. Instructor: Manufacturer's training personnel.
4. Location: At project site.

3.06 MAINTENANCE

A. Provide service and maintenance of packaged air handling units for [2] years from Date of Substantial Completion.

B. Provide routine maintenance service with a three month interval as maximum time period between calls.

C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of four (4) filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.

D. After each service call, submit copy of service call work order or report that includes description of work performed.

END OF SECTION

SECTION 23 73 14
CUSTOM AIR-HANDLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Custom Air-Handling Units

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of all units with size, location and installation of service utilities.

B. Coordinate the work with other trades for installation of indoor air handling units.

C. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

D. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data:
   1. Published Literature: Indicate dimensions, weights, capacities, ratings, gages and finishes of materials, and electrical characteristics and connection requirements.
   2. Filters: Data for filter media, filter performance data, filter assembly, and filter frames.
   3. Fans: Performance and fan curves with specified operating point clearly plotted, power, RPM.
   4. Sound Power Level Data: Fan outlet and casing radiation at rated capacity.
   5. Electrical Requirements: Power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.

C. Sustainable Design Documentation: Submit manufacturer's product data on refrigerant used, showing compliance with specified requirements.

D. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.

E. Executed Warranty: Submit documentation of final executed warranty completed in Owner's name and registered with manufacturer.

F. Manufacturer's Instructions: Include installation instructions.

G. Maintenance Data: Include instructions for lubrication, filter replacement, motor and drive replacement, spare parts lists, and wiring diagrams.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept products on site in factory-fabricated protective containers, with factory-installed shipping skids and lifting lugs. Inspect for damage.

B. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

C. Do not operate units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide minimum two year manufacturer parts and labor warranty covering repair or replacement due to defective materials or workmanship.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, all air-handling units shall be manufactured by Nortek Ventrol. Other manufacturers offering similar products may be incorporated, they include and are limited to, the following:
   1. Nortek Ventrol, basis of design
   2. Temtrol
   3. Governair
   4. Mammoth
   5. Huntair

2.02 MANUFACTURED UNITS

A. General Description: Factory assembled, consisting of fans, motor and drive assembly, coils, dampers, plenums, filters, drip pans, mixing dampers and other accessories as indicated on drawings or schedules.

B. Motor and Electrical Components: Refer to Division 15 Section "Electrical Requirements for Mechanical Equipment."

2.03 AIR HANDLING UNITS

A. GENERAL: This specification covers the performance requirements and the material/construction requirements of custom-built air handling units. The detailed performance and data sheets and/or equipment schedule drawing(s) are considered part of this specification.

B. Submittal: The successful manufacturer shall provide Shop drawings and submittal data for review. The submittals and shop drawings shall be complete in all respects including the following information:
   1. Overall unit dimensions and individual components and section dimensions.
   2. Sound analysis consisting of inlet, outlet and radiated sound power levels per unit performed by an AMCA 300 accredited lab.
   3. Shipping and operating weight of unit and/or sections.
   4. Materials of construction.
   5. Cross section details of typical wall, floor and roof construction.
   6. Component equipment data as detailed in component specification section.
   7. Unit performance data including sound data.
   8. Details of coil support in a coil bank.
   9. Piping connection sizes and approximate locations.
   10. Door and window sizes and elevations.
   11. Drain pan details.
   12. Operating and Maintenance Data

C. Product Delivery, Storage and Handling
   1. All equipment shall be delivered to the job site suitably packaged and protected for overland trucking using heavy-duty protective shrink-wrap plastic. Where multiple units are required, a schedule of priority will be furnished which shall determine the manufacturing and delivery sequence. In general, units shall be delivered in one piece unless indicated otherwise. Where building constraints, unit size or trucking limitations require that units ship in more than one piece, the manufacturer shall indicate all split points on the shop drawings. All items shipped loose such as filters, steam humidifier

assemblies, caulking, etc. shall be itemized on the packing slip and be suitably secured in the unit or on a separate pallet.

D. General Design Considerations
   1. Coils shall be arranged so that space between coils is a minimum of 24", unless specifically shown otherwise on drawings. Fan compartment shall be arranged such that the space between the fan inlet(s) and the housing is a minimum of 75% of fan diameter, unless noted or shown otherwise on the schedule or drawings. Coil assembly shall have provisions to facilitate total or partial removal from coil bank. Housing shall be designed and sealed to minimize air and water vapor leakage. Housing shall be designed and tested to meet maximum leakage of SMACNA class 3 when tested in accordance with the procedure outlined in the SMACNA HVAC Air Duct Leakage Manual.

2.04 UNIT CONSTRUCTION

A. Unit Base / Floor / Frame Work:
   1. The unit base frame is manufactured with an aluminum 2" X 5" X 0.125" HSS type rectangular structural tubing. Unit base is fitted with 20" on-center C-channel cross support members. The completed unit base coating must be able to sustain salt spray testing of 1000 hours, per ASTM 117B. Sheet metal formed unit bases are not acceptable. The "Double Bottom" base features a 4.5" thick insulated walk-on floor as specified below. The base rails are fitted with Bolted removable lifting lugs at the unit or module (if demounted) corners. Sheet metal lifting lugs are not acceptable. Floor liner shall be 16-ga, G-90 galvanized steel. Floor seams shall be sealed to create leak free joints. The perimeter of the unit consists of a 1½" upturned perimeter lip to create a drainable floor. The under floor liner shall be G-90 galvanized steel and recessed nominal ½" to allow for air circulation under the unit floor. All floor openings on outdoor units are complete with floor grating. The entire unit base must be polyurethane foamed in place with a minimum thickness of 3" and a minimum R value of 20. Fiberglass insulated unit bases will not be acceptable. Maximum deflection of floor shall be L/360 at design loading (L=span in inches), the minimum floor design load is 150 lbs/sqft (distributed load), and the maximum point load on floor shall be 300 lbs (over 1 square foot).

CONSTRUCTION OPTIONS			
WALL THICKNESS	**R-VALUE**	**CABINET INSULATION OPTIONS**	**THERMAL BREAK OPTIONS**
2"	**16.0**	**INJECTED FOAM**	**GASKET THERMAL BREAK**

A. Panel structural strength:
   1. Maximum deflection of walls and roof shall be L/180 at +/- 8" w.c. for 2" construction (L= span in inches). Deflection is worst case at the center of wall span.
      a. Minimum roof and wall load is 75 lbs /sqft (distributed load such as wind and snow)
      b. Maximum point load on roof shall be 300 lbs (over 1 square foot)

B. Cabinet Insulation:
   1. The polyurethane injected foam, 2.5 pcf with an effective thermal conductivity (C) of 0.125 BTU in/hr sq.ft°F). The foam insulation has an ozone depletion potential of 0, a global warming potential of 0 and is VOC exempt. It is also rated UL94 HF-1.

C. Cabinet – Smooth Exterior Panels:

1. Formed and reinforced wall panels, fabricated to allow removal for access to internal parts and components, with joints between sections sealed. Outside Casing shall be solid 16-ga, Bright spangled G-90 galvanized steel, double die-formed 2” thick panel secured with 1/4” hex head, zinc plated fasteners at 12” on-centers.The inside liner shall be 20-ga, G-90 galvanized steel. Liner shall be secured with sheet metal screws to outside casing at 12” on-centers. The unit construction needs to be thermal break PVC (poly-vinyl chloride) closed cell foam gasket meeting NFPA 90 A and B. The panel construction must meet a minimum R value of 16 in the walls and ceiling.

D. Drain Pans and Cooling Coil Support Structure
   1. Condensate Drain Pans are IAQ design, 18-ga., 304 stainless steel and incorporate a double slope shape to eliminate standing water. All drain pans have a “Double Bottom” attached to welded structural steel base, with a minimum of 1.25” of polyurethane spray foam insulation under the drain pan under the lowest point. Drain connections are standard stainless steel 1-1/4” MPT connection. All coils are self-supported to reduce unit height to a minimum. All coils shall be mounted on raised supports above drain pan to facilitate cleaning and coil removal. Coils shall have independent removable access panels on both sides of the coil to allow for coil pull.

2.05 ACCESS DOORS AND PANELS:

A. Access doors are constructed with a double wall construction and an extruded aluminum frame. The door frame features a built-in no-through-metal high density resin barrier and a perimeter gasket. Door frames with no thermal break are not acceptable. The door gasket is seamed together at each corner to prevent leakage through the door. Door is attached to the unit with 3 axes adjustable stainless steel hinges. Doors shall open against higher pressure side. Where this is not feasible due to site constraints, an interlocking mechanism furnished on the fan section access door with a de-energizing switch complying with CAL-OSHA, ETL and the mechanical protection requirements of UL 1995 will be provided.

B. Inspection access panels and doors shall be sized and located to allow periodic maintenance and inspections. Provide access panels and doors in the following locations as shown on drawings

C. All outward swinging doors must be equipped with a door chain to limit door swing.

2.06 FANWALL TECHNOLOGY®

A. Manufacturers
   1. NAS, Nortek Air Solutions, including Governair, Huntair, Mammoth, Temtrol, Venmar, and Nortek Ventrol.
   2. Approved Equal
      a. Must be submitted per project specifications
      b. Must guarantee submitted AHU performance for flow, pressure, and acoustics at the perimeter boundary of the unit.
      c. Any corrective acoustical treatment, added airway tunnel lengths, increased electrical service, and any structural modifications necessary to meet specified and scheduled performance shall be provided at no additional cost to the owner to meet the specified performance criteria.

B. Fan Wheel HPF-A100
   1. Fans shall be aluminum airfoil wheel, Class III, direct drive arrangement and shall be individually housed. Fans shall be certified by AMCA for performance. Fan shall be housed in a “cell”.
   2. Fan housing or “cell” shall be constructed of aluminum or stainless steel with perforated inner liner, melamine insulation, with either solid or perforated outer panels as required by application.

3. Fan/motor assembly shall be mounted within the housing on an adjustable slide rail base. Fan/motor assembly must be capable of either horizontal or vertical application.
4. Each fan/motor assembly shall be dynamically balanced to meet AMCA standard 204-96, for fan application class BV-5, to meet or exceed a rotational imbalance Grade G.55, producing a maximum rotational imbalance of 0.022 inches per second peak, filter in. “Filter in” measurement indicates that the specified balance grade must be achieved at the submitted design operating speed for the fan(s).
5. Fan and motor assemblies shall be designed for application in multiple fan arrays.

C. Motors
1. AC Motors:
   a. All motors shall be standard foot mounted type, TEFC or TEAO motors selected at the specified operating voltage, RPM, and efficiency as specified or as scheduled elsewhere.
   b. Motors shall meet the requirements of NEMA MG-1 Part 30 and 31, section 4.4.2.
   c. Motors shall be as manufactured by Baldor, Siemens, or Toshiba. Motors shall be available in 1/2 HP increments at nameplate HP ratings from 1.5 HP through 12 HP.
   d. All motors shall include permanently sealed bearings and shaft grounding means to protect the motor bearings from electrical discharge machining due to stray shaft current. Motors provided with hybrid ceramic bearings, when specified, do not require shaft grounding devices.
   e. Steel cased motors and/or ODP motors are not acceptable.
2. Electronically Commutated Permanent magnet motors (ECMi)
   a. All ECMi motors shall be UL listed with brushless permanent magnet motors.
   b. All bearings shall be permanently lubricated
   c. Motors shall have a design life of L10 100,000 hours
   d. Motors shall have a means of shaft isolation to prevent electrical arcing across bearings
   e. Motors shall be complete with electronic motor overload protection, locked rotor protection and thermal management
   f. Motors shall meet IP54 protection and thermal class THCL 155.
   g. Modbus communication option available
3. Ultra-Premium Efficient Motors (IE5+)
   a. Provide FANWALL Ultra-Premium Efficient Motors IE5+ that meet IE5 efficiency levels. Compared to NEMA Premium induction motors, these FANWALL Ultra-Premium Efficient Motors shall have tested data that shows a 5HP motor having 4.5% improved efficiency at nominal nameplate speed and load and over 20% improved efficiency at 40% turndown speed along a fan curve.

D. Multiple Fan Arrays
1. The fan array shall consist of multiple housed fans or “cells”, spaced in the air way tunnel cross section to provide a uniform air flow and velocity profile across the entire air tunnel cross section and components contained therein.
2. Each fan and motor assembly shall be removable through a 24” wide, free area, access door located on the discharge side of the fan wall array without removing the fan wheel from the motor.
3. All fans in the multiple fan arrays shall be AMCA certified for performance per AMCA arrangement “A” testing configuration. The submitted fan performance shall be inclusive of system effects attributed to the fan mounting arrangement, fan enclosures, back draft dampers, and other fan appurtenances not considered when AMCA certified performance per AMCA arr. “A” is determined. Submitted AHU/fan performance that does not indicate allowances for system effects for the back flow prevention device(s), wheel enclosures, safety screens, bearing pedestals, belt guards, or the fan and motor enclosure in which each fan is mounted, will be returned to the contractor disapproved and will need to be

resubmitted with all of the requested information included for approval. Added system effects for acoustic attenuators, or other devices required to meet specified fan performance and sound levels must be indicated in the submitted fan selection data.

4. Fan system power requirements or sound power levels that fail to meet specified performance levels shall be corrected to meet specified performance levels at no additional cost to the owner. Any proposed corrections for power or sound deviations from specified values must be submitted to the engineer for approval prior to implementation of any proposed corrective procedure.
5. Submittals for units providing less than the scheduled quantity of fans and/or spacing of the fans for multiple fan arrays shall submit CFD modeling of the air flow profile for approval that indicates uniform velocity and flow across all internal components without increasing the length of the AHU unit or changing the aspect ratio of the unit casing as designed.
6. Manufacturers that do not manufacture their own fans for the specific purpose of use in multiple fan arrays, shall provide a letter guaranteeing submitted AHU performance for flow, pressure, and acoustics at the perimeter boundary of the unit signed by an officer of the OEM fan manufacturer being submitted. Any corrective acoustical treatment, added airway tunnel lengths, increased electrical service, and any structural modifications necessary to meet specified and scheduled performance shall be provided at no additional cost to the owner to meet the specified performance criteria. All proposed corrective actions, when required, must be submitted for approval and shall include a guarantee of performance, as listed above, at no additional cost to the owner.

E. Backdraft dampers:
1. Each fan applied in multiple fan applications shall be provided with an integral back flow prevention device that prohibits recirculation of air in the event a fan, or multiple fans, becomes disabled. The system effect for the submitted back flow prevention device shall be included in the calculation to determine the fan TSP for fan selection purposes, and shall be indicated as a separate line item SP loss in the submitted fan selection data. Manufacturers other than the basis of design being submitted must provide independent lab certification of fan testing that indicates the system effects attributed to the submitted back flow prevention device in the submitted close coupled mounting arrangement at the inlet of the fan. Fans submitted with discharge dampers will not be approved.
2. Back Draft Damper performance data that is based on an AMCA ducted inlet and ducted discharge mounting configuration will not be accepted. Submitted Back flow prevention device data must be reflective of close coupled mounting at the intake of the fan(s) per the project design documents. Motorized dampers or other motorized devices submitted for back flow prevention are not acceptable.
3. AHU Manufacturers that do not manufacture the fans being submitted must provide tested and certified performance data for fans as installed in the AHU unit including the back draft damper system effects introduced by close coupled back draft dampers at the fan inlet.

F. Control Panel
1. Each fan motor shall be individually wired to a motor control panel containing motor overloads and VFD(s). VFD configuration may be one of the following (please select)
   a. Single VFD without bypass
2. Each control panel shall have a single point electrical power connections. Therefore, units with supply and return fan wall would have two power connections.
3. Wire sizing shall be determined, and installed, in accordance with applicable NEC standards and local code requirements.

2.07 COILS

A. Heating Coils:
1. Steam distributing coils: AHRI Certified Performance

a. Piping connections: Same end of coil
b. Tube Material (outer tube): Round Seamless Copper
   1) 1 1/8” od. x 0.035” tube wall [25.57 mm x .889 mm]
   2) 1 1/8” od. x 0.049” tube wall [25.57 mm x 1.245 mm]
   3) Tube Material (inner tube): Round Seamless Copper
      (a) 5/8” od. x 0.035” tube wall [15.85 mm x .889 mm]
   4) Fin Type: Corrugated plate with full drawn collar for accurate spacing.
   5) Fin Thickness / material:
      (a) 0.010” [.254 mm] Aluminum or Copper
   6) Fin Spacing: FPI (fins per inch)
      (a) 5 thru 14 FPI
   7) Fin and Tube Joint: Tubes are mechanically expanded.
   8) Coil Headers:
      (a) Type L Seamless copper with 5% silver brazed joints
      (b) Red Brass Male npt connections (std)
      (c) Copper o.d. sweat connections
   9) Coil Casing:
      (a) Galvanized steel 16ga. or 14ga.
      (b) 304 Stainless steel 16ga. or 14ga.
      (c) 316 Stainless steel 16ga. or 14ga.
   10) Coatings:
      (a) ElectroFin® including UV protective layer
      (b) Heresite® P-413 including UV protective layer
   11) Leak testing:
      (a) Entire coil assembly submerged in water and filled with Nitrogen at 315 psig.
   12) Coil Working-Pressure Rating: 100 psig

B. Cooling Coils:
   1. Chilled Water coils: AHRI Certified Performance, Continuous circuit, Self-draining unless noted on performance output.
      a. Piping connections: Same end of coil
      b. Tube Material: Round Seamless Copper
         1) 5/8” od. x 0.020” tube wall [15.8 mm x .508 mm]
         2) 5/8” od. x 0.025” tube wall [15.8 mm x .635 mm]
         3) 5/8” od. x 0.035” tube wall [15.8 mm x .889 mm]
         4) 5/8” od. x 0.049” tube wall [15.8 mm x 1.245 mm]
         5) 1/2” od. x 0.017” tube wall [12.7 mm x .432 mm]
         6) 1/2” od. x 0.025” tube wall [12.7 mm x .635 mm]
      c. Fin Type: Corrugated plate with full drawn collar for accurate spacing.
      d. Fin Thickness / material / tube size:
         1) 0.008” [.203 mm] Aluminum on 5/8” tube
         2) 0.010” [.254 mm] Aluminum on 5/8” tube
         3) 0.006” [.152 mm] Aluminum on 1/2” tube
         4) 0.006” [.152 mm] Copper on 5/8” & 1/2” tube
         5) 0.008” [.203 mm] Copper on 5/8” tube
         6) 0.010” [.254 mm] Copper on 5/8” tube
      e. Fin Spacing: FPI (fins per inch) / tube size
         1) 6 thru 14 FPI on 5/8” tube
         2) 8 thru 14 FPI on 1/2” tube
      f. Fin and Tube Joint: Tubes are mechanically expanded.
      g. Coil Headers:

1) Type L Seamless copper with 5% silver brazed joints
2) Vent & Drain located at high and low point to provide gravity drain.
3) Red Brass Male npt connections (std)
4) Red Brass Grooved (Victaulic) connections
5) Copper o.d. sweat connections

h. Coil Casing:
1) Galvanized steel 16ga. or 14ga.
2) 304 Stainless steel 16ga. or 14ga.
3) 316 Stainless steel 16ga. or 14ga.

i. Coatings:
1) ElectroFin® including UV protective layer
2) Heresite® P-413 including UV protective layer

j. Leak testing:
1) Entire coil assembly submerged in water and filled with Nitrogen at 315 psig.

k. Coil Working-Pressure Rating: 250 psig at 300 deg F

2.08 MOISTURE ELIMINATOR SECTION:

A. The unit shall contain a moisture eliminator with 304 stainless steel mesh as manufactured by Mistop, Inc., or equal. All hardware is to be made of corrosion resistant materials. The eliminator section shall drain to cooling coil drain pan. Units shall have less than 0.1" S.P. at 600 FPM.

2.09 FILTERS, FILTER FRAMES, AND FILTER BANKS

A. Filters
1. The filter shall consist of a pleated media, media support grid, and enclosing frame. The media shall be non-woven cotton fabric and shall be designed to consistently increase efficiency throughout service life of filter with an initial Merv 13 rating. The media support shall be a welded wire grid with an effective open area of not less than 90%. The grid shall be bonded to the filter media to eliminate media oscillation and pull away. The enclosing frame shall be constructed of rigid, heavy duty, high wet strength beverage board. The frame shall be bonded to the filter pack. Standard sizes shall be 12" x 24" x 2" and 24" x 24" x 2". All filter holding frames must be caulked in between them to minimize bypass air through the frames. Filters shall be American Air Filter Perfect Pleat, or equal by Cam-Farr, Eco-Air or Airguard. Provide Dwyer Instruments Inc Series 2000 Magnehelic gauges across each filter bank.

B. Filter Frame Assemblies
1. Constructed of galvanized steel, specifically designed and sized to have matching mounting holes such that frames may be riveted together. Frame comes with pre-installed gasket so as to provide a surface onto which the filter will self-seal. Filter frames come with stiffeners which are installed between each column of filter frame. All filter holding frames are caulked in between them to minimize bypass air through the frames. Proper structural support (every 5 frames wide) is provided when reinforcement is required for attachment of frame assembly to existing AHU casing / building structure as well as complete safing and proper air seal.

2.10 DAMPERS

A. Low leakage aluminum dampers as made by TAMCO. Dampers are made of extruded aluminum airfoil blades with extruded EPDM blade gaskets and extruded TPE frame seals, 7/16'' aluminum hexagon shaft, aluminum linkage crankarm, aluminum pivot pin, acetal copolymer inner bearing and polycarbonate outer, and a 12-ga. aluminum frame.

B. Low leakage TAMCO two deck multi-zone dampers have extruded aluminum airfoil blades, extruded EPDM blades gaskets, extruded TPE frame seals, 7/16'' aluminum hexagon shaft, aluminum linkage crankarm, aluminum pivot pin, acetal copolymer (cecon) inner bearing and

polycarbonate outer bearing, and a 12-ga. aluminum frame. The cold/hot decks are on a common shaft driven by one operator. [Actuator are furnished and mounted by NORTEK VENTROL. Electric specified in Division 15 Section “HVAC Instrumentation and Controls.

2.11 ELECTRICAL

A. Control panel with main disconnect.

B. Motor Wiring
   1. Motor shall be wired to NEMA-1 enclosure located on the exterior of unit fan housing. Conduit shall be appropriately sized EMT with a 3 ft. section of Greenfield flex conduit at the motor to provide a vibration loop. EMT conduit used up to 100 HP, TEK wire used on 100 HP and up, when single point wiring is required.

C. AHU tag must bear the ETL label

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Bolt sections together with gaskets.

C. Isolate fan section with flexible duct connections.

D. Install flexible duct connections between fan inlet and discharge ductwork and air handling unit sections. Ensure that metal bands of connectors are parallel with minimum one inch flex between ductwork and fan while running.

E. Install assembled unit on vibration isolators. Install isolated fans with resilient mountings and flexible electrical leads. Install restraining snubbers as required. Refer to Section 23 05 48. Adjust snubbers to prevent tension in flexible connectors when fan is operating.

F. Make connections to coils with unions or flanges.

G. Hydronic Coils:
   1. Hydronic Coils: Connect water supply to leaving air side of coil (counterflow arrangement).
   2. Locate water supply at bottom of supply header and return water connection at top.
   3. Provide manual air vents at high points complete with stop valve.
   4. Ensure water coils are drainable and provide drain connection at low points.

H. Refrigerant Coils: Provide sight glass in liquid line within 12 inches of coil.

I. Insulate coil headers located outside air flow as specified for piping. Refer to Section 23 07 19.

3.02 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements

B. Air Handling Unit Casing Field Leak-Testing
   1. Perform field leakage testing on completely assembled modular AHU.
   2. Determine casing air leakage rate per AHRI Standard 1350 to demonstrate a leakage class of CL(24) maximum.
   3. Submit casing leakage reports to engineer with testing and balancing report.
   4. Final Acceptance Requirements:
      a. Use dial indicator gauges to demonstrate fan and motor are aligned.

3.03 SYSTEM STARTUP

A. Provide manufacturer's field representative to perform systems startup.

B. Prepare and start equipment and systems in accordance with manufacturers' instructions and recommendations.

C. Adjust for proper operation within manufacturer's published tolerances.

D. system to be commissioned by manufacturer field representative.

3.04 CLOSE OUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. See Section 01 79 00 - Demonstration and Training, for additional requirements.

C. Demonstrate proper operation of equipment to Owner's designated representative.

D. Demonstration: Demonstrate operation of system to Owner's personnel.
   1. Use operation and maintenance data as reference during demonstration.
   2. Briefly describe function, operation, and maintenance of each component.

E. Training: Train Owner's personnel on operation and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
   2. Provide minimum of one day of training.
   3. Instructor: Manufacturer's training personnel.
   4. Location: At project site.

3.05 MAINTENANCE

A. Provide service and maintenance of packaged air handling units for [2] years from Date of Substantial Completion.

B. Provide routine maintenance service with a three month interval as maximum time period between calls.

C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of four (4) filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.

D. After each service call, submit copy of service call work order or report that includes description of work performed.

3.06 SCHEDULES - SEE DRAWINGS

END OF SECTION

SECTION 26 05 01
MINOR ELECTRICAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical demolition.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on Drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition drawings are based on casual field observation .

D. Report discrepancies to Owner before disturbing existing installation.

E. Report discrepancies to Architect before disturbing existing installation.

F. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings to be removed.

B. Coordinate utility service outages with utility company.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Obtain permission from Owner at least 24 hours before partially or completely disabling system.
   2. Make temporary connections to maintain service in areas adjacent to work area.

E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Notify Owner before partially or completely disabling system.
   2. Notify local fire service.
   3. Make notifications at least 24 hours in advance.
   4. Make temporary connections to maintain service in areas adjacent to work area.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Remove, relocate, and extend existing installations to accommodate new construction.

B. Remove abandoned wiring to source of supply.

C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

E. Disconnect and remove abandoned panelboards and distribution equipment.

F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

H. Repair adjacent construction and finishes damaged during demolition and extension work.

I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

3.04 CLEANING AND REPAIR

A. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

B. Clean and repair existing materials and equipment that remain or that are to be reused.

C. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

D. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts and broken electrical parts.

E. Any lighting or ceiling-mounted devices removed during construction must be reinstalled.

END OF SECTION

SECTION 26 05 19
LOW VOLTAGE ELEC. POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single conductor building wire.
B. Metal-clad cable.
C. Variable-frequency drive cable.
D. Wire and cable for 600 volts and less.
E. Wiring connectors.
F. Electrical tape.
G. Wire pulling lubricant.

1.02 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire.
B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes.
D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation.
E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape.
F. NECA 1 - Standard for Good Workmanship in Electrical Construction.
G. NECA 120 - Standard for Installing Armored Cable (AC) and Type Metal-Clad (MC) Cable.
H. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
I. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.
J. NFPA 70 - National Electrical Code.
K. NFPA 79 - Electrical Standard for Industrial Machinery.
L. UL 44 - Thermoset-Insulated Wires and Cables.
M. UL 83 - Thermoplastic-Insulated Wires and Cables.
N. UL 486A-486B - Wire Connectors.
O. UL 486C - Splicing Wire Connectors.
P. UL 486D - Sealed Wire Connector Systems.
Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape.
R. UL 1569 - Metal-Clad Cables.
S. UL 2277 - Outline of Investigation for Flexible Motor Supply Cable and Wind Turbine Tray Cable.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

C. Wire Pulling Lubricant: Certification of compatibility with conductors/cables.

D. Product Data: Provide for each cable assembly type.

E. Test Reports: Indicate procedures and values obtained.

F. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors. Include proposed modifications to raceways, boxes, wiring gutters, enclosures, etc. to accommodate substituted conductors.

G. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

H. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.

J. Project Record Documents: Record actual locations of components and circuits.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

C. Concealed Dry Interior Locations: Use only building wire in raceway type THHN/THHW.

D. Exposed Dry Interior Locations: Use only building wire in raceway type THHN/THHW.

E. Above Accessible Ceilings: Use only building wire in raceway type THHN.

F. Wet or Damp Interior Locations: Use only building wire in raceway type THW.

G. Exterior Locations: Use only building wire in raceway type THHW.

H. Use solid conductor for feeders and branch circuits 10 AWG and smaller.

I. Use solid conductors for control circuits.

J. Use conductor not smaller than 12 AWG for power and lighting circuits.

K. Use conductor not smaller than 16 AWG for control circuits.

L. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.

M. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.

2.02 CONDUCTOR AND CABLE MANUFACTURERS

A. Cerro Wire LLC: www.cerrowire.com.

B. Southwire Company: www.southwire.com.

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

D. Comply with NEMA WC 70.

E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

G. Conductors for Grounding and Bonding: Also comply with Section 26 05 26.

H. Conductor Material:
   1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
   2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B 787M unless otherwise indicated.
   3. Tinned Copper Conductors: Comply with ASTM B33.

I. Minimum Conductor Size: 12 AWG.
   1. Branch Circuits: 12 AWG.
      a. Exceptions:
         1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
         2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
         3) 20 A, 277 V circuits longer than 150 feet: 10 AWG, for voltage drop.
   2. Control Circuits: 14 AWG.

J. Conductor Color Coding:

1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
2. Color Coding Method: Integrally colored insulation.
   a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
3. Color Code:
   a. 480Y/277 V, 3 Phase, 4 Wire System:
      1) Phase A: Brown.
      2) Phase B: Orange.
      3) Phase C: Yellow.
      4) Neutral/Grounded: Gray.
   b. 208Y/120 V, 3 Phase, 4 Wire System:
      1) Phase A: Black.
      2) Phase B: Red.
      3) Phase C: Blue.
      4) Neutral/Grounded: White.
   c. Equipment Ground, All Systems: Green.
   d. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.
   e. For control circuits, comply with manufacturer's recommended color code.

2.04 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
   1. Copper Building Wire:
      a. Cerro Wire LLC: www.cerrowire.com/#sle.
      b. General Cable Technologies Corporation: www.generalcable.com/#sle.
      c. Southwire Company: www.southwire.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
   1. Feeders and Branch Circuits:
      a. Size 10 AWG and Smaller: Solid.
      b. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
   1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
      a. Size 4 AWG and Larger: Type XHHW-2.

F. Conductor: Copper.
   1. For Sizes Smaller Than 4 AWG: Copper.
   2. For Sizes 4 AWG and Larger: Copper.

G. Insulation Voltage Rating: 600 volts.

H. Insulation: NFPA 70, Type THHW/THWN/THHN/THW.

I. Insulation: Thermoplastic material rated 75/90 degrees C.

2.05 METAL-CLAD CABLE

A. Manufacturers:
   1. AFC Cable Systems Inc: www.afcweb.com/#sle.
   2. Encore Wire Corporation: www.encorewire.com/#sle.

3. Southwire Company: www.southwire.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.

C. Conductor Stranding:
1. Size 10 AWG and Smaller: Solid.
2. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.

F. Provide dedicated neutral conductor for each phase conductor where indicated or required.

G. Grounding: Full-size integral equipment grounding conductor.

H. Armor: Steel, interlocked tape.

I. Provide PVC jacket applied over cable armor where indicated or required for environment of installed location.

J. Insulation Temperature Rating: 75/90 degrees C.

2.06 VARIABLE-FREQUENCY DRIVE CABLE

A. Manufacturers:
1. Belden wire and Cable Co.
2. Okonite company.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: Flexible motor supply cable listed and labeled as complying with UL 2277 in accordance with NFPA 79; specifically designed for use with variable frequency drives and associated nonlinear power distortions.

C. Conductor Stranding: Stranded.

D. Insulation Voltage Rating: 2000 V.

E. Insulation: Use only thermoset insulation types; thermoplastic insulation types are not permitted.

F. Grounding: Full-size integral equipment grounding conductor or symmetrical arrangement of multiple conductors of equivalent size.

G. Provide metallic shielding.

H. Jacket: PVC or Chlorinated Polyethylene (CPE).

2.07 METAL CLAD CABLE

A. Description: NFPA 70, Type MC.

B. Conductor: Copper.

C. Insulation Voltage Rating: 600 volts.

D. Insulation Temperature Rating: 90 degrees C.

E. Insulation Material: Thermoplastic.

F. Armor Material: Steel.

G. Armor Design: Interlocked metal tape.

H. Jacket: PVC.

2.08 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 26 05 26.

C. Wiring Connectors for Splices and Taps:
   1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
   2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.

D. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. Ideal Industries, Inc: www.idealindustries.com/#sle.
      c. NSI Industries LLC: www.nsiindustries.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

E. Mechanical Connectors: Provide bolted type or set-screw type.

F. Compression Connectors: Provide circumferential type or hex type crimp configuration.

2.09 WIRING ACCESSORIES

A. Electrical Tape:
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. Plymouth Rubber Europa: www.plymouthrubber.com/#sle.
      c. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
   3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.

B. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. American Polywater Corporation: www.polywater.com/#sle.
      c. Ideal Industries, Inc: www.idealindustries.com/#sle.

C. Split Bolt Connectors: Description: Connector suitable for copper to copper connection tested and listed to UL 486A requirements. Black burn type-H or equal.
   1. Product: Thomas R Betts or equal
   2. Substitutions: See Section 01 60 00 - Product Requirements.

D. Spring Wire Connectors: Description: Flame retardant thermoplastic shell with plated steel square wire spring gated for 105 degrees C, 600 volts, Thomas and Betts fixed spring wire connectors or equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that work likely to damage wire and cable has been completed.

C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

D. Verify that raceway installation is complete and supported.

E. Verify that field measurements are as shown on the drawings.

F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated without specific routing, determine exact routing required.
   3. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.

B. Install products in accordance with manufacturer's instructions.

C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.

D. Install metal-clad cable (Type MC) in accordance with NECA 120.

E. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
   4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.

H. Terminate cables using suitable fittings.
   1. Metal-Clad Cable (Type MC):
      a. Use listed fittings.
      b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.

I. Variable-Frequency Drive Cable: Terminate shielding at both variable-frequency motor controller and associated motor using glands or termination kits recommended by manufacturer.

J. Install conductors with a minimum of 12 inches of slack at each outlet.

K. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

L. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.

M. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.
   4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
   5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

N. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.

O. Insulate ends of spare conductors using vinyl insulating electrical tape.

P. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.

Q. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

R. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

S. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1.

T. Route wire and cable as required to meet project conditions.
   1. Wire and cable routing indicated is approximate unless dimensioned.
   2. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
   3. Include wire and cable of lengths required to install connected devices within 10 ft of location shown.

U. Use wiring methods indicated.

V. Pull all conductors into raceway at same time.

W. Use suitable wire pulling lubricant for building wire 4 AWG and larger.

X. Protect exposed cable from damage.

Y. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels.

Z. Use suitable cable fittings and connectors.

AA. Neatly train and lace wiring inside boxes, equipment, and panelboards.

AB. Clean conductor surfaces before installing lugs and connectors.

AC. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

AD. Use suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.

AE. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.

AF. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.

AG. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.

AH. Identify and color code wire and cable under provisions of Section 26 05 53. Identify each conductor with its circuit number or other designation indicated.

3.04 FIELD QUALITY CONTROL

A. Perform inspection, testing, and adjusting in accordance with Section 01 45 00.

B. Perform field inspection and testing in accordance with Section 01 45 00.

C. Inspect and test in accordance with NETA ATS, except Section 4.

D. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.

E. Correct deficiencies and replace damaged or defective conductors and cables.

F. Perform inspections and tests listed in NETA STD ATS, Section 7.3.2.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

D. Grounding and bonding components.

E. Provide all components necessary to complete the grounding system(s) consisting of:
   1. Existing metal underground water pipe.
   2. Metal frame of the building.
   3. Existing metal underground gas piping system.
   4. Metal underground gas piping system.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.

C. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association.

D. NFPA 70 - National Electrical Code.

E. UL 467 - Grounding and Bonding Equipment.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify exact locations of underground metal water service pipe entrances to building.
   2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Field quality control test reports.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.

B. Do not use products for applications other than as permitted by NFPA 70 and product listing.

C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
   1. Provide products listed, classified, and labeled as suitable for the purpose intended.
   2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in addition to requirements of Section 26 05 19:
   1. Use insulated copper conductors unless otherwise indicated.
      a. Exceptions:
         1) Use bare copper conductors where installed underground in direct contact with earth.
         2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
   1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
   2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
   3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

2.03 MANUFACTURERS

A. Cooper Power Systems: www.cooperpower.com.

B. Framatome Connectors International: www.fciconnect.com.

C. Lightning Master Corporation: www.lightningmaster.com.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 CONNECTORS AND ACCESSORIES

A. Mechanical Connectors: Bronze.
   1. Product: manufactured by Thomas and Betts or equal.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Wire: Stranded copper.

C. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as shown on the drawings.

C. Verify that conditions are satisfactory for installation prior to starting work.

D. Verify existing conditions prior to beginning work.

E. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install grounding and bonding system components in a neat and workmanlike manner in accordance with NECA 1.

C. Make grounding and bonding connections using specified connectors.
   1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
   2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
   3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
   4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

D. Identify grounding and bonding system components in accordance with Section 26 05 53.

E. Provide bonding to meet requirements described in Quality Assurance.

F. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing. Each of branch circuits and feeder circuits shall have dedicated equipment grounding conductor, sharing this conductor with other grounding conductors is not permitted.

3.03 FIELD QUALITY CONTROL

A. Provide field inspection in accordance with Section 01 45 00.

B. Inspect and test in accordance with NETA ATS except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.13.

D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION

SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Support and attachment components for equipment, conduit, cable, boxes, and other electrical work.

1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

B. MFMA-4 - Metal Framing Standards Publication.

C. NECA 1 - Standard for Good Workmanship in Electrical Construction.

D. NFPA 70 - National Electrical Code.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
   2. Coordinate work to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
   4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
   5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has cured; see Section 03 30 00.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel/strut framing systems, nonpenetrating rooftop supports, and post-installed concrete/masonry anchors.

C. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.

D. Product Data: Provide manufacturer’s catalog data for fastening systems.

E. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.05 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Comply with applicable building code.

C. Maintain at project site one copy of each referenced document that prescribes execution requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Comply with the following. Where requirements differ, comply with most stringent.
      a. NFPA 70.
      b. Requirements of authorities having jurisdiction.
   2. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
   3. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
   4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
   5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
   6. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
      a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
      b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
      c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
      d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
   1. Manufacturers:
      a. ABB: www.electrification.us.abb.com/#sle.
      b. Eaton Corporation: www.eaton.com/#sle.
      c. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
      d. nVent; Caddy: www.nvent.com/#sle.
      e. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
   3. Conduit Clamps: Bolted type unless otherwise indicated.

C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
   1. Manufacturers:
      a. ABB: www.electrification.us.abb.com/#sle.
      b. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
      c. nVent; Caddy: www.nvent.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
   1. Manufacturers:
      a. ABB: www.electrification.us.abb.com/#sle.
      b. Eaton Corporation: www.eaton.com/#sle.
      c. Elgen Manufacturing Company, Inc: www.elgenmfg.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

e. Source Limitations: Furnish channel/strut and associated fittings, accessories, and hardware produced by single manufacturer.
2. Comply with MFMA-4.
3. Channel Material:
a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
4. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.
5. Minimum Channel Dimensions: 1-5/8 inch wide by 1-5/8 inch high.

E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
a. Equipment Supports: 1/2-inch diameter.
b. Busway Supports: 1/2-inch diameter.
c. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch diameter.
d. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch diameter.
e. Outlet Boxes: 1/4-inch diameter.
f. Luminaires: 1/4-inch diameter.

F. Anchors and Fasteners:
1. Manufacturers - Mechanical Anchors:
a. Dewalt: anchors.dewalt.com/#sle.
b. Hilti, Inc: www.hilti.com/#sle.
c. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.
2. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
3. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
4. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
5. Hollow Masonry: Use toggle bolts.
6. Hollow Stud Walls: Use toggle bolts.
7. Steel: Use beam clamps, machine bolts, or welded threaded studs.
8. Sheet Metal: Use sheet metal screws.
9. Wood: Use wood screws.
10. Plastic and lead anchors are not permitted.
11. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
b. Comply with MFMA-4.
c. Channel Material: Use galvanized steel.

2.02 MANUFACTURERS

A. Thomas & Betts Corporation: www.tnb.com.

B. Threaded Rod Company: www.threadedrod.com.

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 MATERIALS

A. Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.

B. Supports: Fabricated of structural steel or formed steel members; galvanized.

C. Anchors and Fasteners:
1. Do not use powder-actuated anchors.

2. Obtain permission from Architect before using powder-actuated anchors.
3. Concrete Structural Elements: Use precast inserts.
4. Steel Structural Elements: Use beam clamps.
5. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
6. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use hollow wall fasteners.
7. Solid Masonry Walls: Use expansion anchors.
8. Sheet Metal: Use sheet metal screws.
9. Wood Elements: Use wood screws.

D. Formed Steel Channel:
1. Product: manufactured by [B-Line.
2. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install support and attachment components in a neat and workmanlike manner in accordance with NECA 1.

C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

G. Equipment Support and Attachment:
1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

H. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

I. Secure fasteners according to manufacturer's recommended torque settings.

J. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 26 05 34
CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).

B. Flexible metal conduit (FMC).

C. Liquidtight flexible metal conduit (LFMC).

D. Electrical metallic tubing (EMT).

E. Conduit, fittings and conduit bodies.

1.02 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC).

B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S).

C. ANSI C80.5 - American National Standard for Electrical Rigid Metal Conduit -- Aluminum (ERMC-A).

D. NECA 1 - Standard for Good Workmanship in Electrical Construction.

E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT).

F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.

G. UL 1 - Flexible Metal Conduit.

H. UL 6 - Electrical Rigid Metal Conduit-Steel.

I. UL 360 - Liquid-Tight Flexible Metal Conduit.

J. UL 514B - Conduit, Tubing, and Cable Fittings.

K. UL 797 - Electrical Metallic Tubing-Steel.

L. UL 2419 - Outline of Investigation for Electrically Conductive Corrosion Resistant Compounds.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts.
   3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.
   4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
   5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard data sheets for conduits and fittings.

C. Product Data: Provide for metallic conduit and flexible metal conduit.

D. Project Record Documents: Accurately record actual routing of conduits larger than 2 inches.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

B. Accept conduit on site. Inspect for damage.

C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

D. Protect PVC conduit from sunlight.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.

2.02 CONDUIT REQUIREMENTS

A. Comply with NFPA 70.

B. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling mandrel through them.

C. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.

D. Provide products listed, classified, and labeled as suitable for the purpose intended.

E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

B. Fittings:
   1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
   2. Material: Use steel or malleable iron.
   3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 METAL CONDUIT

A. Manufacturers:
   1. Allied Tube & Conduit: www.alliedtube.com.
   2. Beck Manufacturing, Inc: www.beckmfg.com.
   3. Wheatland Tube Company: www.wheatland.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Rigid Steel Conduit: ANSI C80.1.

C. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.05 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers:
   1. AFC Cable Systems, Inc: www.afcweb.com/#sle.
   2. Electri-Flex Company: www.electriflex.com/#sle.
   3. International Metal Hose: www.metalhose.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.

C. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.

D. Description: Interlocked steel construction.

E. Fittings: NEMA FB 1.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Manufacturers:
   1. AFC Cable Systems, Inc: www.afcweb.com/#sle.
   2. Electri-Flex Company: www.electriflex.com/#sle.
   3. International Metal Hose: www.metalhose.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

C. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.

D. Description: Interlocked steel construction with PVC jacket.

E. Fittings: NEMA FB 1.

2.07 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
   1. Allied Tube & Conduit: www.alliedeg.com/#sle.
   2. Beck Manufacturing, Inc: www.beckmfg.com.
   3. Wheatland Tube Company: www.wheatland.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

C. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.
   3. Connectors and Couplings: Use compression (gland) or set-screw type.
      a. Do not use indenter type connectors and couplings.

D. Fittings and Conduit Bodies: NEMA FB 1; steel set screw type.

2.08 ACCESSORIES

A. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.

B. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf.

C. Sealing Systems for Roof Penetrations: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for conduits and roofing system to be installed; designed to accommodate existing penetrations where applicable.

D. Description: NEMA TC 2.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on drawings.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

D. Verify routing and termination locations of conduit prior to rough-in.

E. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. When conduit destination is indicated without specific routing, determine exact routing required.
   3. Conceal conduits unless specifically indicated to be exposed.
   4. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Within joists in areas with no ceiling.

E. Conduit Support:
   1. Secure and support conduits in accordance with NFPA 70 and Section 26 05 29 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

F. Connections and Terminations:
   1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
   2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
   3. Use suitable adapters where required to transition from one type of conduit to another.
   4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
   5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.

6. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
7. Secure joints and connections to provide maximum mechanical strength and electrical continuity.

G. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
2. Make penetrations perpendicular to surfaces unless otherwise indicated.
3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
4. Conceal bends for conduit risers emerging above ground.
5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

H. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
2. Where conduits are subject to earth movement by settlement or frost.

I. Conduit Sealing:
1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
   a. Where conduits enter building from outside.
   b. Where service conduits enter building from underground distribution system.
   c. Where conduits enter building from underground.
   d. Where conduits may transport moisture to contact live parts.
2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
   a. Where conduits pass from outdoors into conditioned interior spaces.
   b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

J. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
1. Where conduits pass from outdoors into conditioned interior spaces.
2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

K. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

L. Provide grounding and bonding in accordance with Section 26 05 26.

3.03 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

B. Route conduit through roof openings for piping and ductwork wherever possible. Where separate roofing penetration is required, coordinate location and installation method with roofing installation specified in Section roofing section.

END OF SECTION

SECTION 26 05 37
BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.

B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

C. Accessories.

D. Wall and ceiling outlet boxes.

E. Pull and junction boxes.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices.

C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.

D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

E. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.

F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

G. NFPA 70 - National Electrical Code.

H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations.

I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations.

J. UL 508A - Industrial Control Panels.

K. UL 514A - Metallic Outlet Boxes.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures, boxes for hazardous (classified) locations, floor boxes, and underground handhole enclosures.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, and underground handhole enclosures.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.

F. Project Record Documents: Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:
   1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
   2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
   3. Provide products listed, classified, and labeled as suitable for the purpose intended.
   4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
   5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
   1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
   2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
   3. Use suitable concrete type boxes where flush-mounted in concrete.
   4. Use suitable masonry type boxes where flush-mounted in masonry walls.
   5. Use raised covers suitable for the type of wall construction and device configuration where required.
   6. Use shallow boxes where required by the type of wall construction.
   7. Do not use "through-wall" boxes designed for access from both sides of wall.
   8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
   9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
   10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
   11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes.

12. Minimum Box Size, Unless Otherwise Indicated:
    a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 2-1/8 inch deep (100 by 54 mm) trade size.
13. Wall Plates: Comply with Section 26 27 26.
14. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Hubbell Incorporated; Bell Products: www.hubbell-rtb.com/#sle.
    c. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA 250 Environment Type, Unless Otherwise Indicated:
    a. Indoor Clean, Dry Locations: Type 1, painted steel.
    b. Outdoor Locations: Type 3R, painted steel.
3. Junction and Pull Boxes Larger Than 100 cubic inches:
    a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.

2.02 ACCESSORIES

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for boxes and facade materials to be installed.

2.03 MANUFACTURERS

A. Appleton Electric: www.appletonelec.com.

B. Arc-Co./Division of Arcade Technology: www.arc-co.com.

C. Unity Manufacturing: www.unitymfg.com.

D. Steelcity

E. Substitutions: Reco, Inc. See Section 01 60 00 - Product Requirements.

2.04 OUTLET BOXES

A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
2. Concrete Ceiling Boxes: Concrete type.

B. Nonmetallic Outlet Boxes: NEMA OS 2.

C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.

D. Wall Plates for Finished Areas: As specified in Section 26 27 26.

2.05 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

B. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
1. Material: Galvanized cast iron; Cast Aluminum.
2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

C. In-Ground Cast Metal Box: NEMA 250, Type 6, outside flanged, recessed cover box for flush mounting:
1. Material: Galvanized cast iron; Cast Aluminum.

2. Cover: Nonskid cover with neoprene gasket and stainless steel cover screws.
3. Cover Legend: "ELECTRIC".

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on drawings.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

D. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide separate boxes for emergency power and normal power systems.

E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.

F. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

G. Box Locations:
1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 31 00 as required where approved by the Architect.
2. Unless dimensioned, box locations indicated are approximate.
3. Locate boxes as required for devices installed under other sections or by others.
   a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 26 27 26.
   b. Communications Systems Outlets: Comply with Section 27 10 00.
4. Locate boxes so that wall plates do not span different building finishes.
5. Locate boxes so that wall plates do not cross masonry joints.
6. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
7. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
8. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
   a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.
   b. Do not install flush-mounted boxes with area larger than 16 square inches or such that the total aggregate area of openings exceeds 100 square inches for any 100 square feet of wall area.
9. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 05 34.
10. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
    a. Concealed above accessible suspended ceilings.
    b. Within joists in areas with no ceiling.

c. Electrical rooms.
d. Mechanical equipment rooms.

H. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 26 05 29 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
4. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.

I. Install boxes plumb and level.

J. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.

K. Install boxes as required to preserve insulation integrity.

L. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

M. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

N. Close unused box openings.

O. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

P. Provide grounding and bonding in accordance with Section 26 05 26.

Q. Identify boxes in accordance with Section 26 05 53.

R. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.

S. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.

T. Coordinate installation of outlet boxes for equipment connected under Section 26 27 17.

U. Set wall mounted boxes at elevations to accommodate mounting heights indicated.

V. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
1. Adjust box locations up to 10 feet if required to accommodate intended purpose.

W. Orient boxes to accommodate wiring devices oriented as specified in Section 26 27 26.

X. Maintain headroom and present neat mechanical appearance.

Y. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

Z. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.

AA. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

AB. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

AC. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.

AD. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

AE. Use flush mounting outlet box in finished areas.

AF. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

AG. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.

AH. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

AI. Use stamped steel bridges to fasten flush mounting outlet box between studs.

AJ. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

AK. Use adjustable steel channel fasteners for hung ceiling outlet box.

AL. Do not fasten boxes to ceiling support wires.

AM. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.

AN. Use gang box where more than one device is mounted together. Do not use sectional box.

AO. Use gang box with plaster ring for single device outlets.

AP. Use cast outlet box in exterior locations exposed to the weather and wet locations.

AQ. Use cast floor boxes for installations in slab on grade; formed steel boxes are acceptable for other installations.

AR. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

3.03 ADJUSTING

A. Adjust floor boxes flush with finish flooring material.

B. Adjust flush-mounting outlets to make front flush with finished wall material.

C. Install knockout closures in unused box openings.

3.04 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.05 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical identification requirements.

B. Identification nameplates and labels.

C. Wire and cable markers.

D. Voltage markers.

E. Warning signs and labels.

F. Field-painted identification of conduit.

1.02 REFERENCE STANDARDS

A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs.

B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels.

C. NFPA 70 - National Electrical Code.

D. UL 969 - Marking and Labeling Systems.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.

B. Sequencing:
   1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
   2. Do not install identification products until final surface finishes and painting are complete.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

C. Shop Drawings: Provide schedule of items to be identified indicating proposed designations, materials, legends, and formats.

D. Product Data: Provide catalog data for nameplates, labels, and markers.

E. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation and installation of product.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.06 FIELD CONDITIONS

A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

1.07 EXTRA MATERIALS

A. See Section 01 60 00 - Product Requirements for additional requirements.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

A. Existing Work: Unless specifically excluded, identify existing elements to remain that are not already identified in accordance with specified requirements.

B. Identification for Equipment:
   1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
      a. Panelboards:
         1) Identify ampere rating.
         2) Identify voltage and phase.
         3) Identify power source and circuit number. Include location when not within sight of equipment.
         4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
         5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
         6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
      b. Enclosed switches, circuit breakers, and motor controllers:
         1) Identify voltage and phase.
         2) Identify power source and circuit number. Include location when not within sight of equipment.
         3) Identify load(s) served. Include location when not within sight of equipment.
   2. Service Equipment:
      a. Use identification nameplate to identify each service disconnecting means.
      b. For buildings or structures supplied by more than one service, or any combination of branch circuits, feeders, and services, use identification nameplate or means of identification acceptable to authority having jurisdiction at each service disconnecting means to identify all other services, feeders, and branch circuits supplying that building or structure. Verify format and descriptions with authority having jurisdiction.
      c. Use identification nameplate at each piece of service equipment to identify the available fault current and the date calculations were performed.
   3. Use voltage marker to identify highest voltage present for each piece of electrical equipment.
   4. Use identification nameplate to identify equipment utilizing series ratings, where permitted, in accordance with NFPA 70.
   5. Use identification nameplate to identify switchboards and panelboards utilizing a high leg delta system in accordance with NFPA 70.
   6. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
   7. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
   8. Use identification label or handwritten text using indelible marker on inside of door at each motor controller to identify nameplate horsepower, full load amperes, code letter, service factor, voltage, and phase of motor(s) controlled.

C. Identification for Conductors and Cables:
   1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 19.
   2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or

branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
   a. At each source and load connection.
   b. Within boxes when more than one circuit is present.
   c. Within equipment enclosures when conductors and cables enter or leave the enclosure.

D. Identification for Raceways:
1. Use voltage markers to identify highest voltage present for accessible conduits at maximum intervals of 20 feet.
2. Use voltage markers or color-coded bands to identify systems other than normal power system for accessible conduits at maximum intervals of 20 feet.
   a. Maximum Intervals: 20 feet.
   b. Color-Coded Bands: Use field-painting or vinyl color coding electrical tape to mark bands 3 inches wide.
      1) Color Code:
      2) Field-Painting: Comply with Section 09 90 00.
      3) Vinyl Color Coding Electrical Tape: Comply with Section 26 05 19.
   c. Color Code:
      1) Emergency Power System: Red.
3. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify circuits enclosed for accessible conduits at wall penetrations, at floor penetrations, at roof penetrations, and at equipment terminations when source is not within sight.

E. Identification for Boxes:
1. Use voltage markers to identify highest voltage present.
2. Use voltage markers or color coded boxes to identify systems other than normal power system.
   a. Color-Coded Boxes: Field-painted in accordance with Section 09 90 00 per the same color code used for raceways.
      1) Emergency Power System: Red.
3. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.
   a. For exposed boxes in public areas, use only identification labels.

F. Identification for Devices:
1. Identification for Communications Devices: Comply with Section 27 10 00.
2. Wiring Device and Wallplate Finishes: Comply with Section 26 27 26.

2.02 MANUFACTURERS

A. Brady Corporation: www.bradycorp.com.

B. Seton Identification Products: www.seton.com/aec.

C. HellermannTyton: www.hellermanntyton.com.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
1. Manufacturers:
   a. Brimar Industries, Inc: www.brimar.com/#sle.
   b. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
   c. Seton Identification Products: www.seton.com/#sle.

d. Substitutions: See Section 01 60 00 - Product Requirements.

2. Materials:
   a. Indoor Clean, Dry Locations: Use plastic nameplates.
   b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
3. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
   a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
4. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.
5. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
6. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.

B. Identification Labels:
   1. Manufacturers:
      a. Brady Corporation: www.bradyid.com/#sle.
      b. Brother International Corporation: www.brother-usa.com/#sle.
      c. Panduit Corp: www.panduit.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
      a. Use only for indoor locations.
   3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

C. Format for General Information and Operating Instructions:
   1. Minimum Size: 1 inch by 2.5 inches.
   2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
   3. Text: All capitalized unless otherwise indicated.
   4. Minimum Text Height: 1/4 inch.
   5. Color: Black text on white background unless otherwise indicated.

D. Format for Control Device Identification:
   1. Minimum Size: 3/8 inch by 1.5 inches.
   2. Legend: Load controlled or other designation indicated.
   3. Text: All capitalized unless otherwise indicated.
   4. Minimum Text Height: 3/16 inch.
   5. Color: Black text on clear background.

E. Nameplates: Engraved three-layer laminated plastic, black letters on white background.

F. Locations:
   1. Each electrical distribution and control equipment enclosure.
   2. Communication cabinets.
   3. Disconnect switches, and starters.

G. Letter Size:
   1. Use 1/8 inch letters for identifying individual equipment and loads.
   2. Use 1/4 inch letters for identifying grouped equipment and loads.

2.04 WIRE AND CABLE MARKERS

A. Manufacturers:
   1. Brady Corporation: www.bradyid.com/#sle.
   2. HellermannTyton: www.hellermanntyton.com/#sle.
   3. Panduit Corp: www.panduit.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.

C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.

D. Legend: Power source and circuit number or other designation indicated.

E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.

F. Minimum Text Height: 1/8 inch.

G. Color: Black text on white background unless otherwise indicated.

H. Description: split sleeve type wire markers.

I. Locations: Each conductor at panelboard gutters, pull boxes, outlet boxes, and junction boxes each load connection.

J. Legend:
   1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
   2. Control Circuits: Control wire number indicated on shop drawings.

2.05 VOLTAGE MARKERS

A. Manufacturers: Panduit Corp
   1. Brady Corporation: www.bradyid.com/#sle.
   2. Brimar Industries, Inc: www.brimar.com/#sle.
   3. Seton Identification Products: www.seton.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.

C. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.

D. Minimum Size:
   1. Markers for Equipment: 1 1/8 by 4 1/2 inches.
   2. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
   3. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches.
   4. Markers for Junction Boxes: 1/2 by 2 1/4 inches.

E. Legend:
   1. Markers for Voltage Identification: Highest voltage present.
   2. Markers for System Identification:

F. Color: Black text on orange background unless otherwise indicated.

G. Location: Furnish markers for each conduit longer than 6 feet.

H. Spacing: 20 feet on center.

I. Color:
   1. 480 Volt System: Brown.
   2. 208 Volt System: Yellow.

3. Fire Alarm System: Red.

J. Legend:
1. 480 Volt System: brown.
2. 208 Volt System: yellow.
3. Fire Alarm System: red.

2.06 WARNING SIGNS AND LABELS

A. Manufacturers:
1. Brimar Industries, Inc: www.brimar.com/#sle.
2. Clarion Safety Systems, LLC: www.clarionsafety.com/#sle.
3. Seton Identification Products: www.seton.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.

C. Warning Signs:
1. Materials:
a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
b. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
3. Minimum Size: 7 by 10 inches unless otherwise indicated.

D. Warning Labels:
1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
a. Do not use labels designed to be completed using handwritten text.
b. Provide polyester overlaminate to protect handwritten text.
2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

B. Degrease and clean surfaces to receive nameplates and labels.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
1. Surface-Mounted Equipment: Enclosure front.
2. Flush-Mounted Equipment: Inside of equipment door.
3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
4. Elevated Equipment: Legible from the floor or working platform.
5. Branch Devices: Adjacent to device.
6. Interior Components: Legible from the point of access.
7. Conduits: Legible from the floor.
8. Boxes: Outside face of cover.
9. Conductors and Cables: Legible from the point of access.
10. Devices: Outside face of cover.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.

E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

F. Secure rigid signs using stainless steel screws.

G. Mark all handwritten text, where permitted, to be neat and legible.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION

SECTION 26 24 16
PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Power distribution panelboards.

B. Lighting and appliance panelboards.

C. Overcurrent protective devices for panelboards.

1.02 REFERENCE STANDARDS

A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction.

C. NECA 407 - Standard for Installing and Maintaining Panelboards.

D. NEMA PB 1 - Panelboards.

E. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

F. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.

G. NFPA 70 - National Electrical Code.

H. UL 67 - Panelboards.

I. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
   4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.

C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
   1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.
   2. Include wiring diagrams showing all factory and field connections.
   3. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
   4. Include documentation of listed series ratings upon request.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.

F. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.

B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature within the following limits during and after installation of panelboards:
   1. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. ABB/GE: www.electrification.us.abb.com/#sle.

B. Eaton Corporation: www.eaton.com/#sle.

C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PANELBOARDS - GENERAL REQUIREMENTS

A. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature:
      a. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.

C. Short Circuit Current Rating:
   1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
   2. Label equipment utilizing series ratings as required by NFPA 70.

D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.

E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.

F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
   1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.

2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.

G. Conductor Terminations: Suitable for use with the conductors to be installed.

H. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.03 POWER DISTRIBUTION PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:
1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
2. Main and Neutral Lug Type: Mechanical.

C. Bussing:
1. Phase and Neutral Bus Material: Copper.
2. Ground Bus Material: Copper.

D. Circuit Breakers:
1. Provide bolt-on type or plug-in type secured with locking mechanical restraints.
2. Provide thermal magnetic circuit breakers unless otherwise indicated.
3. Provide electronic trip circuit breakers where indicated.

2.04 LIGHTING AND APPLIANCE PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:
1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
2. Main and Neutral Lug Type: Mechanical.

C. Bussing:
1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
2. Phase and Neutral Bus Material: Copper.
3. Ground Bus Material: Copper.

D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.

2.05 OVERCURRENT PROTECTIVE DEVICES

A. Molded Case Circuit Breakers:
1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
2. Interrupting Capacity:
   a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
      1) 14000 rms symmetrical amperes at 240 VAC or 208 VAC.
      2) 22000 rms symmetrical amperes at 480 VAC.
   b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
3. Conductor Terminations:
   a. Provide mechanical lugs unless otherwise indicated.
   b. Lug Material: Copper, suitable for terminating copper conductors only.

4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
5. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.
   a. Provide the following field-adjustable trip response settings:
      1) Long time pickup, adjustable by replacing interchangeable trip unit or by setting dial.
      2) Long time delay.
      3) Short time pickup and delay.
      4) Instantaneous pickup.
      5) Ground fault pickup and delay where ground fault protection is indicated.
6. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
7. Provide listed switching duty rated circuit breakers with SWD marking for all branch circuits serving fluorescent lighting.

2.06 SOURCE QUALITY CONTROL

A. Factory test panelboards according to NEMA PB 1.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive panelboards.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship).

B. Install products in accordance with manufacturer's instructions.

C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.

D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

E. Provide required support and attachment in accordance with Section 26 05 29.

F. Install panelboards plumb.

G. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.

H. Provide grounding and bonding in accordance with Section 26 05 26.

I. Install all field-installed branch devices, components, and accessories.

J. Set field-adjustable circuit breaker tripping function settings as indicated.

K. Provide filler plates to cover unused spaces in panelboards.

L. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
   1. Emergency and night lighting circuits.
   2. Fire detection and alarm circuits.

M. Identify panelboards in accordance with Section 26 05 53.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

B. Adjust alignment of panelboard fronts.

C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

3.05 CLEANING

A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 27 17
EQUIPMENT WIRING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical connections to equipment.

1.02 REFERENCE STANDARDS

A. NEMA WD 1 - General Color Requirements for Wiring Devices.

B. NEMA WD 6 - Wiring Devices - Dimensional Specifications.

C. NFPA 70 - National Electrical Code.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
   2. Determine connection locations and requirements.

B. Sequencing:
   1. Install rough-in of electrical connections before installation of equipment is required.
   2. Make electrical connections before required start-up of equipment.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Listed, classified, and labeled as suitable for the purpose intended.

1.06 COORDINATION

A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.

B. Determine connection locations and requirements.

C. Sequence rough-in of electrical connections to coordinate with installation of equipment.

D. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
   1. Colors: Conform to NEMA WD 1.
   2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
   3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
   4. Product:

5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Disconnect Switches: As specified in Section and in individual equipment sections.

C. Wiring Devices: As specified in Section 26 27 26.

D. Flexible Conduit: As specified in Section 26 05 34.

E. Wire and Cable: As specified in Section 26 05 19.

F. Boxes: As specified in Section 26 05 37.

2.02 EQUIPMENT CONNECTIONS

A. As required by equipment manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer's instructions.

B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

D. Provide receptacle outlet to accommodate connection with attachment plug.

E. Provide cord and cap where field-supplied attachment plug is required.

F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

H. Install terminal block jumpers to complete equipment wiring requirements.

I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

J. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall switches.

B. Wall dimmers.

C. Receptacles.

D. Wall plates.

1.02 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for.

B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification).

C. NECA 1 - Standard for Good Workmanship in Electrical Construction.

D. NECA 130 - Standard for Installing and Maintaining Wiring Devices.

E. NEMA WD 1 - General Color Requirements for Wiring Devices.

F. NEMA WD 6 - Wiring Devices - Dimensional Specifications.

G. NFPA 70 - National Electrical Code.

H. UL 20 - General-Use Snap Switches.

I. UL 498 - Attachment Plugs and Receptacles.

J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices.

K. UL 943 - Ground-Fault Circuit-Interrupters.

L. UL 1472 - Solid-State Dimming Controls.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
   2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
   3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.
   4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
   5. Coordinate the core drilling of holes for poke-through assemblies with the work covered under other sections.
   6. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

B. Sequencing:
   1. Do not install wiring devices until final surface finishes and painting are complete.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

C. Samples: One for each type and color of device and wall plate specified.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Operation and Maintenance Data:
   1. GFCI Receptacles: Include information on status indicators.

F. Project Record Documents: Record actual installed locations of wiring devices.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Products: Listed, classified, and labeled as suitable for the purpose intended.

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hubbell Incorporated; : www.hubbell-wiring.com.

B. Leviton Manufacturing Company, Inc; : www.leviton.com.

C. Lutron Electronics Company, Inc: www.lutron.com.

D. Pass & Seymour, a brand of Legrand North America, Inc; : www.legrand.us

E. Cooper Wiring Devices: www.cooperwiringdevices.com.

F. Leviton Manufacturing, Inc: www.leviton.com.

G. Substitutions: See Section 01 60 00 - Product Requirements.

H. Source Limitations: Where possible, for each type of wiring device furnish products produced by a single manufacturer and obtained from a single supplier.

2.02 APPLICATIONS

A. Provide wiring devices suitable for intended use and with ratings adequate for load served.

B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.

C. Provide weather resistant GFI receptacles with specified weatherproof covers for all receptacles installed outdoors or in damp or wet locations.

D. Provide GFI protection for all receptacles installed within 6 feet of sinks.

E. Provide GFCI protection for receptacles serving electric drinking fountains.

F. Unless noted otherwise, do not use combination switch/receptacle devices.

2.03 WIRING DEVICE FINISHES

A. Provide wiring device finishes as described below unless otherwise indicated.

B. Wiring Devices, Unless Otherwise Indicated: Black with _____ stainless steel wall plate.

2.04 ALL WIRING DEVICES

A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.05 WALL SWITCHES

A. Manufacturers:
   1. Hubbell Incorporated; : www.hubbell-wiring.com.
   2. Leviton Manufacturing Company, Inc; : www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc; : www.legrand.us/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. All Wall Switches: AC only, quiet operating, general-use switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.

C. Wall Switches: Heavy Duty, AC only general-use switch, complying with NEMA WD 6 and WD
   1. Body and Handle: Black plastic with toggle handle.
   2. Ratings:
      a. Voltage: 120 volts, AC.
      b. Current: 20 amperes.
   3. Ratings: Match branch circuit and load characteristics.

D. Switch Types: Single pole, double pole, 3-way, and 4-way.

2.06 WALL DIMMERS

A. Manufacturers:
   1. Leviton Manufacturing Company, Inc; _____: www.leviton.com/#sle.
   2. Lutron Electronics Company, Inc; Maestro Series: www.lutron.com.
   3. Pass & Seymour, a brand of Legrand North America, Inc; _____: www.legrand.us/#sle.
   4. Hubbell Control Solutions; https://www.hubbell.com/hubbellcontrolsolutions/en..
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. All Wall Dimmers: Solid-state with continuous full-range even control following square law dimming curve, integral radio frequency interference filtering, power failure preset memory, air gap switch accessible without removing wall plate, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 1472; types and ratings suitable for load controlled as indicated on the drawings.

2.07 RECEPTACLES

A. Manufacturers:
   1. Hubbell Incorporated; : www.hubbell-wiring.com.
   2. Leviton Manufacturing Company, Inc; : www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc; : www.legrand.us/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. All Receptacles: Self-grounding, tamper resistant complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
   2. NEMA configurations specified are according to NEMA WD 6.

C. Convenience Receptacles:

1. Standard Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R, tamper resistant; single or duplex as indicated on the drawings.
   a. Products:
      1) Hubbell Wiring Devices.
      2) Leviton.
      3) Pass & Saymore.
      4) Substitutions: See Section 01 60 00 - Product Requirements.

D. GFI Receptacles:
   1. All GFI Receptacles: Provide with feed-through protection, light to indicate ground fault tripped condition and loss of protection, and list as complying with UL 943, class A.
   2. Standard GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, tamper resistant.
   3. Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SD suitable for installation in damp or wet locations.

E. Receptacles: Heavy duty, complying with NEMA WD 6 and WD 1.
   1. Device Body: Black plastic.
   2. Configuration: NEMA WD 6, type as specified and indicated.
   3. Tamper resistant.

F. Convenience Receptacles: Type 5 - 20.

G. Single Convenience Receptacles.

H. Duplex Convenience Receptacles.

I. GFCI Receptacles: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

2.08 WALL PLATES

A. Manufacturers:
   1. Hubbell Incorporated; : www.hubbell-wiring.com/#sle.
   2. Leviton Manufacturing Company, Inc; : www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc; : www.legrand.us/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. All Wall Plates: Comply with UL 514D.
   1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
   2. Size: Standard; .
   3. Screws: Metal with slotted heads finished to match wall plate finish.

C. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.

D. Weatherproof Covers for Damp Locations: Gasketed, cast aluminum, with self-closing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed.

E. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.

F. Decorative Cover Plates: stainless steel.

G. Jumbo Cover Plates: stainless steel.

H. Weatherproof Cover Plates: Gasketed cast metal with hinged cover.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.

C. Verify that wall openings are neatly cut and will be completely covered by wall plates.

D. Verify that final surface finishes are complete, including painting.

E. Verify that floor boxes are adjusted properly.

F. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

G. Verify that openings in access floor are in proper locations.

H. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

B. Perform work in a neat and workmanlike manner in accordance with NECA 1, including mounting heights specified in that standard unless otherwise indicated.

C. Coordinate locations of outlet boxes provided under Section 26 05 37 as required for installation of wiring devices provided under this section.
   1. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
   2. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
   3. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.

D. Install wiring devices in accordance with manufacturer's instructions.

E. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

F. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.

G. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.

H. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.

I. Install securely, in a neat and workmanlike manner, as specified in NECA 1.

J. Install wiring devices plumb and level with mounting yoke held rigidly in place.

K. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.

L. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.

M. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

N. Identify wiring devices in accordance with Section 26 05 53.

O. Install receptacles with grounding pole on top.

P. Connect wiring device grounding terminal to outlet box with bonding jumper.

Q. Install decorative plates on switch, receptacle, and blank outlets in finished areas.

R. Connect wiring devices by wrapping conductor around screw terminal.

S. Use jumbo size plates for outlets installed in masonry walls.

T. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.04 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations of outlet boxes provided under Section 26 05 37 to obtain mounting heights. Coordinate with heights shown on drawings.

B. Install convenience receptacle 6 inches above backsplash of counter.

3.05 FIELD QUALITY CONTROL

A. Perform field inspection, testing, adjusting, and balancing in accordance with Section 01 40 00.

B. Inspect each wiring device for damage and defects.

C. Verify that each receptacle device is energized.

D. Test each receptacle to verify operation and proper polarity.

E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.

F. Correct wiring deficiencies and replace damaged or defective wiring devices.

G. Verify that each telephone jack is properly connected and circuit is operational.

3.06 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

3.07 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

SECTION 26 28 13
FUSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fuses.

1.02 REFERENCE STANDARDS

A. NEMA FU 1 - Low Voltage Cartridge Fuses.

B. NFPA 70 - National Electrical Code.

C. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements.

D. UL 248-12 - Low-Voltage Fuses - Part 12: Class R Fuses.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate fuse clips furnished in equipment provided under other sections for compatibility with indicated fuses.
      a. Fusible Enclosed Switches: See Section 26 28 16.16.
   2. Coordinate fuse requirements according to manufacturer's recommendations and nameplate data for actual equipment to be installed.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard data sheets including voltage and current ratings, interrupting ratings, time-current curves, and current limitation curves.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Bussmann, a division of Eaton Corporation: www.cooperindustries.com/#sle.

B. Littelfuse, Inc: www.littelfuse.com/#sle.

C. Mersen: ep-us.mersen.com/#sle.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 APPLICATIONS

A. Feeders:
   1. Fusible Switches up to 600 Amperes: Class RK1, time-delay.

B. General Purpose Branch Circuits: Class RK1, time-delay.

C. Individual Motor Branch Circuits: Class RK1, time-delay.

2.03 FUSES

A. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.

C. Provide fuses of the same type, rating, and manufacturer within the same switch.

D. Comply with UL 248-1.

E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.

F. Voltage Rating: Suitable for circuit voltage.

G. Class R Fuses: Comply with UL 248-12.
   1. Class RK1, Time-Delay Fuses:

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that fuse ratings are consistent with circuit voltage and manufacturer's recommendations and nameplate data for equipment.

B. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Do not install fuses until circuits are ready to be energized.

B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

END OF SECTION

SECTION 26 28 16.13
ENCLOSED CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Enclosed circuit breakers.

1.02 REFERENCE STANDARDS

A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction.

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

D. NFPA 70 - National Electrical Code.

E. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations.

F. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations.

G. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
   4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for circuit breakers, enclosures, and other installed components and accessories.

C. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
   1. Include dimensioned plan and elevation views of enclosed circuit breakers and adjacent equipment with all required clearances indicated.
   2. Include wiring diagrams showing all factory and field connections.
   3. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
   4. Include documentation of listed series ratings upon request.
   5. Identify mounting conditions required for equipment seismic qualification.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed circuit breaker internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature between 23 degrees F and 104 degrees F during and after installation of enclosed circuit breakers.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. ABB/GE: www.electrification.us.abb.com/#sle.

B. Eaton Corporation: www.eaton.com/#sle.

C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ENCLOSED CIRCUIT BREAKERS

A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature: Between 23 degrees F and 104 degrees F.

D. Conductor Terminations: Suitable for use with the conductors to be installed.

E. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.

F. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
   1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:

G. Provide externally operable handle with means for locking in the OFF position.

2.03 MOLDED CASE CIRCUIT BREAKERS

A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.

B. Interrupting Capacity:
   1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
      a. 14000 rms symmetrical amperes at 240 VAC or 208 VAC.
      b. 21000 rms symmetrical amperes at 480 VAC.
   2. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.

C. Conductor Terminations:
   1. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.

D. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
   1. Provide field-adjustable magnetic instantaneous trip setting for circuit breaker frame sizes 225 amperes and larger.
   2. Provide interchangeable trip units where indicated.

E. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.
   1. Provide the following field-adjustable trip response settings:
      a. Long time pickup, adjustable by replacing interchangeable trip unit or by setting dial.
      b. Long time delay.
      c. Short time pickup and delay.
      d. Instantaneous pickup.
      e. Ground fault pickup and delay where ground fault protection is indicated.

F. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that the ratings of the enclosed circuit breakers are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive enclosed circuit breakers.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide required support and attachment in accordance with Section 26 05 29.

E. Install enclosed circuit breakers plumb.

F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed circuit breakers such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.

G. Provide grounding and bonding in accordance with Section 26 05 26.

3.03 FIELD QUALITY CONTROL

A. Test GFCI circuit breakers to verify proper operation.

B. Test shunt trips to verify proper operation.

C. Correct deficiencies and replace damaged or defective enclosed circuit breakers.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from circuit breaker enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 28 16.16
ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Enclosed safety switches.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

C. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum).

D. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.

E. NFPA 70 - National Electrical Code.

F. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations.

G. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations.

H. UL 98 - Enclosed and Dead-Front Switches.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

C. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

E. Project Record Documents: Record actual locations of enclosed switches.

F. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed switch internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature between -22 degrees F and 104 degrees F during and after installation of enclosed switches.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. ABB/GE: www.electrification.us.abb.com/#sle.

B. Eaton Corporation: www.eaton.com/#sle.

C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ENCLOSED SAFETY SWITCHES

A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature: Between -22 degrees F and 104 degrees F.

D. Horsepower Rating: Suitable for connected load.

E. Voltage Rating: Suitable for circuit voltage.

F. Short Circuit Current Rating:
   1. Provide enclosed safety switches, when protected by the fuses or supply side overcurrent protective devices to be installed, with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
   2. Minimum Ratings:
      a. Heavy Duty Single Throw Switches Protected by Class R, Class J, Class L, or Class T Fuses: 200,000 rms symmetrical amperes.

G. Provide with switch blade contact position that is visible when the cover is open.

H. Fuse Clips for Fusible Switches: As required to accept fuses indicated.
   1. Where NEMA Class R fuses are installed, provide rejection feature to prevent installation of fuses other than Class R.

I. Conductor Terminations: Suitable for use with the conductors to be installed.

J. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.

K. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
   1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
      a. Indoor Clean, Dry Locations: Type 1.

b. Outdoor Locations: Type 3R.

2. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.

L. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

M. Heavy Duty Switches:

1. Comply with NEMA KS 1.
2. Conductor Terminations:
   a. Provide mechanical lugs unless otherwise indicated.
   b. Provide compression lugs where indicated.
   c. Lug Material: Copper, suitable for terminating copper conductors only.
3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that the ratings of the enclosed switches are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive enclosed safety switches.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide required support and attachment in accordance with Section 26 05 29.

E. Install enclosed switches plumb.

F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.

G. Provide grounding and bonding in accordance with Section 26 05 26.

H. Provide fuses complying with Section 26 28 13 for fusible switches as indicated or as required by equipment manufacturer's recommendations.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.

D. Correct deficiencies and replace damaged or defective enclosed safety switches or associated components.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from switch enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 29 13
ENCLOSED CONTROLLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Enclosed NEMA motor controllers for low-voltage (600 V and less) applications:
   1. Magnetic motor starters.
   2. Manual motor starters.

B. Overcurrent protective devices for motor controllers, including overload relays.

C. Motor control accessories:
   1. Auxiliary contacts.
   2. Pilot devices.
   3. Control and timing relays.
   4. Control power transformers.

D. Magnetic motor controllers.

E. Combination magnetic motor controllers and disconnects.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

C. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.

D. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.

E. NEMA ICS 6 - Industrial Control and Systems: Enclosures.

F. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum).

G. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.

H. NFPA 70 - National Electrical Code.

I. UL 98 - Enclosed and Dead-Front Switches.

J. UL 60947-1 - Low-Voltage Switchgear and Controlgear - Part 1: General Rules.

K. UL 60947-4-1 - Low-Voltage Switchgear and Controlgear - Part 4-1: Contactors and Motor-starters - Electromechanical Contactors and Motor-starters.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances required by NFPA 70.
   2. Coordinate the work to provide motor controllers and associated overload relays suitable for use with the actual motors to be installed.
   3. Coordinate the work to provide motor controllers and associated wiring suitable for interface with control devices to be installed.
   4. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   5. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
   6. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.
   1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.

C. Shop Drawings: Indicate dimensions, voltage, controller sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
   1. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Field Quality Control Test Reports.

F. Project Record Documents: Record actual installed locations of motor controllers and final equipment settings.

G. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

H. Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.

I. Test Reports: Indicate field test and inspection procedures and test results.

J. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

K. Maintenance Data: Replacement parts list for controllers.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.

D. Products: Listed, classified, and labeled as suitable for the purpose intended.

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

A. Maintain field conditions within required service conditions during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. ABB/GE: www.electrification.us.abb.com/#sle.

B. Eaton Corporation; Cutler-Hammer Product: www.eaton.com/#sle.

C. General Electric Company: www.geindustrial.com/#sle.

D. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

E. Substitutions: See Section 01 60 00 - Product Requirements.

F. Source Limitations: Furnish enclosed motor controllers and associated components produced by a single manufacturer and obtained from a single supplier.

G. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ENCLOSED MOTOR CONTROLLERS

A. Provide enclosed motor controller assemblies consisting of all required components, control power transformers, instrumentation and control wiring, accessories, etc. as necessary for a complete operating system.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Description: Enclosed motor controllers complying with NEMA ICS 2, and listed and labeled as complying with UL 60947-1 and UL 60947-4-1; ratings, configurations and features as indicated on the drawings.

D. Service Conditions:
   1. Provide motor controllers and associated components suitable for operation under the following service conditions without derating:
      a. Altitude:
         1) Class 1 Km Equipment (devices utilizing power semiconductors, e.g. variable frequency controllers): Less than 3,300 feet.
         2) Class 2 Km Equipment (electromagnetic and manual devices): Less than 6,600 feet.
      b. Ambient Temperature: Between 32 degrees F and 104 degrees F.
   2. Provide motor controllers and associated components suitable for operation at indicated ratings under the service conditions at the installed location.

E. Short Circuit Current Rating:
   1. Provide motor controllers with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
   2. Listed series ratings are acceptable, except where not permitted by motor contribution according to NFPA 70.
   3. Label equipment utilizing series ratings as required by NFPA 70.

F. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.

G. Conductor Terminations: Suitable for use with the conductors to be installed.

H. Enclosures:
   1. Comply with NEMA ICS 6.
   2. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
      a. Indoor Clean, Dry Locations: Type 1 or Type 12.
      b. Outdoor Locations: Type 3R or Type 4.
   3. Finish: Manufacturer's standard unless otherwise indicated.

I. Magnetic Motor Starters: Combination type unless otherwise indicated.

1. Combination Magnetic Motor Starters: NEMA ICS 2, Class A combination motor controllers with magnetic contactor(s), externally operable disconnect and overload relay(s).
2. Configuration: Full-voltage non-reversing unless otherwise inidcated.
3. Minimum Starter Size: NEMA Size 1.
4. Disconnects: Disconnect switch type.
   a. Disconnect Switches: Fusible type unless otherwise indicated.
   b. Provide externally operable handle with means for locking in the OFF position. Provide safety interlock to prevent opening the cover with the disconnect in the ON position with capability of overriding interlock for testing purposes.
   c. Provide auxiliary interlock for disconnection of external control power sources where applicable.
5. Overload Relays: Bimetallic thermal type unless otherwise indicated.
6. Pilot Devices Required:
   a. Furnish local pilot devices for each unit as specified below unless otherwise indicated on drawings.
   b. Single-Speed, Non-Reversing Starters:
      1) Selector Switches: HAND/OFF/AUTO.
      2) Indicating Lights: Red ON.

J. Manual Motor Starters:
1. Description: NEMA ICS 2, Class A manually-operated motor controllers with overload relay(s).
2. Configuration: Non-reversing unless otherwise inidcated.
3. Fractional-Horsepower Manual Motor Starters:
   a. Furnish with toggle operator.
   b. Overload Relays: Bimetallic or melting alloy thermal type.
   c. Provide means for locking operator in the OFF position.
   d. Furnish Red ON indicating light visible on enclosure.
4. Integral-Horsepower Manual Motor Starters:
   a. Furnish with toggle or pushbutton operator.
   b. Overload Relays: Bimetallic or melting alloy thermal type.
   c. Provide means for locking operator in the OFF position.
   d. Furnish Red ON indicating light where not within sight of equipment.
   e. Provide auxiliary contact where indicated; normally open (NO) or normally closed (NC) as indicated or as required.

2.03 OVERCURRENT PROTECTIVE DEVICES

A. Overload Relays:
1. Provide overload relays and, where applicable, associated current elements/heaters, selected according to actual installed motor nameplate data, in accordance with manufacturer's recommendations and NFPA 70; include consideration for motor service factor and ambient temperature correction, where applicable.
2. Inverse-Time Trip Class Rating: Class 20 unless otherwise indicated or required.
3. Trip-free operation.
4. Visible trip indication.
5. Resettable.
   a. Employ manual reset unless otherwise indicated.
   b. Do not employ automatic reset with two-wire control.
6. Bimetallic Thermal Overload Relays:
   a. Interchangeable current elements/heaters.
   b. Adjustable trip; plus/minus 10 percent of nominal, minimum.

c. Trip test function.

7. Melting Alloy Thermal Overload Relays:
   a. Interchangeable current elements/heaters.

B. Fusible Disconnect Switches:
   1. Description: Quick-make, quick-break, dead-front fusible switch units complying with NEMA KS 1, and listed and labeled as complying with UL 98; ratings, configurations, and features as indicated on the drawings.
   2. Fuse Clips: As required to accept indicated fuses.
      a. Where NEMA Class R fuses are installed, provide rejection feature to prevent installation of fuses other than Class R.
   3. Provide externally operable handle with means for locking in the OFF position. Provide means for locking switch cover in the closed position. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

2.04 MOTOR CONTROL ACCESSORIES

A. Auxiliary Contacts:
   1. Comply with NEMA ICS 5.
   2. Provide number and type of contacts indicated or required to perform necessary functions, including holding (seal-in) circuit and interlocking, plus one normally open (NO) and one normally closed (NC) spare contact for each magnetic motor starter, minimum.

B. Pilot Devices:
   1. Comply with NEMA ICS 5; heavy-duty type.
   2. Pushbuttons: Unless otherwise indicated, provide momentary, non-illuminated type with flush button operator; normally open or normally closed as indicated or as required.
   3. Selector Switches: Unless otherwise indicated, provide maintained, non-illuminated type with knob operator; number of switch positions as indicated or as required.
   4. Indicating Lights: Push-to-test type unless otherwise indicated.
   5. Provide LED lamp source for indicating lights and illuminated devices.

C. Control and Timing Relays:
   1. Comply with NEMA ICS 5.
   2. Provide number and type of relays indicated or required to perform necessary functions.

D. Control Power Transformers:
   1. Size to accommodate burden of contactor coil(s) and all connected auxiliary devices, plus 25 VA spare capacity.
   2. Include primary and secondary fuses.

2.05 AUTOMATIC CONTROLLERS

A. Magnetic Motor Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower.

B. Coil Operating Voltage: 120 volts, 60 Hertz.

C. Overload Relays: NEMA ICS 2; bimetal.

D. Enclosures: NEMA ICS 6, Type 1.

2.06 ACCESSORIES

A. Auxiliary Contacts: NEMA ICS 2, 2 normally open contacts in addition to seal-in contact.

B. Cover Mounted Pilot Devices: NEMA ICS 5, standard duty oiltight type.

C. Pilot Device Contacts: NEMA ICS 5, Form Z, rated A150.

D. Indicating Lights: Transformer, LED type.

E. Selector Switches: Rotary type.

F. Relays: NEMA ICS 2.

G. Control Power Transformers: 120 volt secondary, 50 VA minimum, in each motor starter. Provide fused primary, secondary, and bond unfused leg of secondary to enclosure.

2.07 DISCONNECTS

A. Combination Controllers: Combine motor controllers with disconnects in common enclosure. Obtain IEC Class 2 coordinated component protection.

B. Fusible Switch Assemblies: NEMA KS 1, enclosed knife switch with externally operable handle. Fuse clips: Designed to accommodate Class R fuses.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that ratings of enclosed motor controllers are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive enclosed motor controllers.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install enclosed controllers where indicated, in accordance with manufacturer's instructions.

B. Install securely, in a neat and workmanlike manner, as specified in NECA 1.

C. Provide supports in accordance with Section 26 05 29.

D. Install enclosed motor controllers plumb and level.

E. Provide grounding and bonding in accordance with Section 26 05 26.

F. Install all field-installed devices, components, and accessories.

G. Height: 5 ft to operating handle.

H. Provide fuses for fusible switches; refer to Section 26 28 13 for product requirements.

I. Select and install overload heater elements in motor controllers to match installed motor characteristics.

J. Identify enclosed controllers in accordance with Section 26 05 53.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 45 00.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Motor Starters: Perform inspections and tests listed in NETA ATS, Section 7.16.1.1. Tests listed as optional are not required.

D. Fusible Switches: Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.

E. Correct deficiencies and replace damaged or defective enclosed motor controllers or associated components.

F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

G. Perform inspections and tests listed in NETA ATS, Section 7.16.1.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from motor controller enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

3.07 PROTECTION

A. Protect installed enclosed motor controllers from subsequent construction operations.

END OF SECTION

SECTION 26 29 23
VARIABLE-FREQUENCY MOTOR CONTROLLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Variable-frequency motor controllers for low-voltage (600 V and less) AC motor applications.

B. Overcurrent protective devices for motor controllers, including overload relays.

1.02 REFERENCE STANDARDS

A. IEC 60529 - Degrees of Protection Provided by Enclosures (IP Code).

B. NECA 1 - Standard for Good Workmanship in Electrical Construction.

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

D. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.

E. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.

F. NEMA ICS 6 - Industrial Control and Systems: Enclosures.

G. NEMA ICS 7 - Industrial Control and Systems: Adjustable-Speed Drives.

H. NEMA ICS 7.1 - Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable-Speed Drive Systems.

I. NEMA ICS 7.2 - Application Guide for AC Adjustable Speed Drive Systems.

J. NEMA ICS 61800-2 - Adjustable Speed Electrical Power Drive Systems, Part 2: General Requirements-Rating Specifications for Low Voltage Adjustable Frequency AC Power Drive Systems.

K. NEMA MG 1 - Motors and Generators.

L. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.

M. NFPA 70 - National Electrical Code.

N. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures.

O. UL 508A - Industrial Control Panels.

P. UL 61800-5-1 - Standard for Adjustable Speed Electrical Power Drive Systems - Part 5-1: Safety Requirements – Electrical, Thermal, and Energy.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate work to avoid placement of ductwork, piping, equipment, and other obstructions within dedicated equipment spaces and working clearances required by NFPA 70.
   2. Coordinate work to provide motor controllers suitable for use with motors.
   3. Coordinate work to provide controllers and associated wiring suitable for interface with control devices.
   4. Coordinate arrangement of electrical equipment with dimensions and clearance requirements.
   5. Verify with manufacturer that conductor terminations are suitable for use with conductors.
   6. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.

C. Shop Drawings: Indicate dimensions, voltage, controller sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

D. Operation and Maintenance Data: Include detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.
   1. Include contact information for entity providing contract maintenance and trouble call-back service.

E. Executed Warranty: Submit documentation of final executed warranty completed in Owner's name and registered with manufacturer.

F. Maintenance contracts.

G. Project Record Documents: Record actual installed locations of controllers and final equipment settings.
   1. Include nameplate data of actual installed motors and associated overload relay selections and settings.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain copy of each referenced document that prescribes execution requirements at project site.

C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in clean, dry space. Maintain factory wrapping or provide additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

A. Maintain field conditions within required service conditions during and after installation.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Variable-Frequency Motor Controllers - Basis of Design: YASKAWA.

B. Variable-Frequency Motor Controllers - Other Acceptable Manufacturers:
   1. ABB: www.abb.com/#sle.
   2. Danfoss: www.danfoss.com/#sle.
   3. Rockwell Automation, Inc.; Allen-Bradley Products: ab.rockwellautomation.com/#sle.
   4. Schneider Electric; Square D Products: www.se.com/#sle.

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 VARIABLE-FREQUENCY MOTOR CONTROLLERS

A. Provide variable-frequency motor control system consisting of required controller assemblies, operator interfaces, control power transformers, instrumentation and control wiring, sensors, accessories, system programming, etc. as necessary for complete operating system.

B. Provide products listed, classified, and labeled as suitable for purpose intended.

C. Controller Assemblies: Comply with NEMA ICS 7, NEMA ICS 7.1, and NEMA ICS 61800-2; list and label as complying with UL 61800-5-1 or UL 508A as applicable.

D. Provide controllers selected for actual installed motors and coupled mechanical loads in accordance with NEMA ICS 7.2, NEMA MG 1 Part 30, and recommendations of manufacturers of both controller and load, where not in conflict with specified requirements; considerations include, but are not limited to:
   1. Motor type (e.g., induction, reluctance, and permanent magnet); consider NEMA MG 1 design letter or inverter duty rating for induction motors.
   2. Motor load type (e.g., constant torque, variable torque, and constant horsepower); consider duty cycle, impact loads, and high inertia loads.
   3. Motor nameplate data.
   4. Requirements for speed control range, speed regulation, and braking.
   5. Motor suitability for bypass starting method, where applicable.

E. Devices on Load Side of Controller: Suitable for application across full controller output frequency range.

F. Operating Requirements:
   1. Input Voltage Tolerance: Plus/minus 10 percent of nominal.
   2. Input Frequency Tolerance: Plus/minus 5 percent of nominal.
   3. Efficiency: Minimum of 96 percent at full speed and load.
   4. Input Displacement Power Factor: Minimum of 0.96 throughout speed and load range.
   5. Overload Rating:
      a. Variable Torque Loads: Minimum of 110 percent of nominal for 60 seconds.
      b. Constant Torque Loads: Minimum of 150 percent of nominal for 60 seconds.

G. Power Conversion System: Microprocessor-based, pulse width modulation type consisting of rectifier/converter, DC bus/link, and inverter.
   1. Rectifier/Converter: Diode-based, 6-pulse type unless otherwise indicated.

H. Control System:
   1. Provide microprocessor-based control system for automatic control, monitoring, and protection of motors. Include sensors, wiring, and connections necessary for functions and status/alarm indications specified.
   2. Provide integral operator interface for controller programming, display of status/alarm indications, fault reset, and local control functions including motor run/stop, motor forward/reverse selection, motor speed increase/decrease, and local/remote control selection.
   3. Control Functions:
      a. Control Method: Selectable vector and scalar/volts per hertz unless otherwise indicated.
         1) Scalar/Volts per Hertz Control: Provide IR compensation for improved low-speed torque.
         2) Vector Control: Provide selectable autotuning function.
      b. Adjustable acceleration and deceleration time; linear and S-curve ramps; selectable coast to stop.
      c. Selectable braking control; DC injection or flux braking.
      d. Adjustable minimum/maximum speed limits.

e. Adjustable pulse width modulation switching carrier frequency.
f. Adjustable motor slip compensation.
g. Selectable autorestart after noncritical fault; programmable number of time delay between restart attempts.

4. Status Indications:
   a. Motor run/stop status.
   b. Motor forward/reverse status.
   c. Local/remote control status.
   d. Output voltage.
   e. Output current.
   f. Output frequency.
   g. DC bus voltage.
   h. Motor speed.
5. Protective Functions/Alarm Indications:
   a. Overcurrent.
   b. Motor overload.
   c. Undervoltage.
   d. Overvoltage.
   e. Controller overtemperature.
   f. Input/output phase loss.
   g. Output short circuit protection.
   h. Output ground fault protection.
   i. External fault.
6. Inputs:
   a. Digital Input(s): Four.
   b. Analog Input(s): Two.
7. Outputs:
   a. Analog Output(s): One.
   b. Relay Output(s): Two.
8. Communications: Compatible with connected systems. Provide accessories necessary for proper interface.
   a. Ethernet Communications: Support for Modbus TCP protocol.
   b. Remote Monitoring Capabilities:
      1) Motor run/stop status.
      2) Hand-off-auto status.
      3) Fault information.
      4) Discrete input/output status.
      5) Analog input/output values.
9. Features:
   a. Password-protected security access.
   b. Event log.

I. Power Conditioning/Filtering:
   1. Provide DC link choke or input/line reactor for each controller unless otherwise indicated or required.
   2. Provide where indicated:
      a. Input/line reactor.
   3. Reactor Impedance: 3 percent, unless otherwise indicated or required.

J. Packaged Controllers: Controllers factory-mounted in separate enclosure with externally operable disconnect and specified accessories.
   1. Disconnects: Circuit breaker or disconnect switch type.
      a. Disconnect Switches: Fusible type or nonfusible type with separate input fuses.

b. Provide externally operable handle with means for locking in OFF position. Provide safety interlock to prevent opening cover with disconnect in ON position with capability of overriding interlock for testing purposes.
c. Provide auxiliary interlock for disconnection of external control power sources where applicable.

2. Provide door-mounted remote operator interface.
3. Packaged Controllers with Bypass: Provide contactors and controls to enable removal of variable-frequency controller from circuit.
   a. Bypass Method: Manual, unless otherwise indicated.
   b. Bypass Configuration: 3-contactor type, with contactors for bypass, drive output, and drive input.
   c. Bypass Motor Starting Method: Full-voltage (across-the-line) with overload relay, unless otherwise indicated or required.
   d. Overload Relays: Solid state or bimetallic thermal type.
4. Pilot Devices Required:
   a. Furnish local pilot devices for each unit as specified below unless otherwise indicated on drawings, except where equivalent function is provided by remote operator interface.
   b. Packaged Controllers with Bypass:
      1) Bypass Mode Selector Switch: DRIVE/OFF/BYPASS.
      2) Motor Control Selector Switch: HAND/OFF/AUTO.
      3) Indicating Lights: For drive/bypass mode status, drive/bypass run status, and drive/bypass fault status.

K. Service Conditions:
1. Provide controllers and associated components suitable for operation under following service conditions without derating:
   a. Altitude: Less than 3,300 feet.
   b. Ambient Temperature: Between 32 degrees F and 104 degrees F.
2. Provide controllers and associated components suitable for operation at indicated ratings under service conditions at installed location.

L. Short Circuit Current Rating:
1. Provide line/input reactors where specified by manufacturer for required short circuit current rating.

M. Conductor Terminations: Suitable for use with conductors to be installed.

N. Enclosures:
1. Comply with NEMA ICS 6.
2. NEMA 250 Environment Type or Equivalent IEC 60529 Rating: Unless otherwise indicated, as specified for following installation locations:
   a. Indoor Clean, Dry Locations: Type 1 or Type 12.
   b. Outdoor Locations: Type 3R or Type 4.
3. Finish: Manufacturer's standard unless otherwise indicated.
4. Cooling: Forced air or natural convection as determined by manufacturer.

O. Interface with Other Work:
1. Provide products compatible with other systems requiring interface with controllers.
2. Interface with building automation system.
3. Interface with fire alarm control system_____.

2.03 OVERCURRENT PROTECTIVE DEVICES

A. Overload Relays:

1. Provide overload relays and, where applicable, associated current elements/heaters selected for actual installed motor nameplate data, in accordance with manufacturer's recommendations and NFPA 70; include consideration for motor service factor and ambient temperature correction, where applicable.
2. Comply with NEMA ICS 2.
3. Inverse-Time Trip Class Rating: Class 20 unless otherwise indicated or required.
4. Trip-free operation.
5. Visible trip indication.
6. Resettable.
   a. Employ manual reset unless otherwise indicated.
   b. Do not employ automatic reset with two-wire control.
7. Bimetallic Thermal Overload Relays:
   a. Interchangeable current elements/heaters.
   b. Adjustable trip; plus/minus 10 percent of nominal, minimum.
   c. Trip test function.
8. Solid State Overload Relays:
   a. Adjustable full load current.
   b. Phase loss protection.
   c. Phase imbalance protection.
   d. Ambient temperature insensitive.
   e. Thermal memory.
   f. Trip test function.
   g. Provide isolated alarm contact.

B. Circuit Breakers:
1. Molded Case Circuit Breakers:
   a. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers; listed and labeled as complying with UL 489; ratings, configurations, and features as indicated or as required.
      1) Provide thermal magnetic circuit breakers unless otherwise indicated.
   b. Interrupting Capacity:
      1) Provide circuit breakers with interrupting capacity as required to provide short circuit current rating indicated, but not less than specified minimum requirements.
      2) Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than short circuit current rating indicated.
   c. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.

2.04 ACCESSORIES

A. Auxiliary Contacts:
1. Comply with NEMA ICS 5.
2. Provide number and type of contacts indicated or required to perform necessary functions, including holding (seal-in) circuit and interlocking, plus one normally open (NO) and one normally closed (NC) spare contact for each bypass motor starter, minimum.

B. Pilot Devices:
1. Comply with NEMA ICS 5; heavy-duty type.
2. Pushbuttons: Unless otherwise indicated, provide momentary, nonilluminated type with flush button operator; normally open or normally closed as indicated or as required.
3. Selector Switches: Unless otherwise indicated, provide maintained, nonilluminated type with knob operator; number of switch positions as indicated or as required.

4. Indicating Lights: Push-to-test type unless otherwise indicated.
5. Provide LED lamp source for indicating lights and illuminated devices.

C. Control and Timing Relays:
1. Comply with NEMA ICS 5.
2. Provide number and type of relays indicated or required to perform necessary functions.

D. Control Power Transformers:
1. Size to accommodate burden of contactor coil(s) and connected auxiliary devices, plus 25 VA spare capacity.
2. Include primary and secondary fuses.

2.05 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Factory test controllers in accordance with NEMA ICS 61800-2.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that ratings of controllers are consistent with indicated requirements.

C. Verify that mounting surfaces are ready to accept controllers.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install controllers in accordance with NECA 1 (general workmanship).

C. Install in accordance with NEMA ICS 7.1 and manufacturer's instructions.

D. Do not exceed manufacturer's recommended maximum cable length between controller and motor.

E. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

F. Provide required support and attachment in accordance with Section 26 05 29.

G. Install controllers plumb and level.

H. Provide grounding and bonding in accordance with Section 26 05 26.

I. Install field-installed devices, components, and accessories.

J. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.

K. Set field-adjustable settings of controllers and associated components according to installed motor requirements, in accordance with recommendations of manufacturers of controller and load.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.17. Insulation-resistance test on control wiring listed as optional is not required.

D. Packaged Controllers with Bypass: Test for proper operation in both drive and bypass modes.

E. Correct deficiencies and replace damaged or defective controllers or associated components.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from controller enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals for closeout submittals.

3.07 PROTECTION

A. Protect installed controllers from subsequent construction operations.

3.08 MAINTENANCE

A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements relating to maintenance service.

END OF SECTION

SECTION 26 51 00
INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior luminaires.

B. Emergency lighting units.

C. Exit signs.

D. Ballasts and drivers.

E. Accessories.

1.02 REFERENCE STANDARDS

A. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products.

B. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources .

C. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems.

D. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems.

E. NEMA 410 - Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Disharge Ballasts.

F. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility.

G. NFPA 70 - National Electrical Code.

H. NFPA 101 - Life Safety Code.

I. UL 924 - Emergency Lighting and Power Equipment.

J. UL 1598 - Luminaires.

K. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
   2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
   3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
   4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
   1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.

C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting

requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.

1. LED Luminaires:
   a. Include estimated useful life, calculated based on IES LM-80 test data.
   b. Include IES LM-79 test report upon request.

D. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.07 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

A. Furnish products as indicated in luminaire schedule included on the drawings.

2.02 LUMINAIRES

A. Manufacturers:
   1. Acuity Brands, Inc: www.acuitybrands.com/#sle.
   2. Cooper Lighting, a division of Cooper Industries: www.cooperindustries.com/#sle.
   3. Hubbell Lighting, Inc: www.hubbelllighting.com/#sle.
   4. Philips Lighting North America Corporation: www.lightingproducts.philips.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Provide products that comply with requirements of NFPA 70.

C. Provide products that are listed and labeled as complying with UL 1598, where applicable.

D. Provide products listed, classified, and labeled as suitable for the purpose intended.

E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.

G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

H. Recessed Luminaires:
   1. Ceiling Compatibility: Comply with NEMA LE 4.
   2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.

I. LED Luminaires:
   1. Components: UL 8750 recognized or listed as applicable.
   2. Tested in accordance with IES LM-79 and IES LM-80.
   3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

2.03 EMERGENCY LIGHTING UNITS

A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.

B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.

C. Battery:
   1. Size battery to supply all connected lamps, including emergency remote heads where indicated.

D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.

E. Provide low-voltage disconnect to prevent battery damage from deep discharge.

2.04 EXIT SIGNS

A. Description: Exit signs complying with NFPA 101 and applicable state and local codes, and listed and labeled as complying with UL 924.
   1. Number of Faces: Single- or double-face as indicated or as required for installed location.
   2. Directional Arrows: As indicated or as required for installed location.

2.05 BALLASTS AND DRIVERS

A. Manufacturers:
   1. General Electric Company/GE Lighting: www.gelighting.com/#sle.
   2. OSRAM Sylvania, Inc: www.osram.us/ds/#sle.
   3. Philips Lighting North America Corporation: www.usa.lighting.philips.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Ballasts/Drivers - General Requirements:
   1. Electronic Ballasts/Drivers: Inrush currents not exceeding peak currents specified in NEMA 410.

C. Dimmable LED Drivers:
   1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
   2. Control Compatibility: Fully compatible with the dimming controls to be installed.
      a. Wall Dimmers: See Section 26 27 26.
      b. Daylighting Controls: See Section 26 09 23.

2.06 ACCESSORIES

A. Stems for Suspended Luminaires: Steel tubing, minimum 1/2" size, factory finished to match luminaire or field-painted as directed.

B. Threaded Rods for Suspended Luminaires: Zinc-plated steel, minimum 1/4" size, field-painted as directed.

C. Provide accessory plaster frames for luminaires recessed in plaster ceilings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 05 37 as required for installation of luminaires provided under this section.

B. Install products in accordance with manufacturer's instructions.

C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).

D. Provide required support and attachment in accordance with Section 26 05 29.

E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

F. Recessed Luminaires:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
   3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.

G. Suspended Luminaires:
   1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
   2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
   3. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet nominal length, with no more than 4 feet between supports.
   4. Install canopies tight to mounting surface.
   5. Unless otherwise indicated, support pendants from swivel hangers.

H. Install accessories furnished with each luminaire.

I. Bond products and metal accessories to branch circuit equipment grounding conductor.

J. Emergency Lighting Units:

K. Exit Signs:

L. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect each product for damage and defects.

C. Operate each luminaire after installation and connection to verify proper operation.

D. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.

E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.

C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

3.06 CLEANING

A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

SECTION 27 05 29
HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other communications work.

1.02 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

D. BICSI ITSIMM - Information Technology Systems Installation Methods Manual (ITSIMM), 8th Edition.

E. BICSI N1 - Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure, 1st Edition.

F. MFMA-4 - Metal Framing Standards Publication.

G. NECA 1 - Standard for Good Workmanship in Electrical Construction.

H. NFPA 70 - National Electrical Code.

I. TIA-569 - Telecommunications Pathways and Spaces.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
   2. Coordinate work to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
   4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
   5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has cured; see Section 03 30 00.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Comply with the following. Where requirements differ, comply with most stringent.
      a. TIA-569.
      b. NFPA 70.
      c. Requirements of authorities having jurisdiction.

2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of communications work.
3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for load to be supported with minimum safety factor of _____. Include consideration for vibration, equipment operation, and shock loads where applicable.
5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
6. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
   a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
   b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit Supports: Straps and clamps suitable for conduit to be supported.
   1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
   2. Conduit Clamps: Bolted type unless otherwise indicated.

C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.

D. Metal Channel/Strut Framing Systems:
   1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
   2. Comply with MFMA-4.

E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.

F. Anchors and Fasteners:
   1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install hangers and supports in accordance with NECA 1, BICSI ITSIMM, and BICSI N1.

C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

G. Equipment Support and Attachment:
   1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.

2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

H. Secure fasteners in accordance with manufacturer's recommended torque settings.

I. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

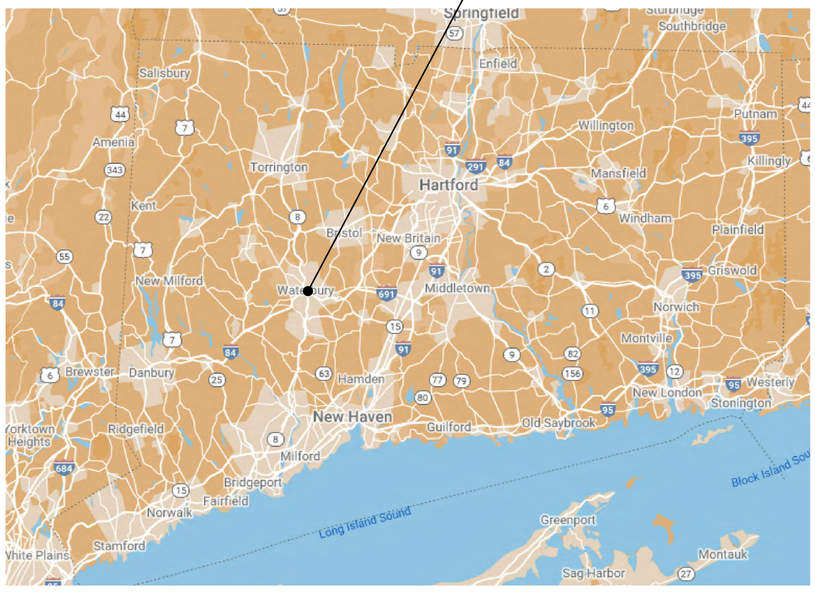
END OF SECTION

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

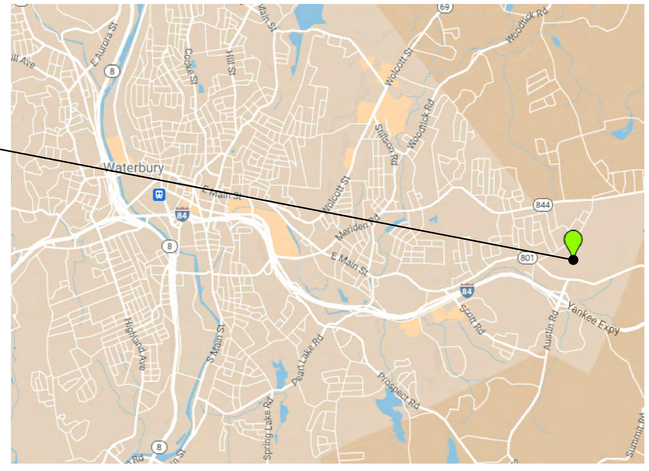
PROJECT LOCATION MAPS

CROSBY HS/WALLACE MS COMPLEX

PROJECT LOCATION
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

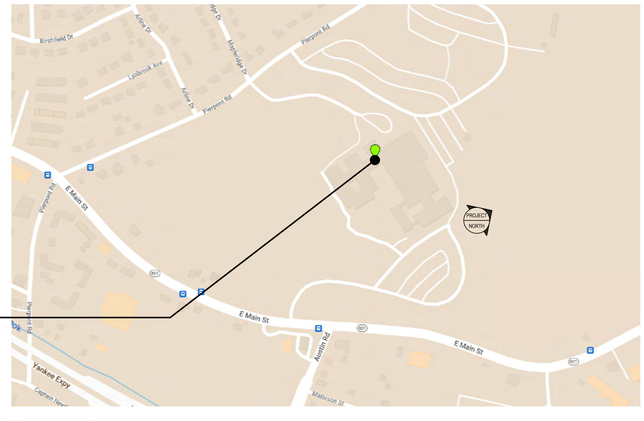


LOCATION MAP



AREA MAP

SITE



SITE MAP

SHEET INDEX

SHEET NUMBER	SHEET TITLE
GENERAL	
G-000	PROJECT COVER SHEET
ARCHITECTURAL	
A-001	ARCHITECTURAL OVERALL PLAN
AD101	INTERIOR ARCHITECTURAL DEMOLITION PLANS
AD102	PENTHOUSE ARCHITECTURAL DEMOLITION PLANS
A-101	INTERIOR ARCHITECTURAL NEW WORK PLANS
A-102	PENTHOUSE ARCHITECTURAL NEW WORK PLANS
A-601	DOOR SCHEDULE & DETAILS
MECHANICAL	
M-000	MECHANICAL COVER SHEET
M-001	MECHANICAL OVERALL PLAN
MD101	INTERIOR MECHANICAL DEMOLITION PLANS
MD102	PENTHOUSE MECHANICAL DEMOLITION PLAN
MD201	INTERIOR PIPING DEMOLITION PLAN
MD202	PENTHOUSE PIPING DEMOLITION PLAN
M-101	INTERIOR MECHANICAL NEW WORK PLANS
M-102	PENTHOUSE MECHANICAL NEW WORK PLAN
M-103	ROOF MECHANICAL PLAN
M-201	INTERIOR PIPING NEW WORK PLAN
M-202	PENTHOUSE PIPING NEW WORK PLAN
M-500	MECHANICAL SCHEDULES
M-600	MECHANICAL DETAILS
M-700	SEQUENCE OF OPERATIONS
M-701	SEQUENCE OF OPERATIONS
M-800	EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY
M-801	EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY
M-802	EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY
M-803	EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY
M-804	EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY
M-805	EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY
M-806	EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY
ELECTRICAL	
E-000	ELECTRICAL COVER SHEET
E-001	ELECTRICAL OVERALL PLAN
ED101	INTERIOR ELECTRICAL DEMOLITION PLANS
ED102	PENTHOUSE ELECTRICAL DEMOLITION PLAN
E-101	INTERIOR ELECTRICAL PLANS
E-102	PENTHOUSE ELECTRICAL PLAN
E-103	ROOF ELECTRICAL PLAN
E-500	ELECTRICAL DETAILS
E-600	ELECTRICAL PANEL SCHEDULES
E-601	ELECTRICAL PANEL SCHEDULES
E-602	ELECTRICAL PANEL SCHEDULES

CODE INFORMATION

1. APPLICABLE CODES AND STANDARDS

IBC 2021 IMC 2021
IPC 2021 NFPA 70 - 2020
NFPA 101 - 2021
ADA STANDARDS FOR ACCESSIBLE DESIGN - 2010

2. PROJECT DATA

OWNER: WATERBURY PUBLIC SCHOOLS

LOCATION: CROSBY HS /WALLACE MS COMPLEX

ADDRESS: 300 PIERPONT RD, WATERBURY, CT 06705

OCCUPANCY CLASSIFICATION: EDUCATION

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ARCHITECT / ENGINEER SEAL

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

PROJECT

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

PROJECT COVER SHEET

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

G-000

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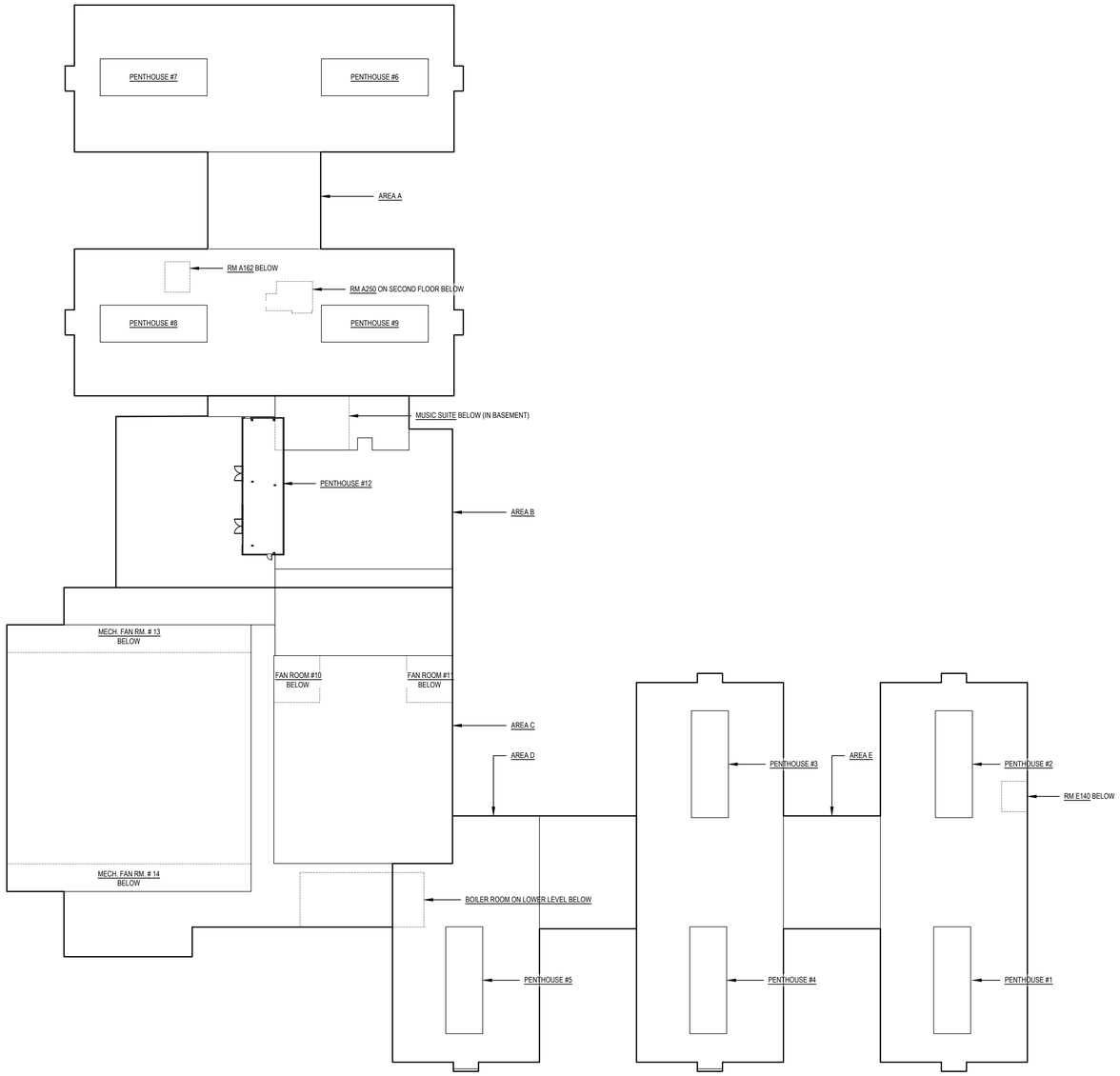

1 A-001 ARCHITECTURAL PENTHOUSE/FAN ROOM LOCATION PLAN

SCALE: 1/32" = 1'-0"

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

ARCHITECTURAL OVERALL PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
KH	DM	22106

SHEET NO.

A-001

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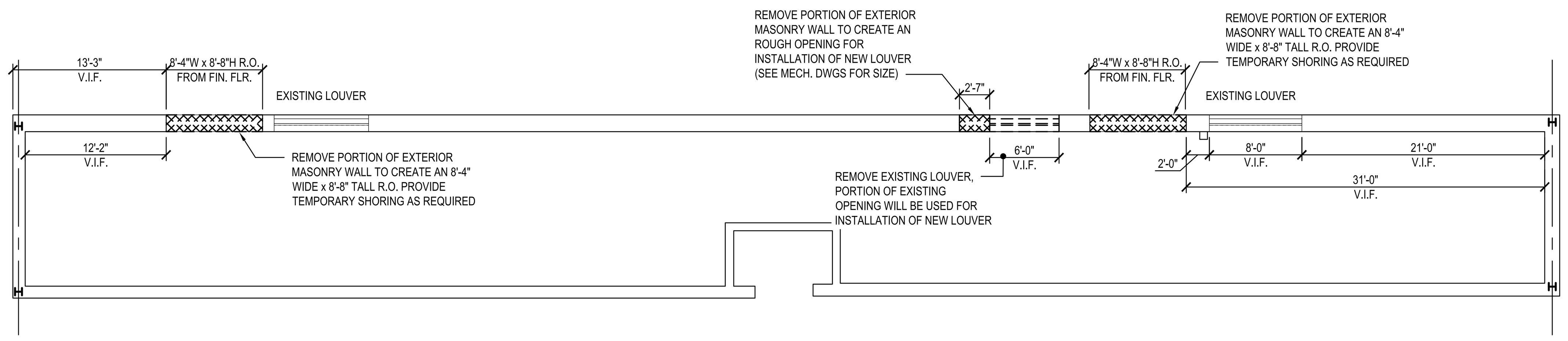
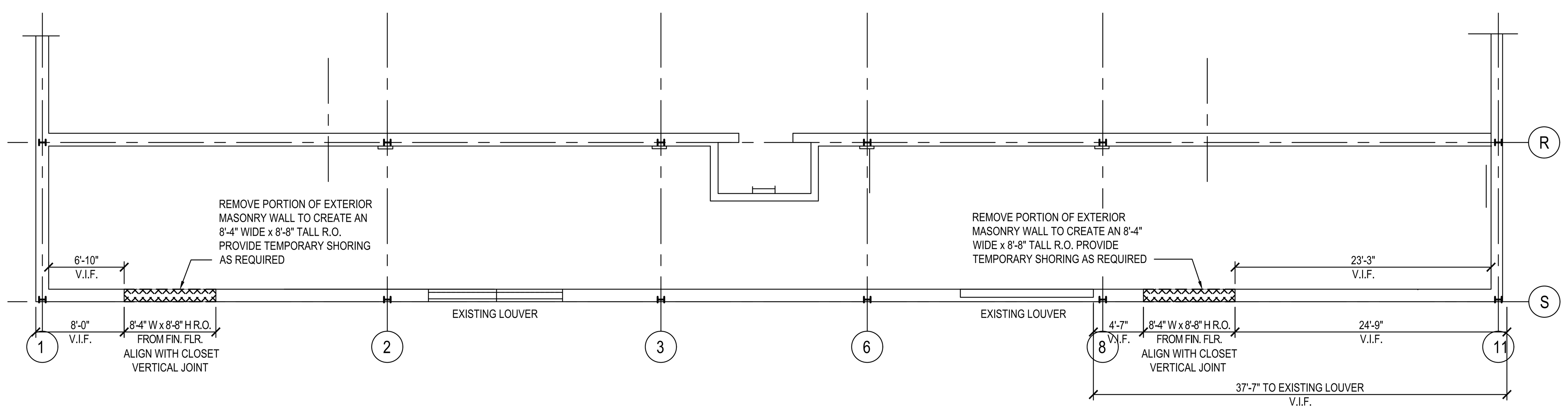


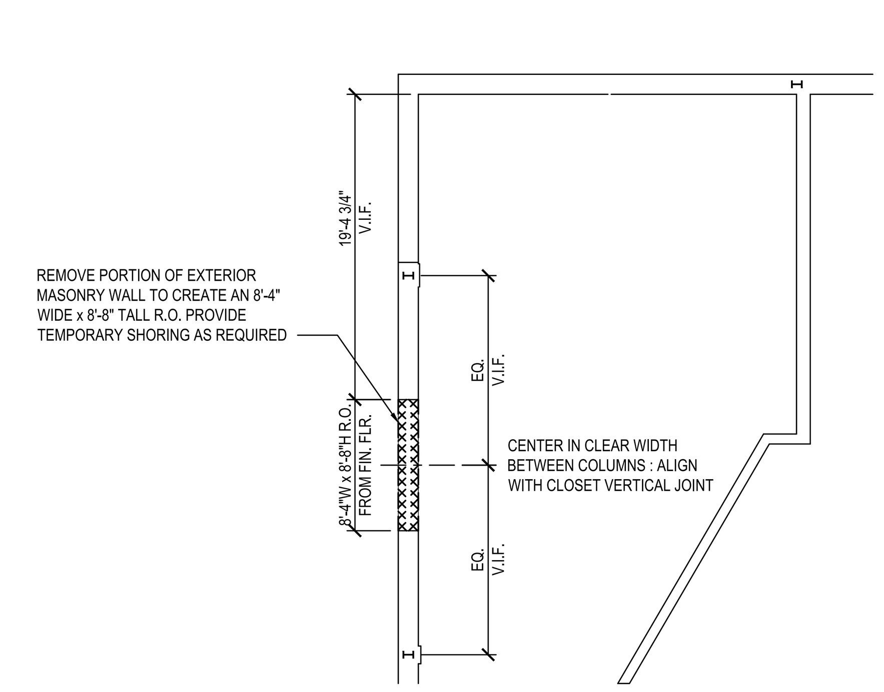
1 AD101 FAN ROOM #13 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



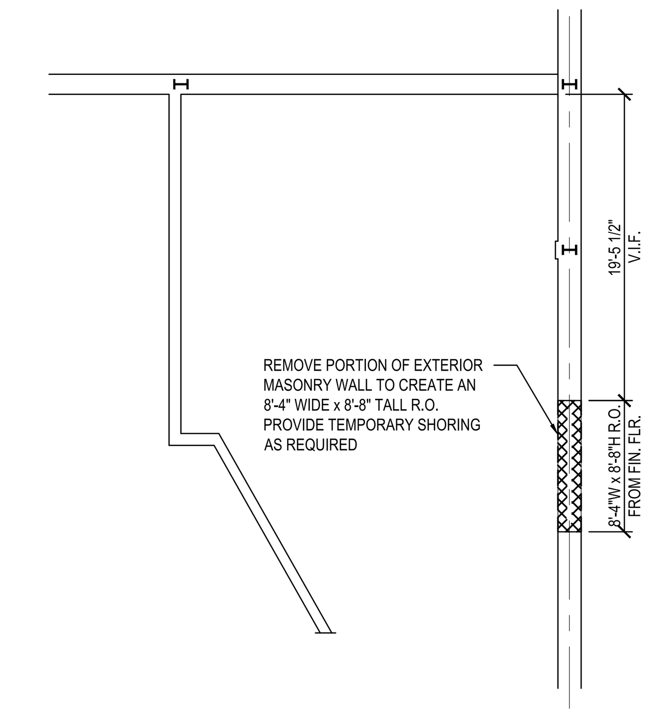
2 AD101 FAN ROOM #14 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



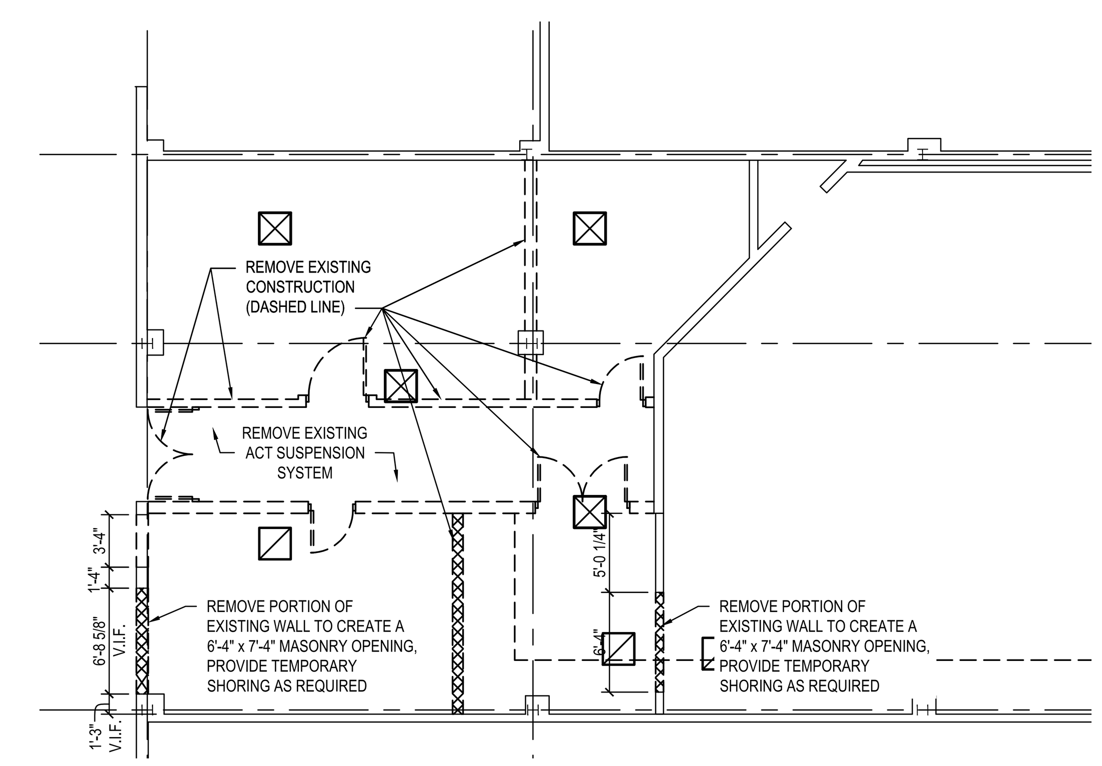
3 AD101 FAN ROOM #10 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



4 AD101 FAN ROOM #11 ARCHITECTURAL DEMOLITION PLAN

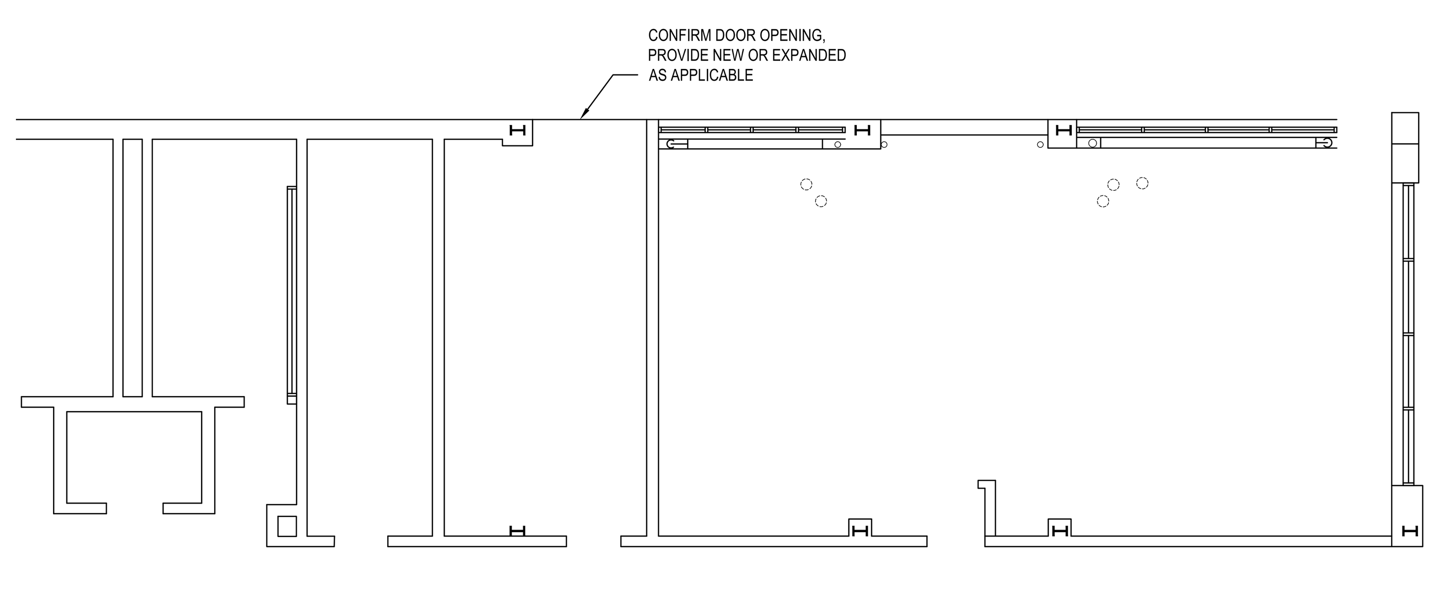
SCALE: 1/8" = 1'-0"



6 AD101 MUSIC SUITE ARCH DEMO PLAN

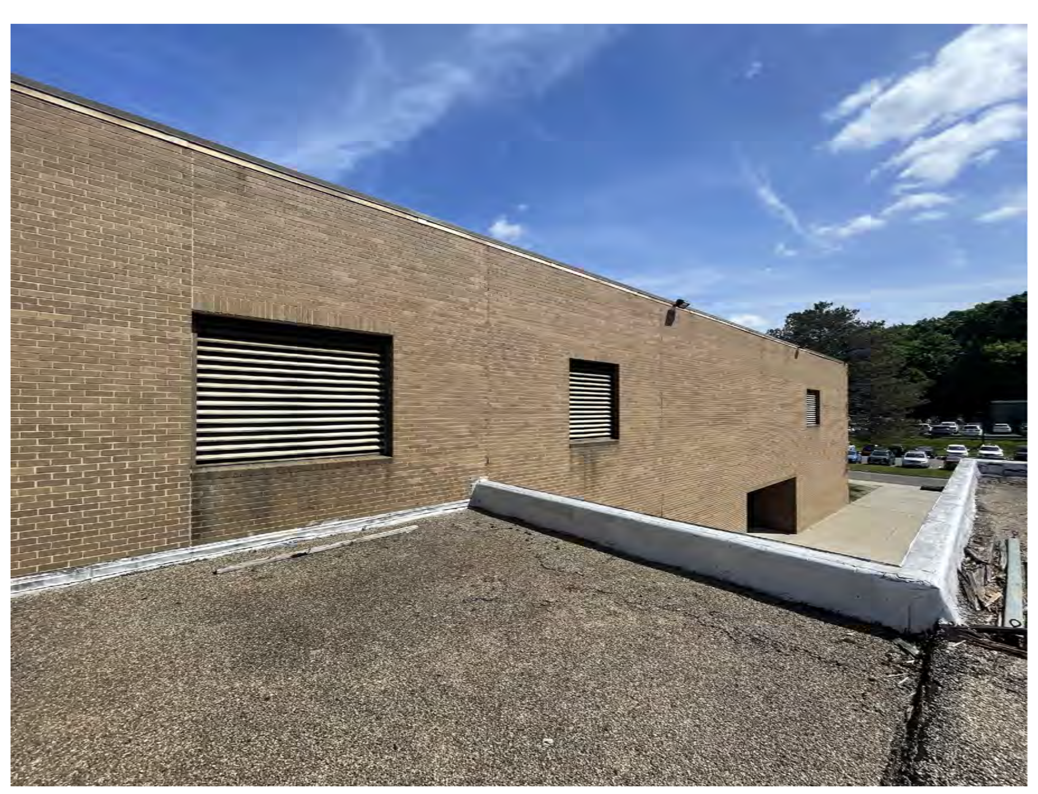
SCALE: 1/8" = 1'-0"

NOTE: SEE A-001 FOR ROOM LOCATIONS

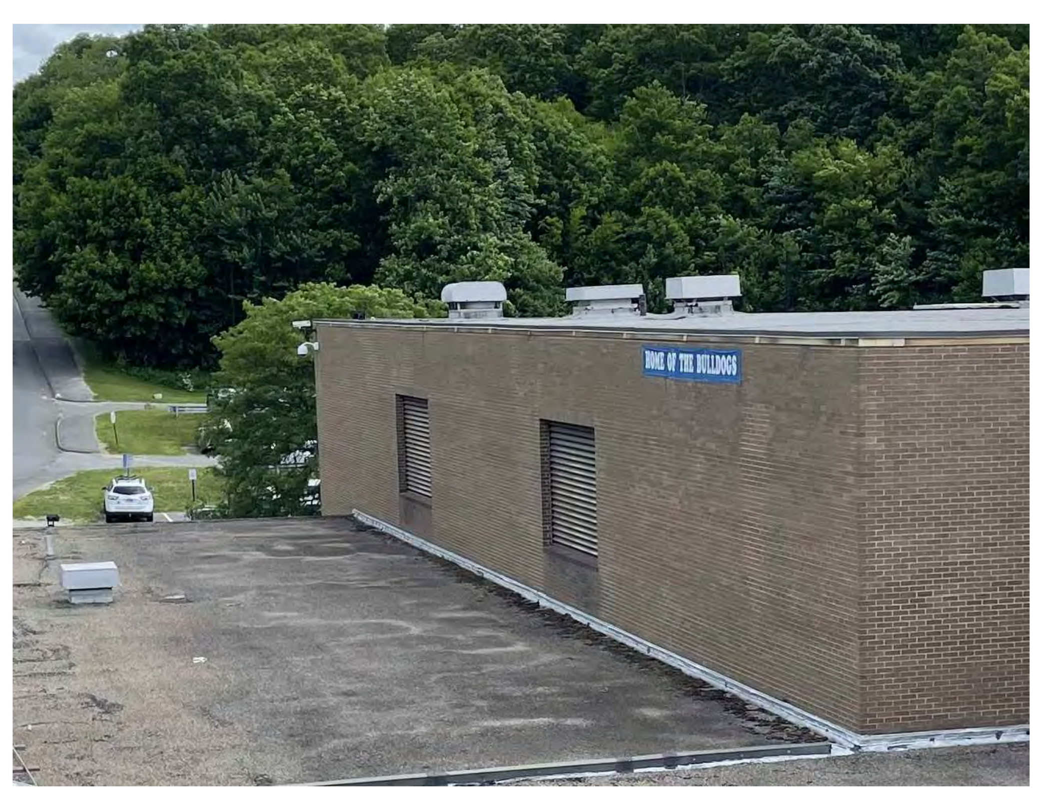


5 AD101 ROOM D104 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



LOUVERS AT FAN ROOM 13



LOUVERS AT FAN ROOM 14

FAN ROOM EXISTING CONDITIONS PHOTOS

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

INTERIOR ARCHITECTURAL DEMOLITION PLANS

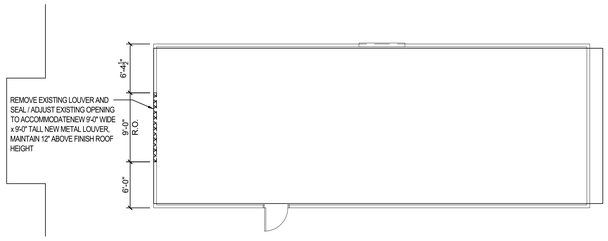
100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
KH	DM	22106

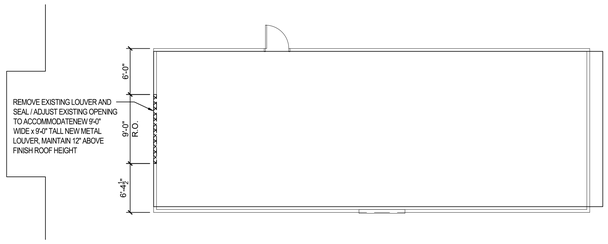
SHEET NO.

AD101



1 AD102 PENTHOUSE #7 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



2 AD102 PENTHOUSE #8 ARCHITECTURAL DEMOLITION PLAN

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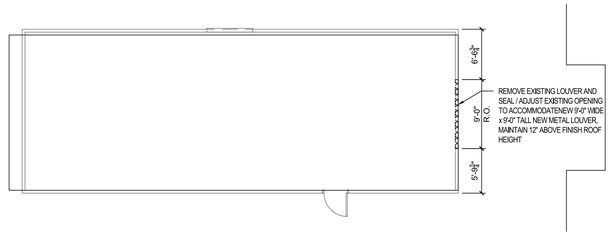
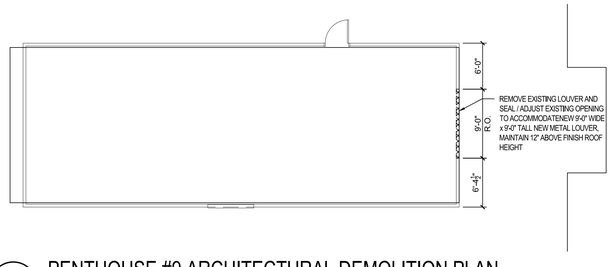


3 AD102 PENTHOUSE #6 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



4 AD102 PENTHOUSE #9 ARCHITECTURAL DEMOLITION PLAN

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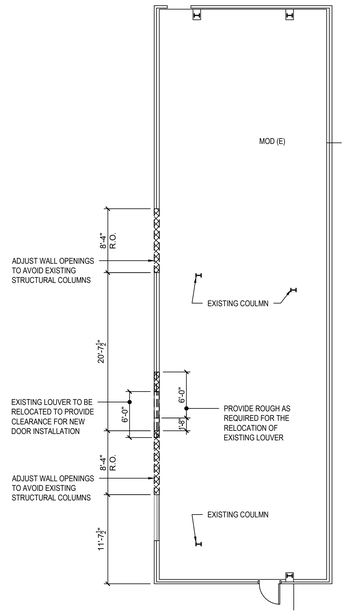
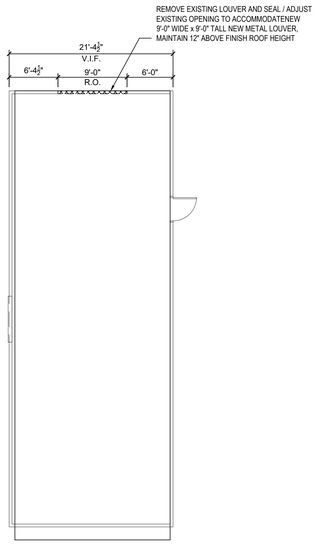


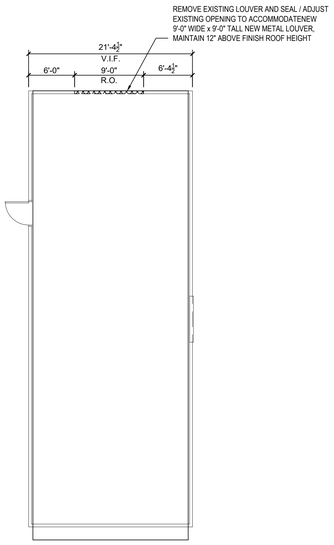
10 AD102 PENTHOUSE #12 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



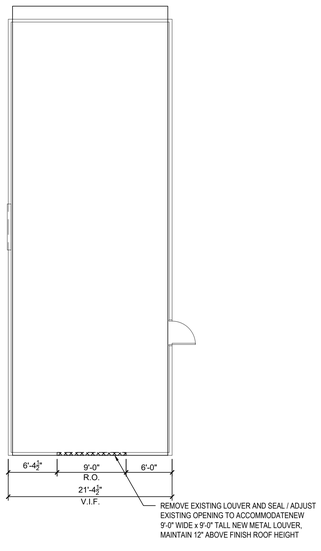
5 AD102 PENTHOUSE #3 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



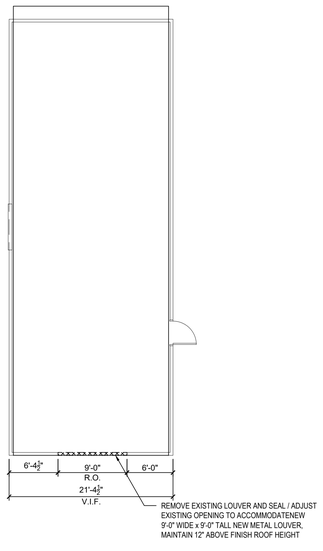
6 AD102 PENTHOUSE #2 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



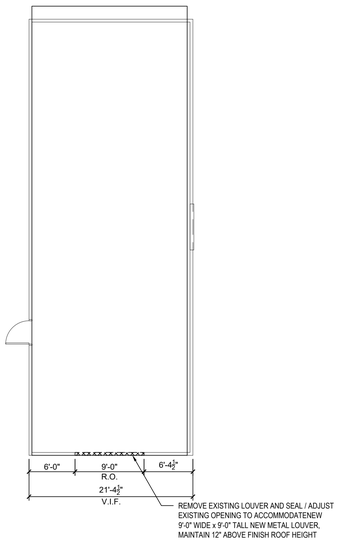
7 AD102 PENTHOUSE #5 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



8 AD102 PENTHOUSE #4 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



9 AD102 PENTHOUSE #1 ARCHITECTURAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

TYPICAL LOUVERS AT PENTHOUSES 1 - 9

LOUVERS AT PENTHOUSES 12

PENTHOUSE EXISTING CONDITIONS PHOTOS

NOTE: SEE A-001 FOR LOCATION OF PENTHOUSES

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300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
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PENTHOUSE ARCHITECTURAL DEMOLITION PLANS

100% CONSTRUCTION DOCUMENTS

08/11/2023

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KH	DM	22106

SHEET NO.

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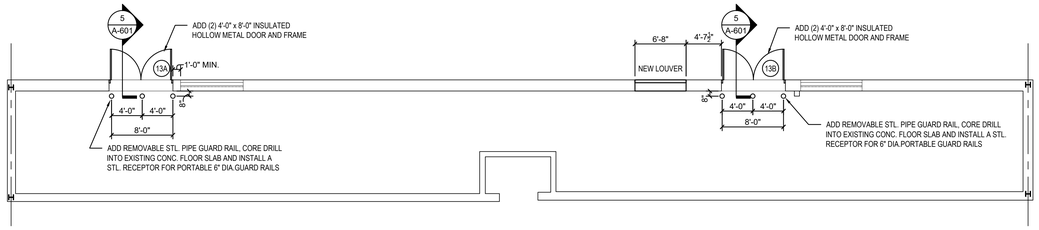
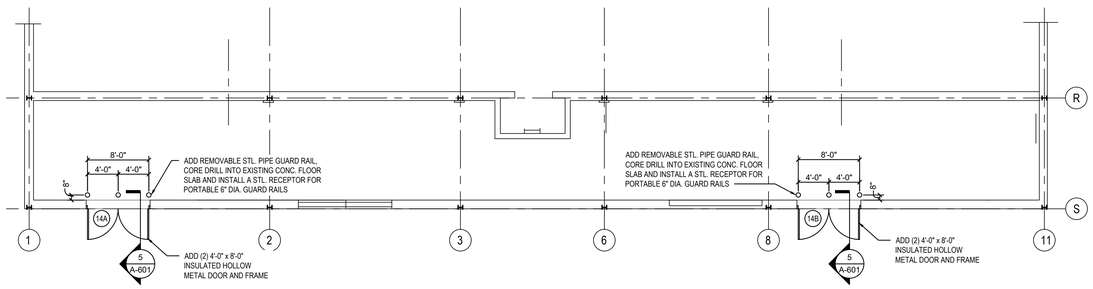


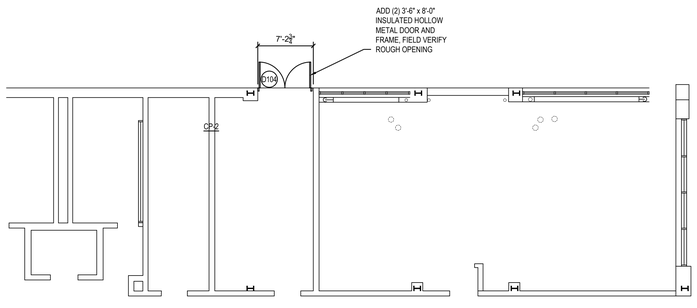
1 A-101 FAN ROOM #13 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



2 A-101 FAN ROOM #14 ARCHITECTURAL NEW WORK PLAN

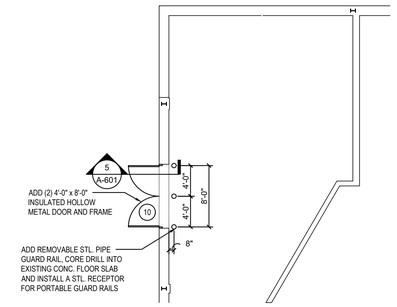
SCALE: 1/8" = 1'-0"



5 A-101 ROOM D104 ARCHITECTURAL NEW WORK PLAN

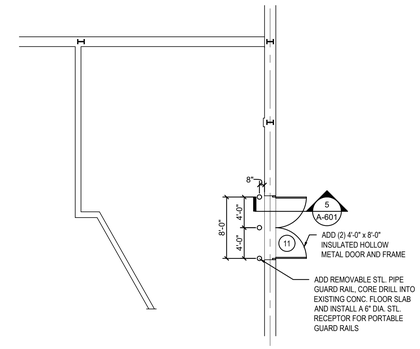
SCALE: 1/8" = 1'-0"

NOTE: SEE A-001 FOR ROOM LOCATIONS



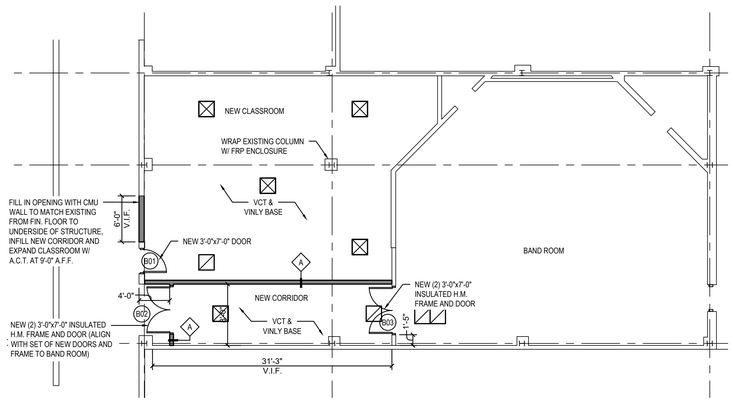
3 A-101 FAN ROOM #10 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



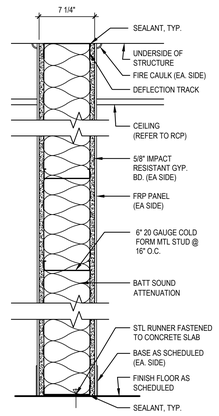
4 A-101 FAN ROOM #11 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

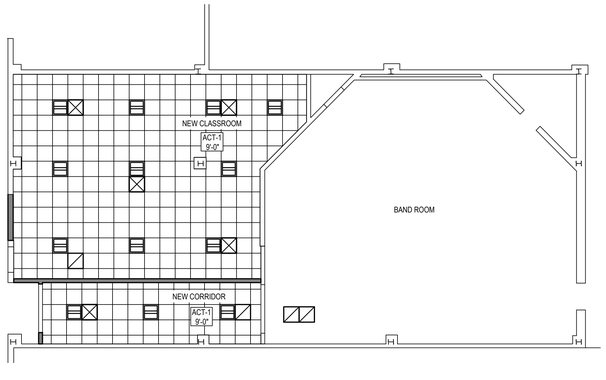


6 A-101 MUSIC SUITE ARCH NEW PLAN & PARTITION TYPE

SCALE: 1/8" = 1'-0"



A WALL TYPE (STC-60)
AS SHOWN



7 A-101 MUSIC SUITE REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

REFLECTED CEILING SYMBOL LEGEND

ACT-1	ACOUSTICAL CEILING TILE CERTAINTEED - SEE SPECIFICATIONS
	NEW 2x2 FIXTURE

FOR ADDITIONAL WALL OR CEILING MOUNTED FIXTURES NOT SHOWN ON THIS LEGEND, REFERENCE ELECTRICAL AND MECHANICAL DRAWINGS FOR MORE INFORMATION

GENERAL REFLECTED CEILING NOTES

1. ALL CEILING-MOUNTED ITEMS (LIGHTS, GRILLES, DIFFUSERS, DETECTORS, SPRINKLER HEAD, ETC) SHALL BE CENTERED WITHIN THE CEILING TILES AND GRIDS UNLESS NOTED OTHERWISE.
2. ALL CEILING TILES TO BE CENTERED IN ROOMS, UNLESS NOTED OTHERWISE.
3. CEILING HEIGHTS REFERENCE ROOMS FINISHED FLOOR ELEVATION.
4. REFERENCE MECHANICAL AND PLUMBING DRAWINGS FOR CEILING MOUNTED DUCTS, PIPES, ETC. REFERENCE ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE TYPES AND LOCATIONS.
5. ALL ACOUSTICAL CEILINGS SHALL BE ACT-1. ALL CEILINGS SHALL BE PLACE 9'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED..

REFLECTED CEILING TYPE LEGEND

ACT-1	INSTALL NEW 2x2 SUSPENDED ACOUSTICAL CEILING TILE AND GRID AS SHOWN. SEE SPECIFICATIONS FOR MORE INFORMATION. SEE ELECTRICAL, MECHANICAL, AND FIRE PROTECTION DRAWINGS FOR ELECTRICAL, MECHANICAL, AND FIRE PROTECTION EQUIPMENT, FIXTURES, AND DEVICE LOCATIONS. CONTRACTOR TO COORDINATE AS REQ'D. TO FACILITATE INSTALLATION OF NEW ACT AND EQUIPMENT THERE WITHIN. HEIGHT INDICATED ON REFLECTED CEILING PLANS.

ARCHITECTURAL NEW WORK NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR ALL SELECTIVE DEMOLITION TO REMOVE EXISTING EQUIPMENT AND INSTALL NEW EQUIPMENT INCLUDING RESTORATION OF DEMOLISHED STRUCTURE AND ENVELOPE.
2. CONTRACTOR IS RESPONSIBLE TO COVER PATCHING OF DAMAGED OR DISTURBED SPRAY-ON FIREPROOFING OF STRUCTURAL STEEL.

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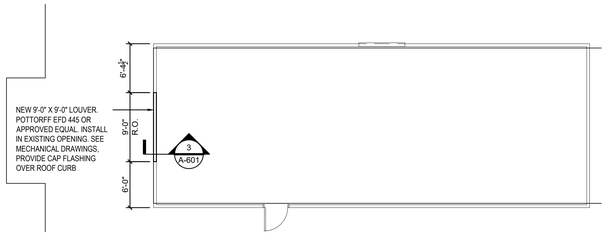
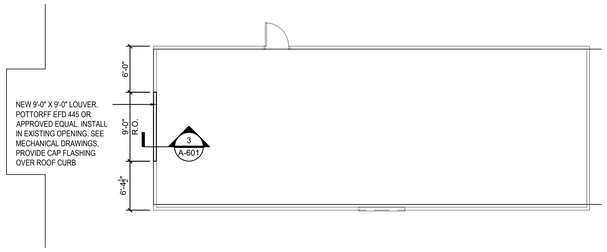


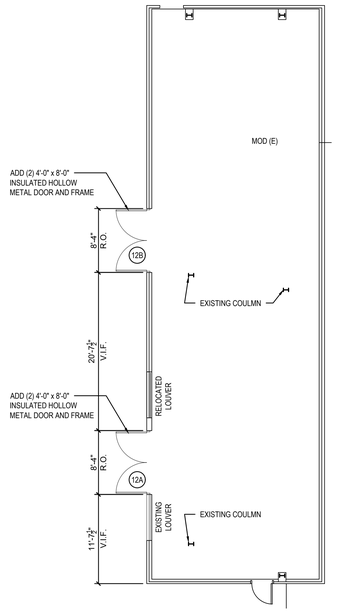
1 A-102 PENTHOUSE #7 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



2 A-102 PENTHOUSE #8 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



10 A-102 PENTHOUSE #12 ARCHITECTURAL NEW WORK PLAN

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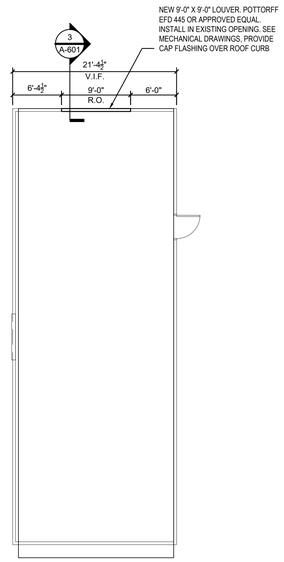
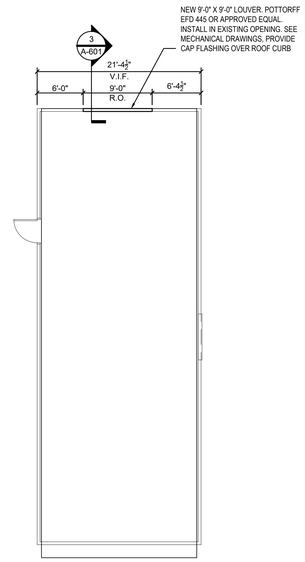


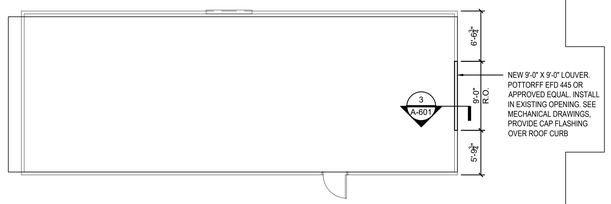
5 A-102 PENTHOUSE #3 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



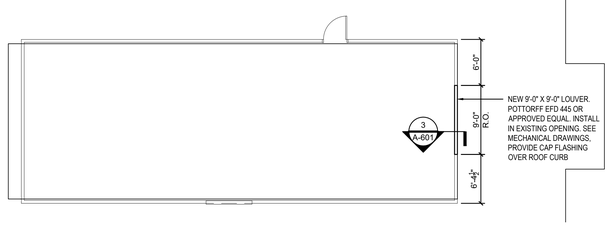
6 A-102 PENTHOUSE #2 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



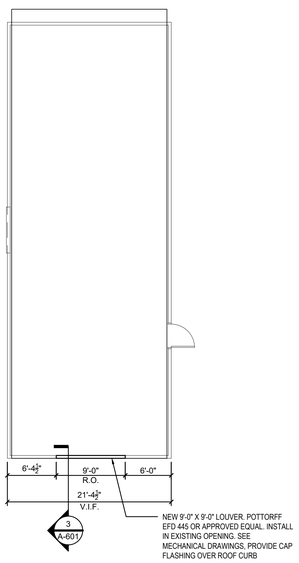
3 A-102 PENTHOUSE #6 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



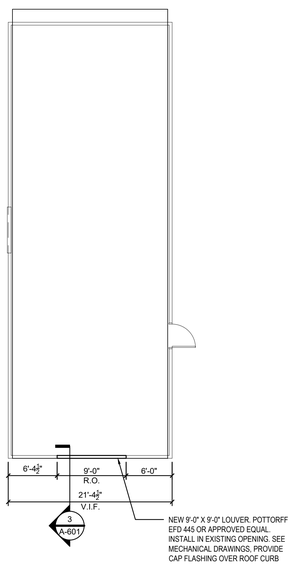
4 A-102 PENTHOUSE #9 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



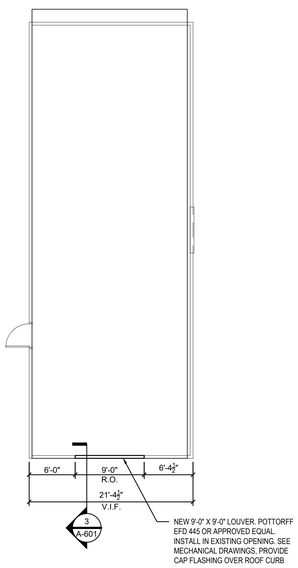
7 A-102 PENTHOUSE #5 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



8 A-102 PENTHOUSE #4 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



9 A-102 PENTHOUSE #1 ARCHITECTURAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

ARCHITECTURAL NEW WORK NOTES:

1. SEE A-001 FOR LOCATION OF PENTHOUSES
2. CONTRACTOR IS RESPONSIBLE FOR ALL SELECTIVE DEMOLITION TO REMOVE EXISTING EQUIPMENT AND INSTALL NEW EQUIPMENT INCLUDING RESTORATION OF DEMOLISHED STRUCTURE AND ENVELOPE.
3. CONTRACTOR IS RESPONSIBLE TO COVER PATCHING OF DAMAGED OR DISTURBED SPRAY-ON FIREPROOFING OF STRUCTURAL STEEL.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
	-	-

SHEET TITLE

PENTHOUSE ARCHITECTURAL NEW WORK PLANS

100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
KH	DM	22106

SHEET NO.

A-102

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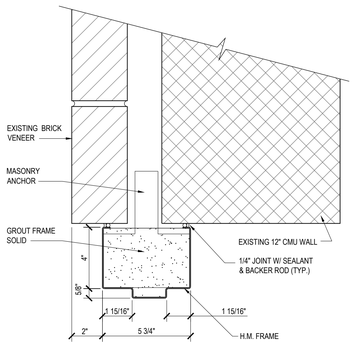
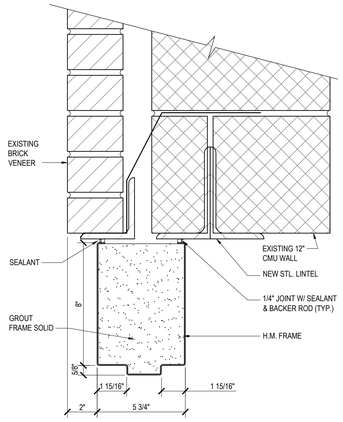


JAMB DETAIL J1



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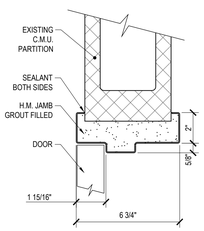

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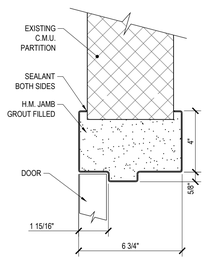

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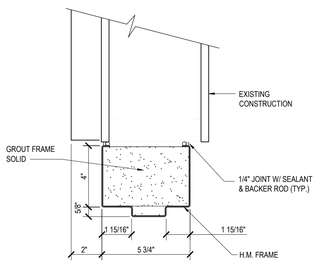

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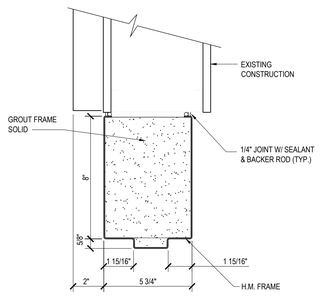
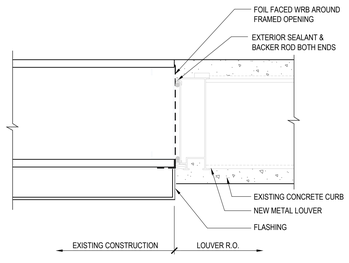


HEAD DETAIL H3

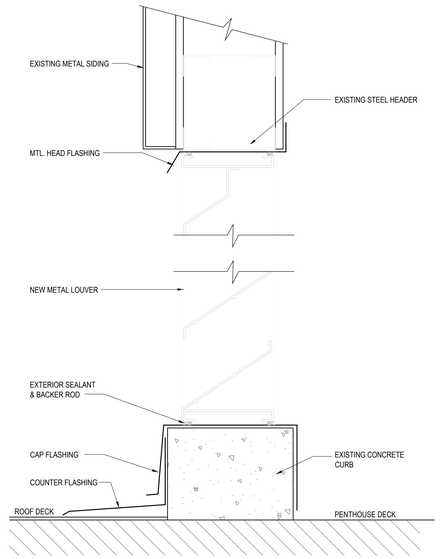
1 A-601 HEAD & JAMB DETAILS

SCALE: 3" = 1'-0"



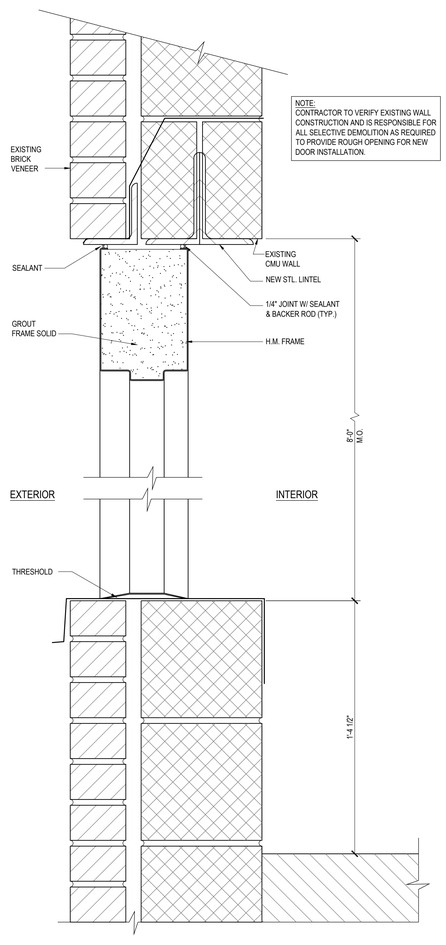
2 A-601 LOUVER JAMB DETAIL

SCALE: 3" = 1'-0"



3 A-601 LOUVER SECTION DETAIL

SCALE: 3" = 1'-0"



NOTE:
CONTRACTOR TO VERIFY EXISTING WALL CONSTRUCTION AND IS RESPONSIBLE FOR ALL SELECTIVE DEMOLITION AS REQUIRED TO PROVIDE ROUGH OPENING FOR NEW DOOR INSTALLATION.

5 A-601 WALL SECTION AT FAN ROOM

SCALE: 3" = 1'-0"

DOOR SCHEDULE

MARK	DOOR						FRAME				FIRE RTG	HDWR	REMARKS
	W	HT	THK	MATL	TYPE	GLZ	MATL	TYPE	HEAD	JAMB			
B01	3'-0"	7'-0"	1 3/4"	HM	B	N/A	HM	F1	H2	J2	60-MIN.	2	
B02	(2) 3'-0"	7'-0"	1 3/4"	HM	A	N/A	HM	F1	H2	J2	60-MIN.	3	
B03	(2) 3'-0"	7'-0"	1 3/4"	HM	A	N/A	HM	F1	H2	J2	60-MIN.	3	
10	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
11	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
12A	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H3	J3	-	1	
12B	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H3	J3	-	1	
13	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
14A	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
14B	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
D104	(2) 3'-6"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	

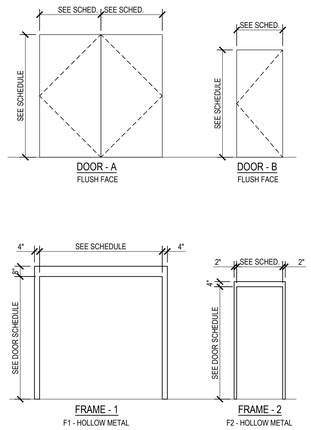
HARDWARE SETS

HARDWARE SET 1 - EXTERIOR, DOUBLE DOOR, HOLLOW METAL
- 6 HINGES
- 2 STORE ROOM LOCK SETS W/ INSIDE HARDWARE ONLY
- 1 KEYED REMOVABLE MULLION
- 2 RAIN DRIP EDGE
- 2 THRESHOLD
- 2 GASKETING
- 2 SWEEP

HARDWARE SET 2: INTERIOR, SINGLE DOOR, HOLLOW METAL
- 3 HINGES
- 1 LOCKSET
- 1 CLOSER
- 1 KICK PLATE
- 1 WALL STOP
- 1 GASKETING SET
- 1 AUTO DOOR BOTTOM

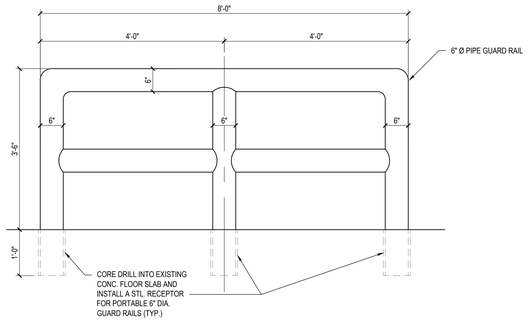
HARDWARE SET 3 - INTERIOR, DOUBLE DOOR, HOLLOW METAL - 60 MIN LABEL
- 6 HINGES
- 2 EXIT DEVICES
- 2 CLOSERS
- 2 KICK PLATES
- 2 WALL STOPS
- 2 GASKETING

DOOR AND FRAME TYPES



4 A-601 DOOR SCHEDULE

SCALE: 1/4" = 1'-0"



6 A-601 PIPE GUARD RAIL DETAIL

SCALE: 3/4" = 1'-0"

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SIGNATURE: _____
DATE OF SIGNATURE: _____
DATE OF REGISTRATION EXPIRATION: _____

ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

DOOR SCHEDULE & DETAILS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
KH	DM	22106

SHEET NO.

A-601

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GENERAL HVAC NOTES

1. ALL NEW SUPPLY AIR DIFFUSERS AND RETURN AIR REGISTERS SHALL BE EQUIPPED W/ MFGR. SUPPLIED VOLUME DAMPERS.
2. FIRE DAMPERS SHALL BE PLACED IN ALL DUCT OR TRANSFER AIR PENETRATIONS OF ALL FIRE RATED PARTITIONS. SEE ARCHITECTURAL DRAWINGS FOR FIRE RATED PARTITIONS. PROVIDE LABELED ACCESS DOORS AS NEEDED. FIRE DAMPERS AND INSTALLATION ARE TO BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL MECHANICAL CODE.
3. DUCT SMOKE DETECTORS ARE TO BE SUPPLIED AND INSTALLED WHERE SHOWN IN ACCORDANCE WITH NFPA 72. ACCESS SHALL BE PROVIDED TO SMOKE DETECTORS FOR INSPECTION AND MAINTENANCE. ELECTRICAL CONTRACTOR SHALL MAKE APPROPRIATE AND REQUIRED ELECTRICAL CONNECTIONS TO THE DUCT SMOKE DETECTORS AS SPECIFIED AND REQUIRED FOR PROPER OPERATION. DUCT SMOKE DETECTORS SHALL DE-ENERGIZE THE AIR HANDLING UNIT, OR EXHAUST FAN, THAT THEY ARE ASSOCIATED WITH AND ACTIVATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL IN THE BUILDING'S FIRE PROTECTIVE SIGNALING SYSTEM AT A CONSTANTLY ATTENDED LOCATION. ANY SYSTEM THAT IS DE-ENERGIZED BY THE ALARM SHALL NOT RESTART EXCEPT BY MANUAL RESET ON THE UNIT R THROUGH THE BAC SYSTEM. SMOKE DETECTORS SHALL COMPLY WITH THE 2018 INTERNATIONAL MECHANICAL CODE IN ENTIRETY.
4. PIPES, BUS DUCTS, CABLES, WIRES, AIR DUCTS AND SIMILAR BUILDING SERVICE EQUIPMENT THAT PASS THROUGH SMOKE PARTITIONS SHALL BE PROTECTED AS STATED IN NFPA 101 CHAPTER 6-3.6. THE SPACE BETWEEN THE PENETRATING PIPE OR DUCT AND THE SMOKE BARRIER SHALL:

   A. BE FILLED WITH A MATERIAL CAPABLE OF MAINTAINING THE SMOKE-RESISTANCE OF THE SMOKE BARRIER OR

   B. BE PROTECTED BY AN APPROVED DEVICE DESIGNED FOR THE SPECIFIC PURPOSE.

   INSULATION AND COVERINGS FOR PIPES AND DUCTS SHALL NOT PASS THROUGH FIRE BARRIERS UNLESS ONE OF THESE REQUIREMENTS IS MET. CONTRACTOR IS RESPONSIBLE FOR CHOOSING WHICH ALTERNATIVE TO USE UNLESS OTHERWISE SPECIFIED IN THE DRAWINGS OR SPECIFICATIONS.
5. INSULATE ALL NEW DUCTWORK AND EQUIPMENT, AS SPECIFIED UNLESS OTHERWISE NOTED. ALL NON-FLEXIBLE DUCTWORK SHALL BE METAL. DUCTBOARD IS PROHIBITED.
6. PROVIDE AND INSTALL ALL GAUGES AND METERS AS SHOWN AND SPECIFIED.
7. MFGR'S OF ALL COILS SHALL ENSURE THAT THE COILS ARE CLEAN AND FREE OF ANY RESIDUE FROM THE MANUFACTURING AND SHIPPING PROCESS. IF COILS ARE FOUND TO BE DIRTY OR SMOKE WHEN HOT WATER IS PROVIDED TO THEM, THE CONTRACTOR WILL BE RESPONSIBLE FOR CLEANING OF THE COILS, AS WELL AS, CLEANING THE BUILDING FROM SMOKE, COIL EMANATIONS, OR VAPORS.
8. ALL DUCTS SHALL BE CONNECTED TO AIR OUTLETS, AIR INLETS, AND AIR HANDLING DEVICES TO PROVIDE A COMPLETE DUCTWORK SYSTEM. FOR CONNECTION TO AIR OUTLETS UP TO 5 FEET OF FLEX DUCT SHALL BE USED WHERE CONCEALED FROM OCCUPANT VIEW. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TRANSITIONS TO ENSURE PROPER AND ADEQUATE CONNECTIONS OF ALL DUCTWORK TO ALL AIR INLETS, OUTLETS, AIR HANDLING DEVICES AND AIR TERMINAL DEVICES. DUCTWORK IS TO BE COORDINATED WITH TRANSFER AIR OPENINGS AND ROOF TRUSS SYSTEM, OR STRUCTURAL STEEL.
9. THE RETURN AIRFLOWS INDICATED ON THE PLANS CORRESPOND TO THE OCCUPIED MODE WITH MINIMUM OUTSIDE AIR BEING SUPPLIED. THE BALANCE REPORT IS TO INDICATE THESE AIRFLOWS IN THIS MODE OF OPERATION.
10. GRAVITY VENTILATORS, ROOF EXHAUSTERS AND ASSOCIATED DUCTWORK CONNECTIONS ARE TO BE COORDINATED WITH BUILDING STRUCTURAL COMPONENTS.
11. HVAC EQUIPMENT SHALL BE FURNISHED WITH A MOTOR STARTER SUITABLE FOR THE OFF-ON CONTROL OF THE MOTOR BY A REMOTE THERMOSTAT OR BAS CONTACT. THESE STARTERS SHALL COMPLY WITH NATIONAL ELECTRIC CODE.
12. ALL AIR HANDLING UNITS ARE TO BE INSTALLED TO PROVIDE ADEQUATE, UNOBSTRUCTED, ACCESS AND CLEARANCE FOR AIR FILTER REPLACEMENT.
13. ALL MOTORS FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR (OR A MECHANICAL SUBCONTRACTOR) SHALL BE PROTECTED AGAINST OVERLOAD IN ACCORDANCE WITH NFPA 70.
14. WHERE DEMOLISHING AND REMOVING UV'S, REMOVE ASSOCIATED LOUVER. CONTRACTOR MUST PATCH AND PAINT TO MATCH EXISTING SURROUNDINGS.
15. MECHANICAL EQUIPMENT AND DEVICES SHALL OPERATE WITHOUT OBJECTIONABLE NOISE AND VIBRATION BEING TRANSMITTED TO OCCUPIED PORTIONS OF THE BUILDING OR ANY PART OF THE BUILDING STRUCTURE BY APPARATUS, PIPING, DUCTWORK, CONDUITS, OR OTHER PARTS OF THE MECHANICAL SYSTEM. SECURE AND BRACE ALL PIPING AND DUCTWORK, PROVIDE FLEXIBLE CONNECTION, VIBRATION ISOLATORS, OR OTHER DEVICES WHERE INDICATED OR REQUIRED TO PREVENT THE TRANSMISSION OF NOISE AND VIBRATION TO THE BUILDING. NC LEVEL IS 35.
16. ALL NEW CEILING MOUNTED AIR INLETS AND AIR OUTLETS ARE TO BE COORDINATED WITH LIGHTING. A NEAT, SYMMETRICAL INSTALLATION IS TO BE MAINTAINED, WITH CEILING MOUNTED AIR INLETS/OUTLETS IN PROXIMITY TO LOCATIONS SHOWN ON THE PLANS. IN THE CASE THAT THERE IS A CONFLICT, THE LOCATION OF THE LIGHTING WILL TAKE PRIORITY AND THE INLET/OUTLET SHALL BE RELOCATED AS CLOSE AS POSSIBLE. DUCTWORK SHOP DRAWINGS ARE TO SHOW PLACEMENT OF AIR INLETS/OUTLETS WITH LIGHTING OVERLAID ON THE SAME PLAN. CONTRACTORS ARE TO USE REFLECTED CEILING PLAN AS BASIS FOR COORDINATION.
17. THE CONTRACTOR SHALL PROVIDE ALL WALL AND ROOF PENETRATIONS REQUIRED FOR DUCT ROUTING. THE CONTRACTOR SHALL PATCH AND PAINT ALL PENETRATIONS LEFT BY DEMOLITION WORK AND BY CLEARANCE OPENINGS THAT REMAIN AFTER NEW DUCT INSTALLATIONS.
18. NOTIFY THE OWNER IN THE EVENT ANY EXISTING HAZARDOUS MATERIALS, SUCH AS ASBESTOS, PCB'S, LEAD, ETC., ARE ENCOUNTERED ON THE PROJECT. THE OWNER WILL ARRANGE WITH A QUALIFIED SPECIALIST FOR THE IDENTIFICATION, TESTING, REMOVAL, HANDLING AND PROTECTION AGAINST EXPOSURE OR ENVIRONMENTAL POLLUTION, TO COMPLY WITH APPLICABLE REGULATIONS, LAWS AND ORDINANCES.
19. ALL THERMOSTATS SHOWN ON HVAC PLANS ARE TO BE MOUNTED 4'-0" MAXIMUM AFF (TOP OF UNIT), UNLESS NOTED OTHERWISE. CONTRACTOR IS RESPONSIBLE FOR MOUNTING & WIRING ALL THERMOSTATS. PLENUM RATED CABLES MUST BE USED.
20. THE CONTRACTOR SHALL PROVIDE RADIUSED ELBOWS OR SQUARE THROAT ELBOWS WITH VANES FOR ALL DUCTWORK CHANGES IN DIRECTION, PER SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE. SQUARE THROAT ELBOWS WITHOUT VANES AND MITERED ELBOWS ARE NOT PERMITTED.
21. HANG ALL CEILING MOUNTED UNITS HIGH TO ALLOW FOR CONDENSATE TRAPPING AND GRAVITY VENTS.
22. ALL QUANTITIES TO BE VERIFIED BY CONTRACTOR.
23. PRIOR TO SUBMITTING BID, THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION. CONTRACTOR SHALL INCLUDE IN THEIR BID ALL MATERIALS, LABOR AND ALL INCIDENTALS FOR A COMPLETE INSTALLATION WHETHER SPECIFICALLY INDICATED OR NOT. ALL ERRORS, DISCREPANCIES AND MISSED ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS BY THE CONTRACTOR. THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE. NO EXTRA COST WILL BE ALLOWED FOR ANY DISCREPANCY WHICH COULD HAVE BEEN NOTICED AT THE SITE BY THE CONTRACTOR.
24. INSTALL ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S WRITTEN INSTRUCTION.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL COSTS INCURRED AS A RESULT OF SUBSTITUTIONS OR DEVIATIONS FROM THE BASIS OF DESIGN SHOWN ON THESE DRAWINGS.
26. CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRANSITIONS AND FLEXIBLE CONNECTIONS BETWEEN ALL UNITS AND SUPPLY, RETURN, OR OUTSIDE AIR DUCTS.
27. INSULATE ALL EXISTING TO REMAIN DUCTWORK AND EQUIPMENT WHERE INDICATED AND AS SPECIFIED.

HVAC LEGEND

Symbol	Description
	EXISTING DUCTWORK OR EQUIPMENT
	ROUND RETURN OR EXHAUST AIR DOWN
	ROUND SUPPLY AIR DOWN
	ROUND RETURN OR EXHAUST AIR UP
	ROUND SUPPLY AIR UP
	RECTANGULAR RETURN OR EXHAUST AIR DOWN
	RECTANGULAR SUPPLY AIR DOWN
	RECTANGULAR RETURN OR EXHAUST AIR UP
	RECTANGULAR SUPPLY AIR UP
	NEW FLEX DUCTWORK
D - X / XXX CFM	CEILING MOUNTED SUPPLY AIR DIFFUSER
D - X / XXX CFM	SIDE-WALL MOUNTED SUPPLY AIR DIFFUSER
D - X / XXX CFM	CEILING MOUNTED RETURN AIR REGISTER
D - X / XXX CFM	SIDE-WALL MOUNTED RETURN AIR REGISTER
	VOLUME DAMPER
MOD	MOTOR OPERATED DAMPER
T	THERMOSTAT
DD	DUCT SMOKE DETECTOR - FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR
	EXTENT OF WORK
O.E.D.	OPEN END DUCT
OA	OUTSIDE AIR
RA	RETURN AIR
SA	SUPPLY AIR
GV - ?	GRAVITY VENTILATOR
AHU - ?	AIR HANDLING UNIT
F - ?	FAN
EF - ?	EXHAUST FAN

THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR MATERIALS TO PROVIDE A FULLY FUNCTIONAL BUILDING AUTOMATION SYSTEM FOR THE PROJECT. THIS INCLUDES ALL CONTROL COMPONENTS, CONTROLLERS, WIRING, PROGRAMMING, AND COORDINATION BETWEEN TRADES TO ACCOMPLISH THE SEQUENCE OF OPERATIONS HEREIN. CONTRACTOR SHALL ENSURE THAT ALL COMPONENTS ARE COORDINATED BETWEEN EQUIPMENT SUPPLIERS AND CONTROLS VENDOR FOR ALL EQUIPMENT.

GENERAL PIPING NOTES

1. INSTALL ALL GAUGES AND METERS AS SHOWN ON DRAWINGS AND AS SPECIFIED.
2. INSULATE ALL EXISTING TO REMAIN AND NEW PIPING WHERE INDICATED AND AS SPECIFIED.
3. UNLESS OTHERWISE SHOWN OR SPECIFIED, ALL CONDENSATE DRAINS FROM ALL HVAC UNITS SHALL BE TRAPPED AND PIPED THROUGH THE BUILDING AND DRAINED THROUGH THE EXTERIOR WALL OF THE BUILDING AT A HEIGHT NOT TO EXCEED 18" ABOVE GRADE. PIPE SIZES SHALL MATCH SIZE OF DRAIN CONNECTION AT A MINIMUM. UNIT DRAINS SHALL NOT BE GANGED TOGETHER UNLESS APPROVED BY ARCHITECT/ENGINEER. UNLESS OTHERWISE SHOWN OR STATED, CONDENSATE PIPING SHALL NOT BE EXPOSED.
4. ALL FLOOR PENETRATIONS SHALL BE SLEEVED AND SEALED AS SPECIFIED.
5. THE CONTRACTOR IS RESPONSIBLE FOR ALL NEW PIPING PENETRATIONS IN WALLS AND FLOORS. THE PIPING PLANS DO NOT SPECIFICALLY NOTE WHERE PIPING PENETRATES WALLS AND FLOORS. IT IS THE CONTRACTOR'S RESPONSIBILITY PRIOR TO BID TO STUDY THE PLANS AND IF NECESSARY EVALUATE THE SITE, TO ACCOUNT FOR ALL PIPING PENETRATIONS OF THE EXISTING STRUCTURE.
6. THE CONTRACTOR SHALL PROVIDE NEW SUPPORTS OF COMPATIBLE MATERIAL FOR ALL NEW PIPING.
7. ALL CONTROL VALVES TO BE INSTALLED OVER DRAIN PANS IN HVAC UNITS.
8. ALL PIPING SHALL BE SIZED AS CALLED OUT ON DRAWINGS, AND MAY NOT BE DOWN SIZED BETWEEN CONTROL VALVE AND COIL.
9. PROVIDE AIR VENTS AT ALL HIGH POINTS IN SYSTEM. PROVIDE DRAIN VALVES TO ALL LOW POINTS IN SYSTEM.
10. PROVIDE ISOLATION VALVES AT ALL BRANCH PIPING TAKEOFFS.
11. COORDINATE INSTALLATION OF ALL NEW PIPING WITH EXISTING FIRE PROTECTION PIPING, CONDUIT, EXHAUST/RELIEF DUCT WORK, AND STRUCTURE.
12. FOR CONDENSATE DRAIN PIPING RUNS LONGER THAN 50 FEET, PROVIDE A REMOVABLE PLUG AT A CHANGE OF DIRECTION EVERY 50 FT.
13. UNLESS OTHERWISE SHOWN OR STATED, ALL STEAM AND CHILLED WATER ISOLATION VALVES SHALL BE DEMOLISHED AND REPLACED FOR ALL AIR HANDLING UNITS TO BE REPLACED.

PIPING LEGEND

Symbol	Description
	HYDRONIC PIPING
	EXISTING HYDRONIC PIPING
	CONDENSATE PIPING
	SHUTOFF VALVE
	BALANCING VALVE
	CHECK VALVE
	ATC 2-WAY CONTROL VALVE
	STRAINER
	FLOW METER FITTING
T	BAC TEMP SENSOR TO BE CONNECTED TO BAC SYSTEM
	AUTOFLOW 3/4" FLOW LIMITING DEVICE OR APPROVED EQUAL
CP	CONDENSATE PUMP SYSTEM
STEAM	STEAM
STM COND	STEAM CONDENSATE DRAIN PIPING
COND	COOLING CONDENSATE DRAIN PIPING
CWSR	CHILLED WATER SUPPLY AND RETURN

MECHANICAL DEMO NOTES & LEGEND

1. ALL DEMOLISHED MECHANICAL UNITS ARE TO BE REMOVED AND TAKEN OFF SITE AND BECOME PROPERTY OF THE CONTRACTOR UNLESS NOTED OTHERWISE.
2. ALL DEMOLISHED DUCTWORK, DIFFUSERS, REGISTERS, GRILLES, INSULATION, AND HANGERS ARE TO BE REMOVED AND TAKEN OFF SITE AND BECOME PROPERTY OF THE CONTRACTOR UNLESS NOTED OTHERWISE.
3. ALL DEMOLISHED HEATING SUPPLY AND RETURN PIPING, VALVES, FITTINGS, INSULATION AND HANGERS ARE TO BE REMOVED AND TAKEN OFF SITE AND BECOME PROPERTY OF THE CONTRACTOR UNLESS NOTED OTHERWISE. PIPING THAT IS TO BE ABANDONED IN PLACE SHALL BE CUT AND CAPPED BELOW FLOOR OR WITHIN TRENCH, AND THE OPENING SEALED WITH CONCRETE.
4. PROVIDE TEMPORARY COVERS AND CAPS FOR TEMPORARILY EXPOSED EXISTING PIPING, EQUIPMENT AND WALL OPENINGS. TEMPORARY COVERS AND CAPS SHALL BE SUFFICIENT TO ENSURE DIRT, WEATHER AND CONSTRUCTION DEBRIS WILL NOT ENTER ANY SYSTEM OR WALL, ROOF OR FLOOR OPENING.
5. SEE ELECTRICAL PLANS FOR INFORMATION ON WIRING TERMINATION OF DEMO'D EQUIPMENT.
6. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING DEMOLITION PLAN.
7. PATCHING AND PAINTING AT UNIT VENTILATOR, FIN TUBE, UNIT HEATER, AND THERMOSTAT LOCATIONS BY GENERAL TRADES. SEE ARCHITECTURAL DRAWINGS FOR FINISH SCHEDULE.
8. THE CONTRACTOR SHALL PROVIDE PROTECTION FOR ALL ROOFTOP AND WALL OPENINGS CREATED BY DEMOLITION SUITABLE FOR WITHSTANDING WEATHER CONDITIONS.
9. ALL ASBESTOS CONTAINING MATERIALS WILL BE REMOVED BY OTHERS PRIOR TO DEMOLITION.
10. THE INFORMATION SHOWN ON THESE DRAWINGS WAS COMPILED FROM EXISTING DRAWINGS AND SITE VISITS. HOWEVER, THE INFORMATION MAY STILL VARY FROM THE ACTUAL INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION FOR DEMOLITION WORK.

Symbol	Description
GV - ?	GRAVITY VENTILATOR
AHU - ?	AIR HANDLING UNIT
F - ?	FAN
EF - ?	EXHAUST FAN
MOD	MOTOR OPERATED DAMPER
	DUCTWORK
RHC	RE-HEAT COIL
	HYDRONIC SUPPLY AND RETURN PIPING
	PIPING ELBOW DOWN
	PIPING ELBOW UP
	DEMOLISH MECHANICAL EQUIPMENT IN HATCHED AREA, INCLUDING ALL RELATED PIPING, INSULATION, VALVES, FITTINGS, DUCTWORK, INSULATION, HANGERS, SUPPORTS, HARDWARE, DEVICES AND INSULATION, ENCLOSURES, MOUNTS, AND WALL LOUVERS UNLESS OTHERWISE NOTED.

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

R E V I S I O N S

MARK	DESCRIPTION	DATE
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SHEET TITLE

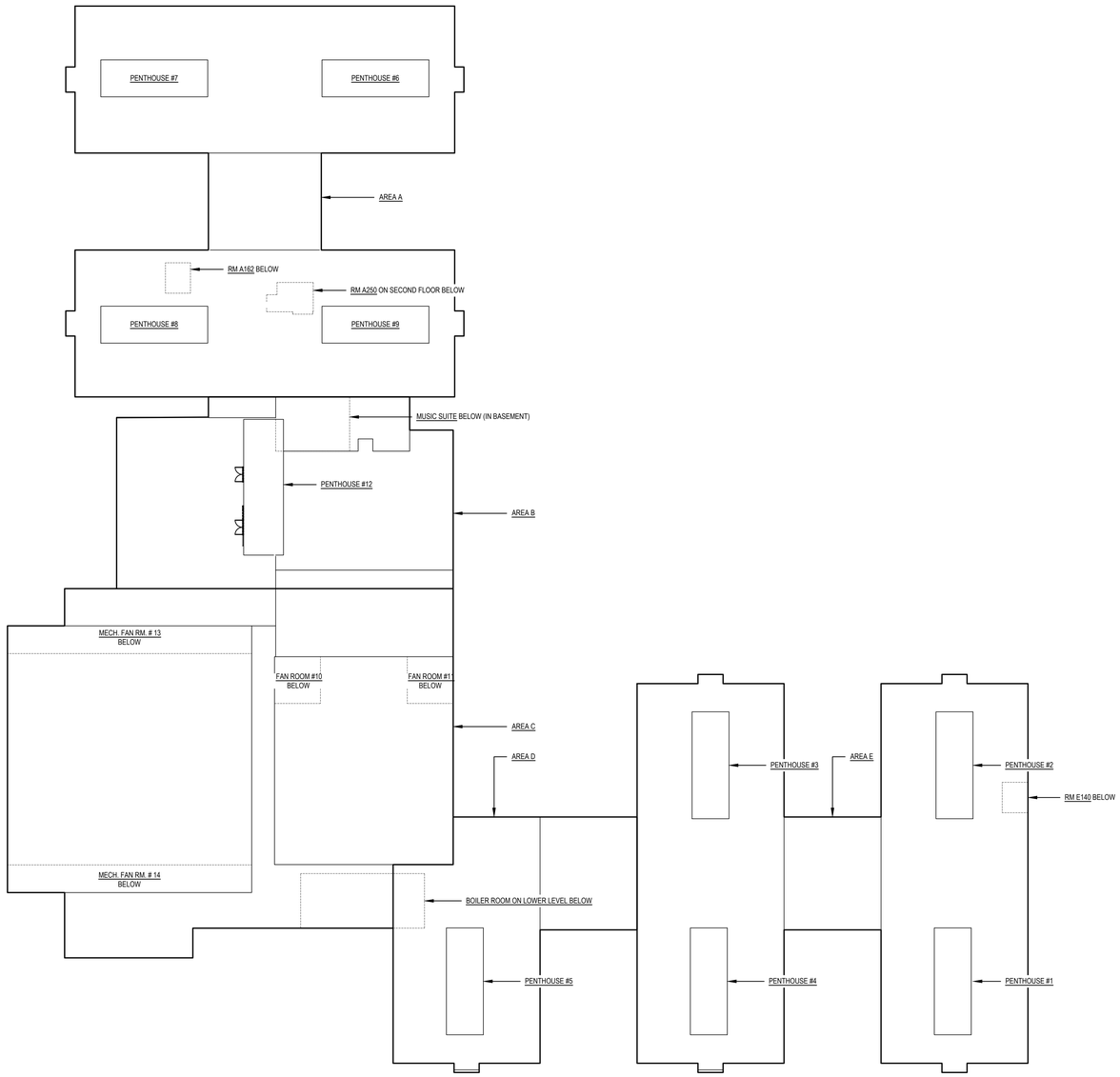
MECHANICAL COVER SHEET

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-000



1
M-001

MECHANICAL PENTHOUSE/FAN ROOM LOCATION PLAN

SCALE: 1/32" = 1'-0"

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SHEET TITLE

MECHANICAL OVERALL PLAN

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M-001

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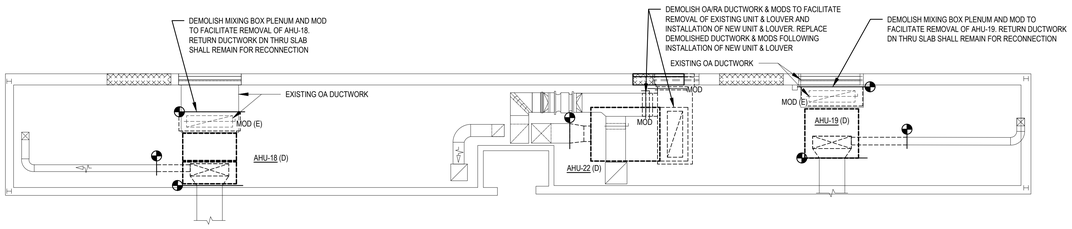
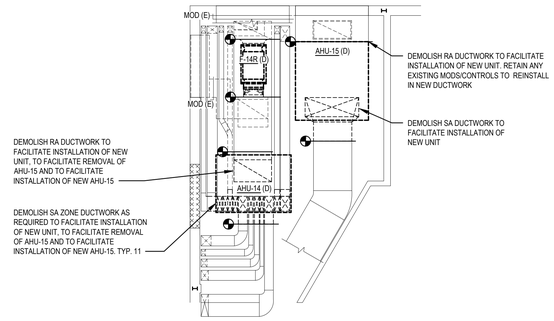


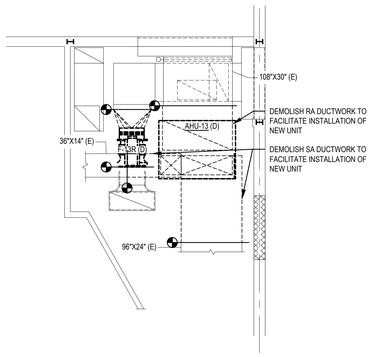
1 MD101 FAN ROOM #13 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



3 MD101 FAN ROOM #10 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



4 MD101 FAN ROOM #11 MECHANICAL DEMOLITION PLAN

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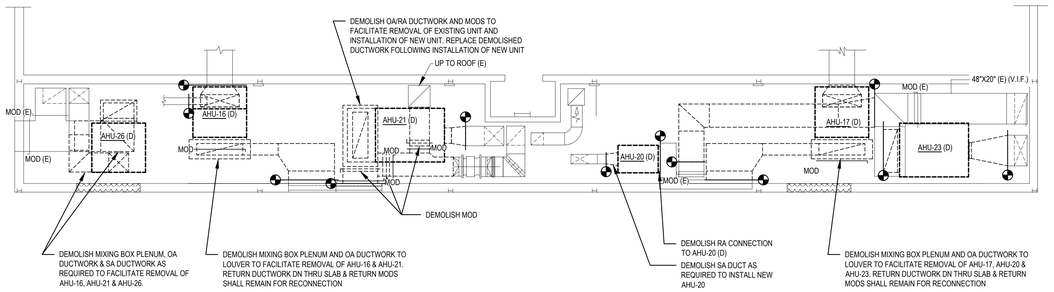
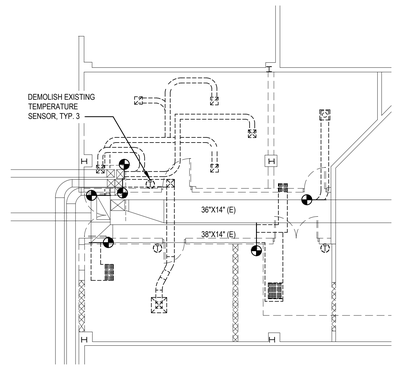


2 MD101 FAN ROOM #14 MECHANICAL DEMOLITION PLAN

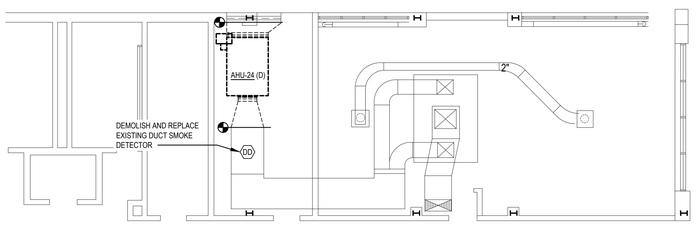
SCALE: 1/8" = 1'-0"



6 MD101 MUSIC SUITE MECH DEMO PLAN

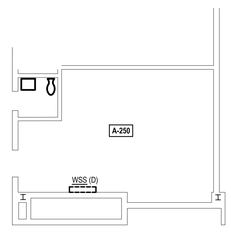
SCALE: 1/8" = 1'-0"

NOTE: SEE M-001 FOR ROOM LOCATIONS



5 MD101 ROOM D104 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



7 MD101 ROOM A250 MECH DEMO PLAN

SCALE: 1/8" = 1'-0"

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INTERIOR MECHANICAL DEMOLITION PLANS

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MD101

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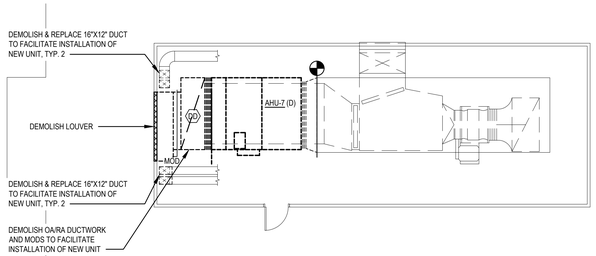
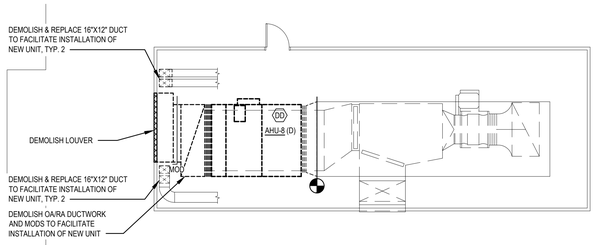


1 MD102 PENTHOUSE #7 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



2 MD102 PENTHOUSE #8 MECHANICAL DEMOLITION PLAN

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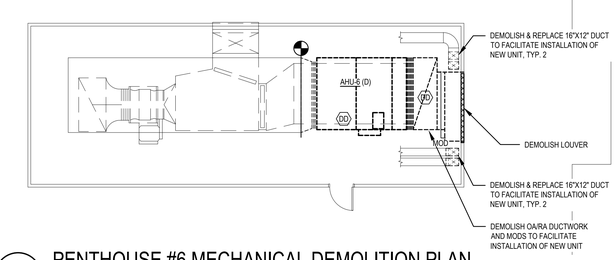

3 MD102 PENTHOUSE #6 MECHANICAL DEMOLITION PLAN

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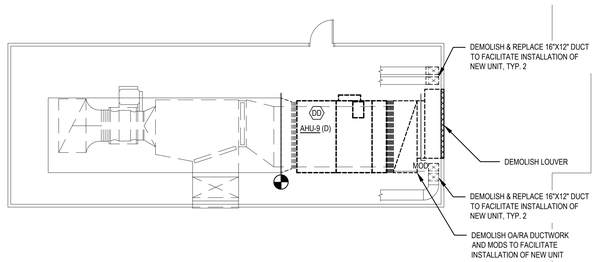
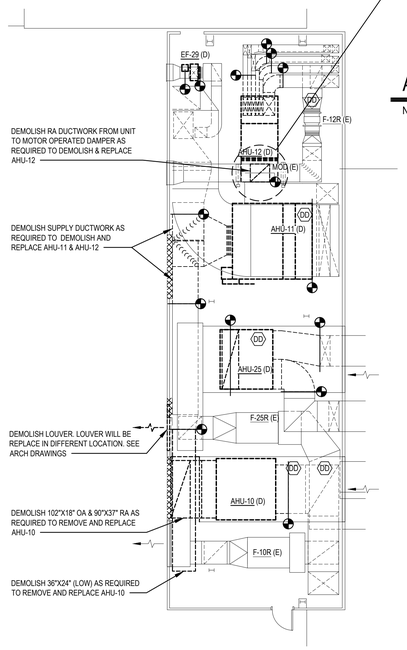


4 MD102 PENTHOUSE #9 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

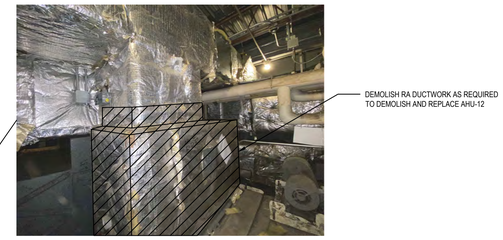
GENERAL MECHANICAL NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES



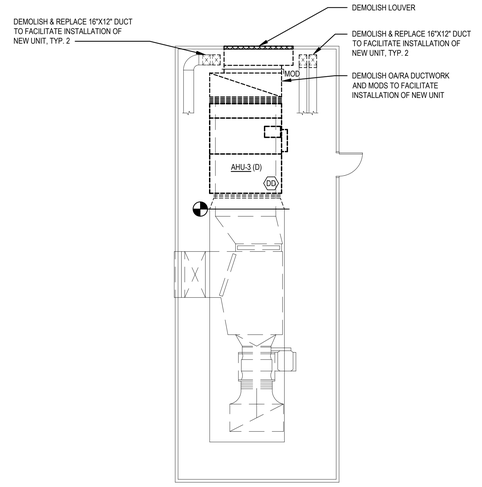
10 MD102 PENTHOUSE #12 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



AHU-12 RETURN DEMOLITION PHOTO

NTS



5 MD102 PENTHOUSE #3 MECHANICAL DEMOLITION PLAN

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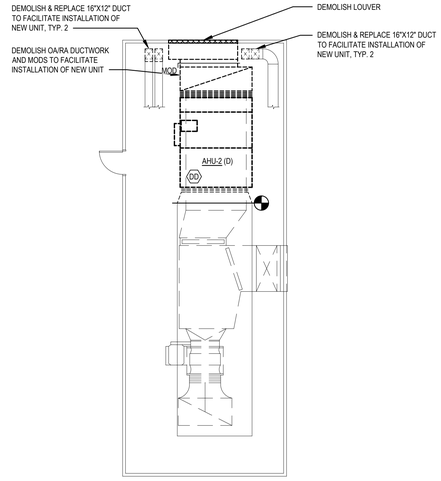
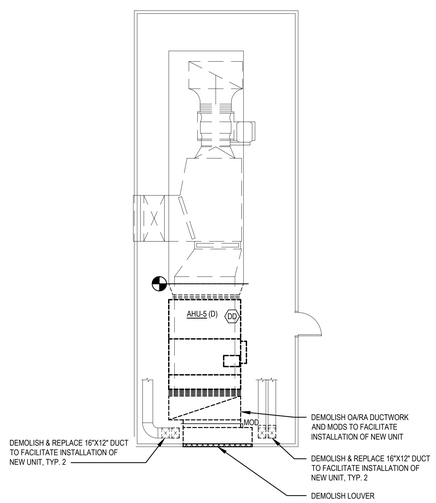


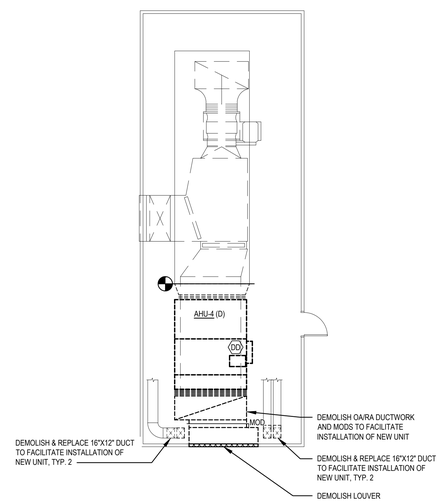
6 MD102 PENTHOUSE #2 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



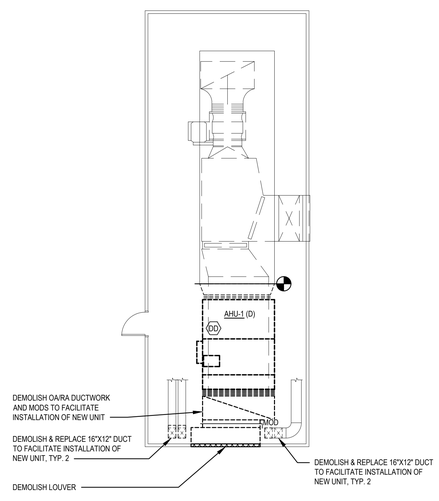
7 MD102 PENTHOUSE #5 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



8 MD102 PENTHOUSE #4 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



9 MD102 PENTHOUSE #1 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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PENTHOUSE MECHANICAL DEMOLITION PLAN

100% CONSTRUCTION DOCUMENTS

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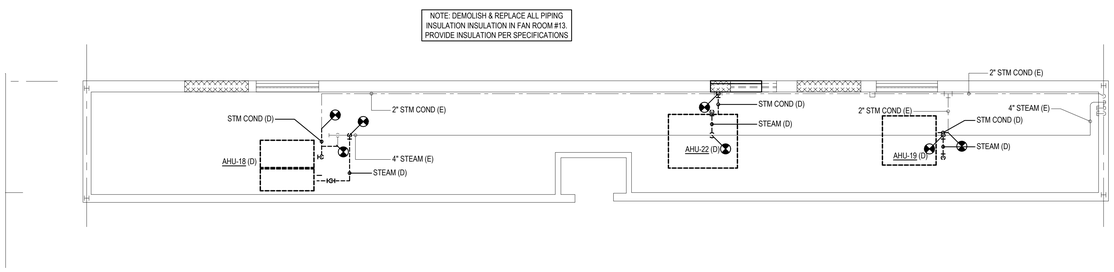
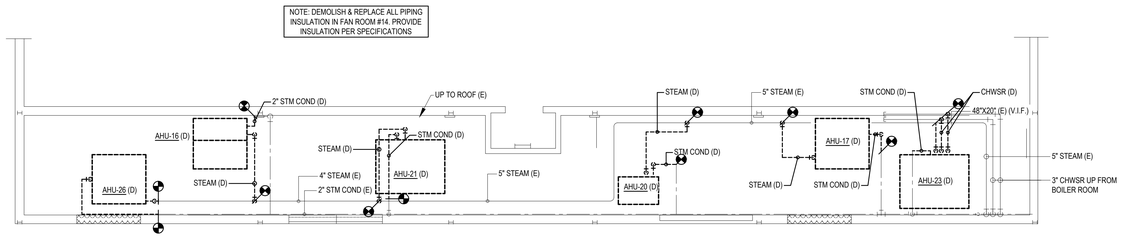


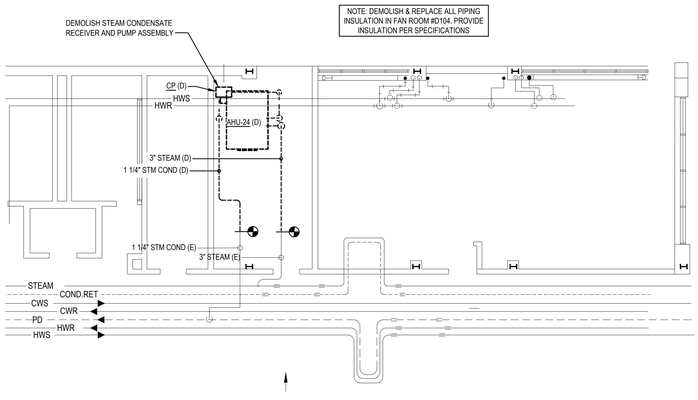
1 MD201 FAN ROOM #13 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



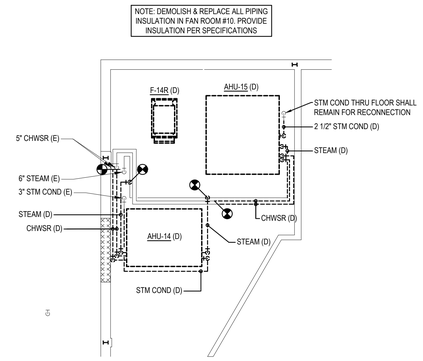
2 MD201 FAN ROOM #14 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



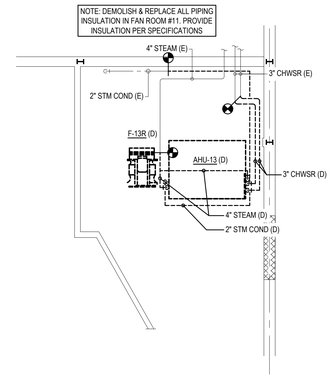
5 MD201 ROOM D104 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



3 MD201 FAN ROOM #10 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

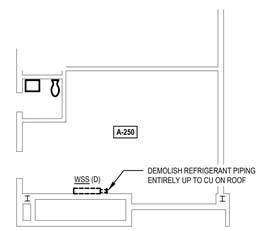


4 MD201 FAN ROOM #11 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

MECHANICAL PIPING DEMOLITION NOTES:

1. SEE M-001 FOR ROOM LOCATIONS
2. REMOVE AND STORE ON SITE ALL STEAM AND CHILLED WATER CONTROL VALVES EXCEPT WHERE NOTED TO PROVIDE NEW STEAM CONTROL VALVES. EXISTING CONTROL VALVES WILL BE REINSTALLED IN NEW STEAM PIPING EXCEPT WHERE NOTED TO PROVIDE NEW STEAM CONTROL VALVES
3. DEMOLISH AHU-13 & AHU-14 STEAM CONTROL VALVES AND PROVIDE NEW



7 MD201 ROOM A250 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

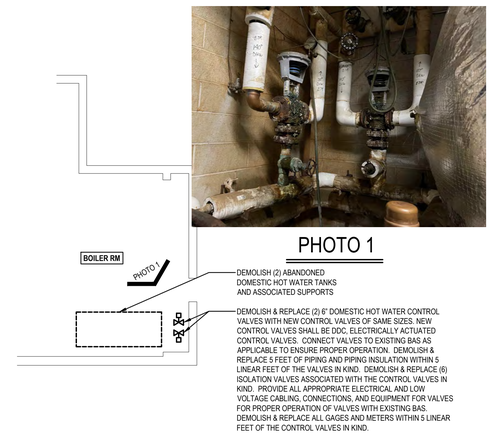
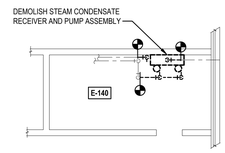


PHOTO 1

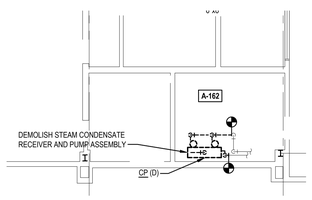
8 MD201 BOILER ROOM DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



9 MD201 ROOM E140 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"



10 MD201 ROOM A162 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

INTERIOR PIPING DEMOLITION PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

MD201

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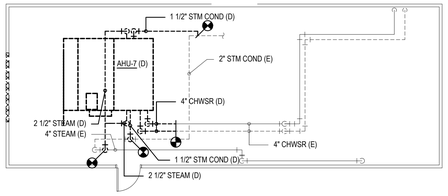
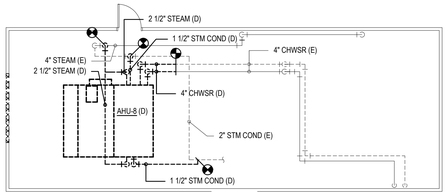


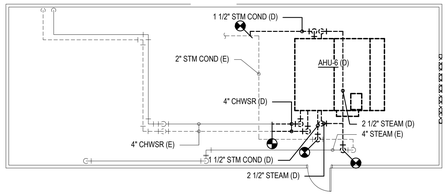
1 MD202 PENTHOUSE #7 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



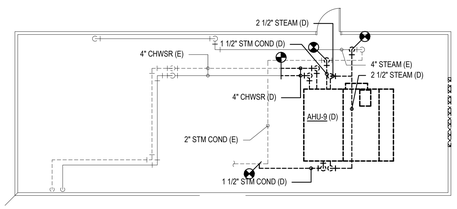
2 MD202 PENTHOUSE #8 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



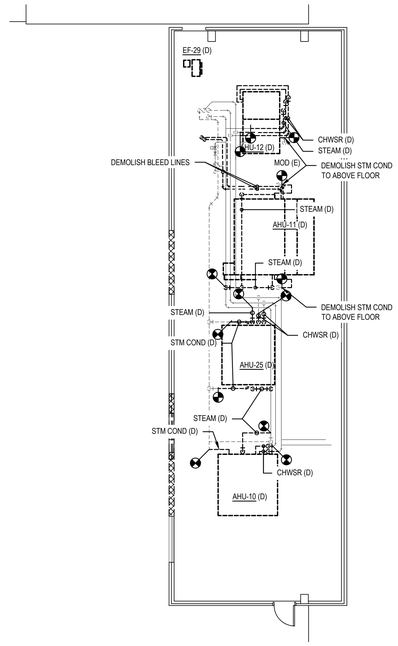
3 MD202 PENTHOUSE #6 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



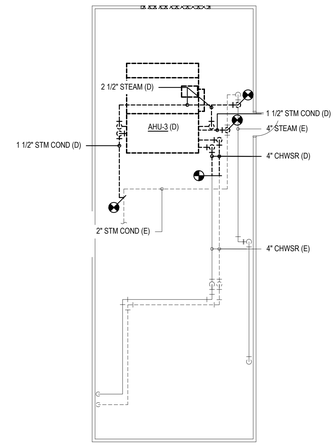
4 MD202 PENTHOUSE #9 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



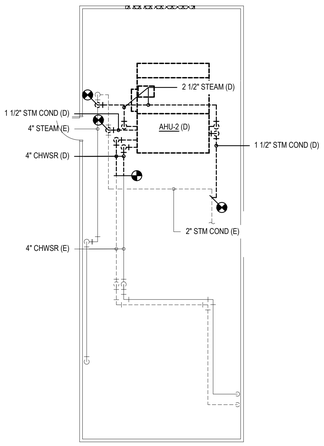
10 MD202 PENTHOUSE #12 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



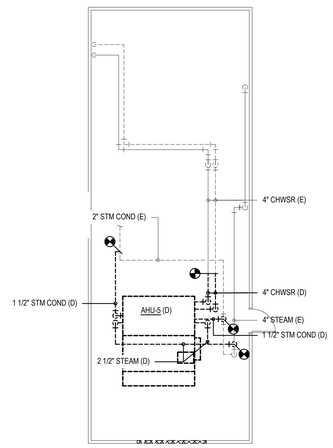
5 MD202 PENTHOUSE #3 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



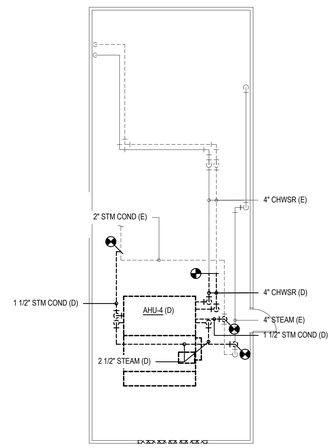
6 MD202 PENTHOUSE #2 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



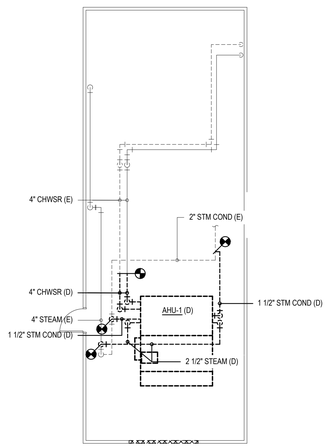
7 MD202 PENTHOUSE #5 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



8 MD202 PENTHOUSE #4 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



9 MD202 PENTHOUSE #1 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

MECHANICAL PIPING DEMOLITION NOTES:

1. SEE M-001 FOR ROOM LOCATIONS
2. REMOVE AND STORE ON SITE ALL STEAM AND CHILLED WATER CONTROL VALVES EXCEPT WHERE NOTED TO PROVIDE NEW STEAM CONTROL VALVES. EXISTING CONTROL VALVES WILL BE REINSTALLED IN NEW PIPING EXCEPT WHERE NOTED TO PROVIDE NEW STEAM CONTROL VALVES
3. DEMOLISH AHU-1, AHU-2, AHU-3, AHU-4, AHU-5, AHU-6, AHU-7, AHU-8, AHU-9, AHU-11 & AHU-25 STEAM CONTROL VALVES AND PROVIDE NEW

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WATERBURY, CT 06705

REVISIONS

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SHEET TITLE

PENTHOUSE PIPING DEMOLITION PLAN

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08/11/2023

DRAWN	CHKD	PROJECT NO.
TMC	DTS	22106

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MD202

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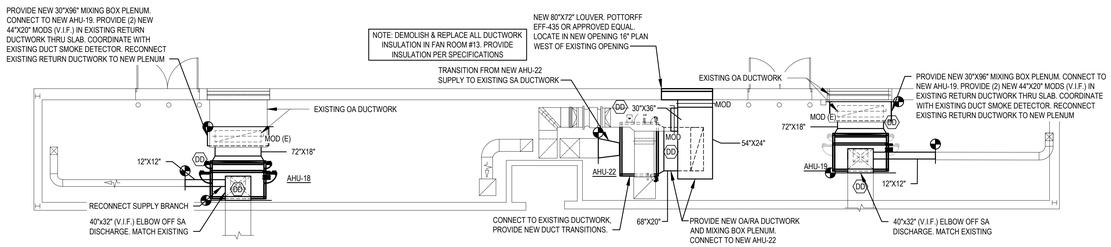
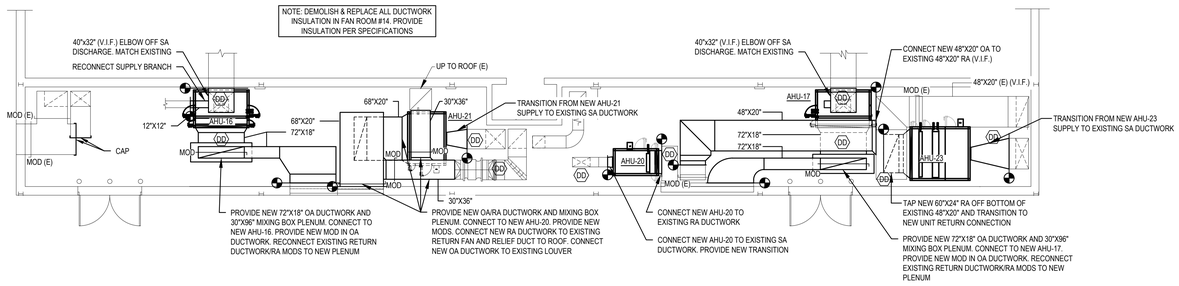


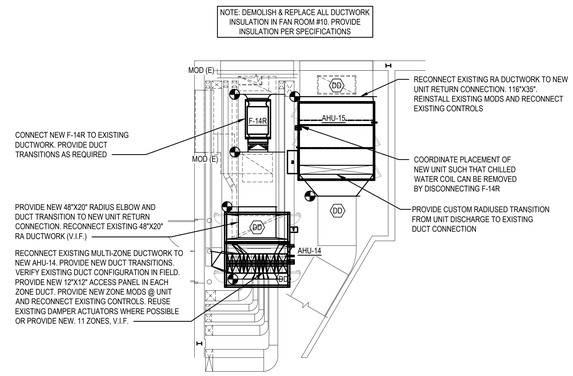
1 M-101 FAN ROOM #13 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



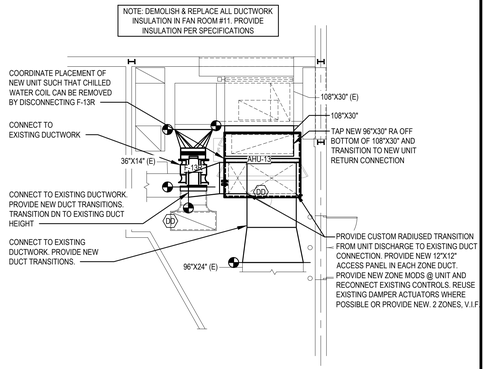
2 M-101 FAN ROOM #14 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



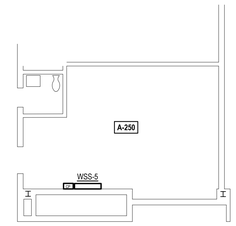
3 M-101 FAN ROOM #10 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



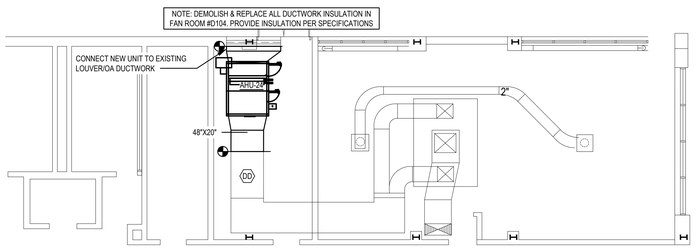
4 M-101 FAN ROOM #11 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



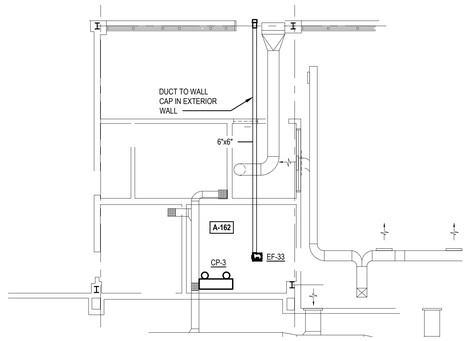
8 M-101 ROOM A250 MECH NEW PLAN

SCALE: 1/8" = 1'-0"



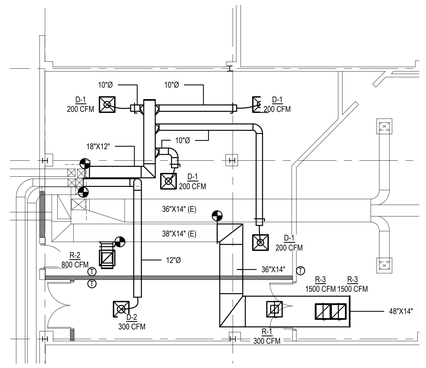
5 M-101 ROOM D104 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



6 M-101 ROOM A162 MECH PLAN

SCALE: 1/8" = 1'-0"



7 M-101 MUSIC SUITE MECH NEW PLAN

SCALE: 1/8" = 1'-0"

MECHANICAL NEW WORK NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE ALL DUCTWORK INSULATION IN FAN ROOMS 10, 11, 13 & 14. DEMOLISH AND REPLACE ALL DUCTWORK INSULATION IN ROOM D104. PROVIDE NEW INSULATION PER SPECIFICATIONS.
3. PROVIDE NEW CUSTOM GALVANIZED STEEL SUPPORT STANDS FOR AHUS 16, 17, 18, 19, 20, 21, 22, & 23. STANDS SHALL BE DESIGNED FOR THE WEIGHT AND DIMENSIONS OF THE NEW UNITS APPROVED IN SHOP DRAWINGS WITH A SAFETY FACTOR OF 2.5. VERIFY FIELD CONDITIONS PRIOR TO FABRICATION TO CLEAR EXISTING DUCTWORK, PIPING, ETC. THE NEW STANDS SHALL MATCH THE HEIGHTS AND BASIC CONFIGURATION OF THE EXISTING STANDS. PROVIDE SUBMITTAL DRAWINGS STAMPED BY A P.E. REGISTERED IN C.T. SEE 11/M-102 FOR EXAMPLE OF EXISTING STAND
4. PROVIDE NEW FLEXIBLE DUCT CONNECTORS AT SUPPLY AND RETURN CONNECTIONS OF ALL NEW UNITS
5. THE CONTRACTOR SHALL VERIFY DIMENSIONS OF THE SPECIFIED NEW UNITS IN THE FIELD PRIOR TO RELEASE OF THE AIR HANDLING UNIT SUBMITTAL. IN THE EVENT OF A CONFLICT WITH EXISTING EQUIPMENT, STRUCTURE, ETC, THE CONTRACTOR SHALL REPORT TO THE ENGINEER FOR DIRECTION.
7. PROVIDE AHU-13 & AHU-14 WITH NEW ZONE DAMPERS. MATCH EXISTING QUANTITY AND GENERAL SIZE OF EXISTING ZONE DUCTWORK. COORDINATE WITH NEW UNIT ZONE OPENING SIZES AND QUANTITIES.

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SHEET TITLE

INTERIOR MECHANICAL NEW WORK PLANS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-101

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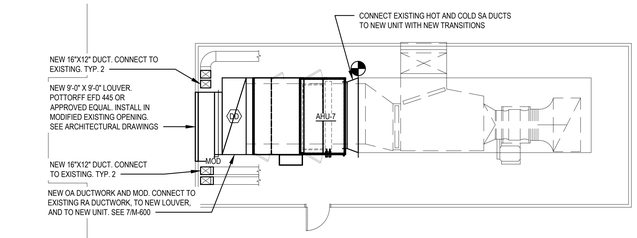
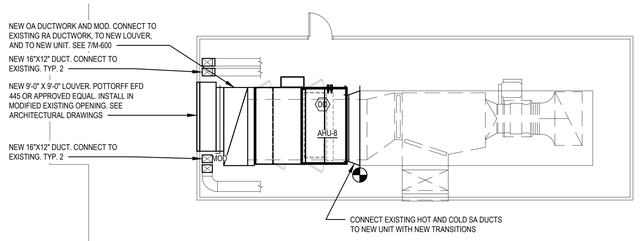


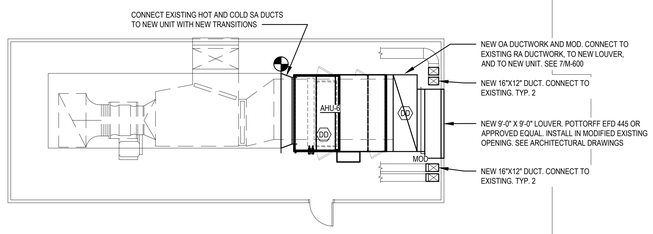
1 M-102 PENTHOUSE #7 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



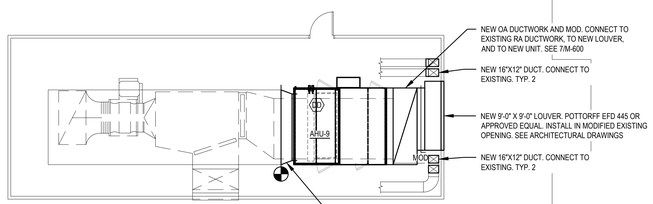
2 M-102 PENTHOUSE #8 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



3 M-102 PENTHOUSE #6 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

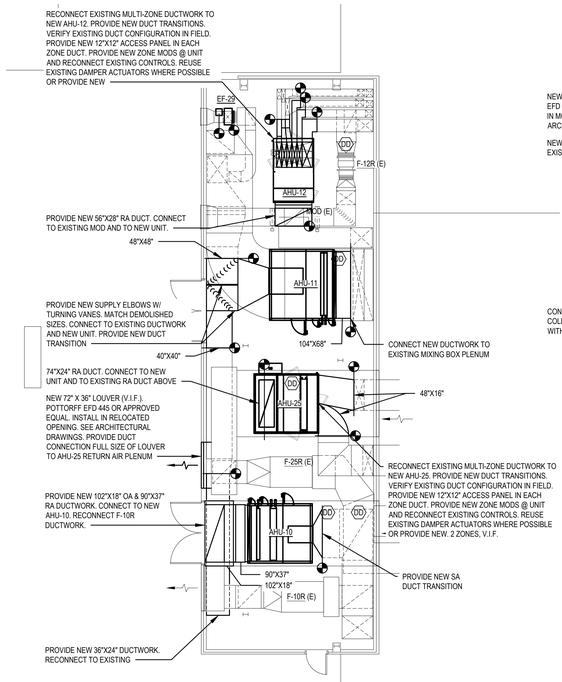


4 M-102 PENTHOUSE #9 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

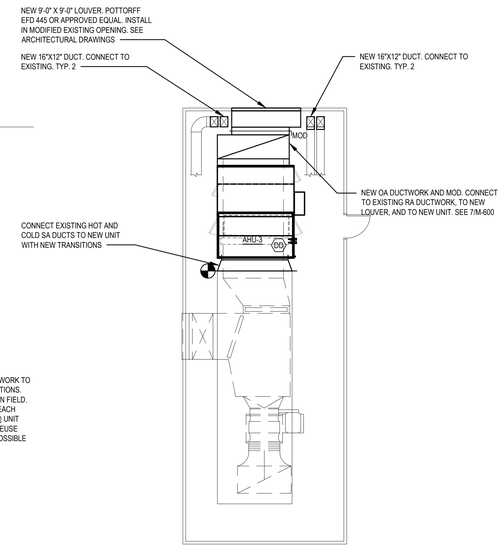
MECHANICAL NEW WORK NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE AND ALL DUCTWORK INSULATION IN ALL PENTHOUSE MECHANICAL ROOMS SHOWN THIS DRAWING. PROVIDE NEW INSULATION PER SPECIFICATIONS.
3. PROVIDE NEW CUSTOM GALVANIZED STEEL SUPPORT STANDS FOR AHUS 1, 2, 3, 4, 5, 6, 7, 8, 9, & 25, STANDS SHALL BE DESIGNED FOR THE WEIGHT AND DIMENSIONS OF THE NEW UNITS APPROVED IN SHOP DRAWINGS WITH A SAFETY FACTOR OF 2.5. VERIFY FIELD CONDITIONS PRIOR TO FABRICATION TO CLEAR EXISTING DUCTWORK, PIPING, ETC. THE NEW STANDS SHALL MATCH THE BASIC CONFIGURATION OF THE EXISTING STANDS. PROVIDE SUBMITTAL DRAWINGS STAMPED BY A P.E. REGISTERED IN C.T. SEE 11/M-102 FOR EXAMPLE OF EXISTING STAND
4. PROVIDE NEW FLEXIBLE DUCT CONNECTORS AT SUPPLY AND RETURN CONNECTIONS OF ALL NEW UNITS
5. VERIFY DIMENSIONS OF THE SPECIFIED NEW UNITS IN THE FIELD PRIOR TO RELEASE OF THE AIR HANDLING UNIT SUBMITTAL. IN THE EVENT OF A CONFLICT WITH EXISTING EQUIPMENT, STRUCTURE, ETC, THE CONTRACTOR SHALL REPORT TO THE ENGINEER FOR DIRECTION.
6. COORDINATE CHILLED WATER COIL PULL CLEARANCE FOR AHUS 1 THRU 9 WITH PENTHOUSE DOORS. IN THE EVENT OF A CONFLICT, SHORTEN LENGTH OF MIXING BOX PLENUM AT THE REAR OF THE UNIT AS LITTLE AS POSSIBLE TO ALLOW THE CHILLED WATER COIL TO BE REMOVED THROUGH THE DOOR.
7. PROVIDE AHU-12 & AHU-25 WITH NEW ZONE DAMPERS. MATCH EXISTING QUANTITY AND GENERAL SIZE OF EXISTING ZONE DUCTWORK. COORDINATE WITH NEW UNIT ZONE OPENING SIZES AND QUANTITIES.



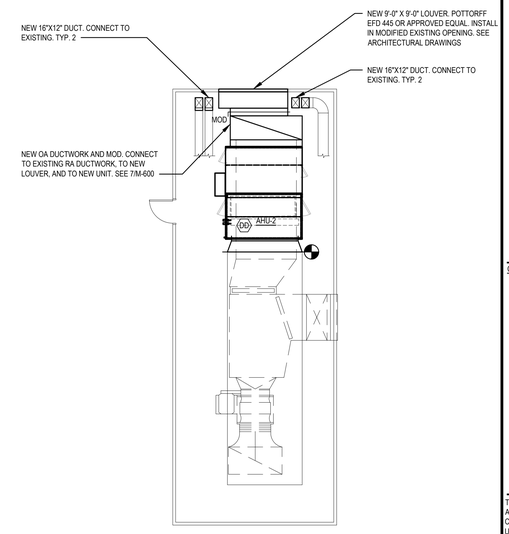
10 M-102 PENTHOUSE #12 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



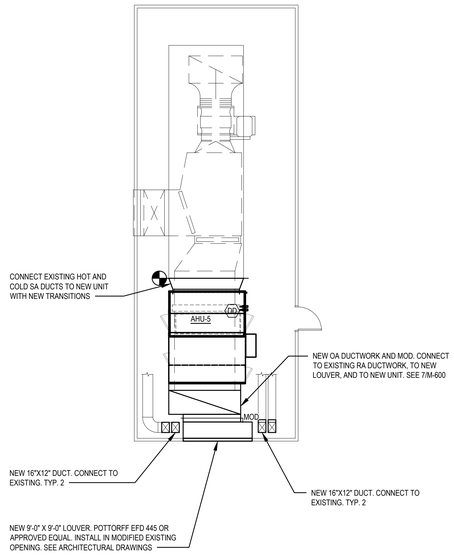
5 M-102 PENTHOUSE #3 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



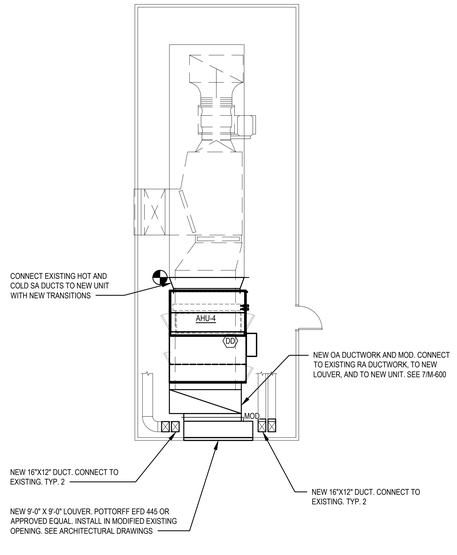
6 M-102 PENTHOUSE #2 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



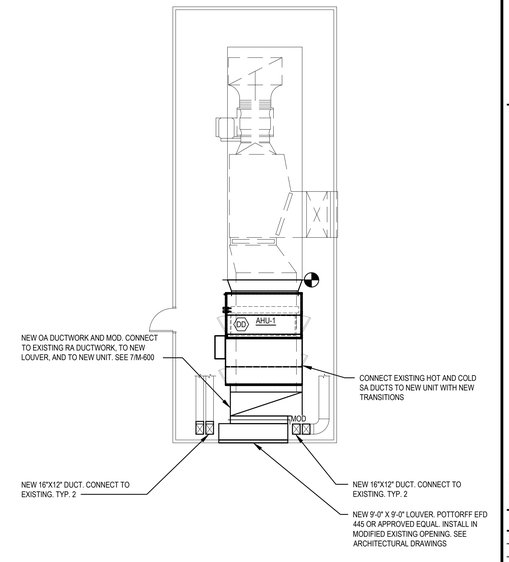
7 M-102 PENTHOUSE #5 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



8 M-102 PENTHOUSE #4 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



9 M-102 PENTHOUSE #1 MECHANICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

11 M-102 PARTIAL EXISTING AHU SUPPORT STAND

SCALE: NTS

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
	-	-

SHEET TITLE

PENTHOUSE MECHANICAL NEW WORK PLAN

100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-102

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8/11/2023 10:22 AM

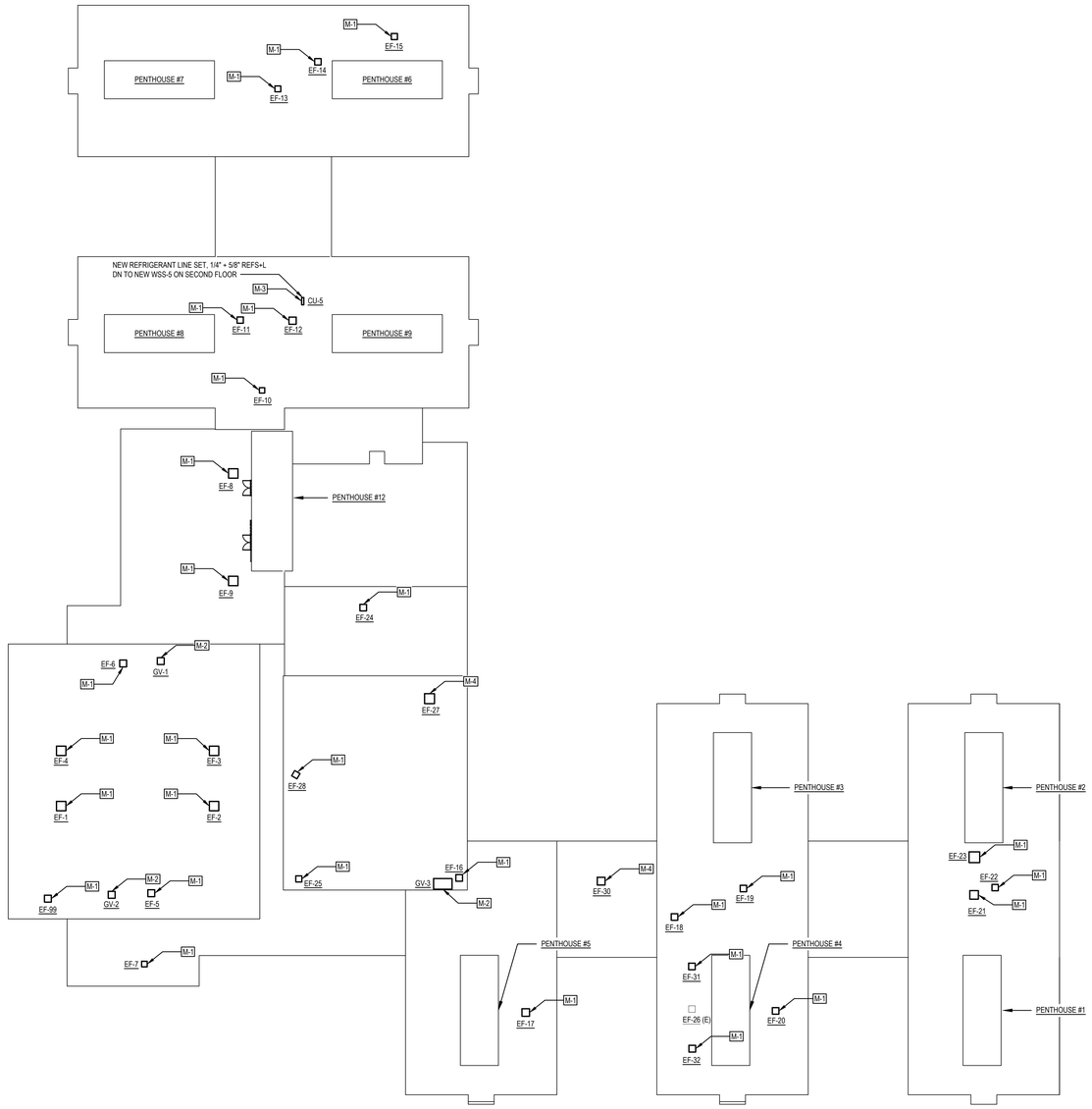
MECHANICAL KEYNOTES:

M-1 DEMOLISH & REPLACE ROOF-MOUNTED EXHAUST FAN AND ASSOCIATED DAMPERS. EXISTING ROOF CURB SHALL REMAIN FOR RE-USE. PROVIDE CURB ADAPTER AND NEW MOTOR OPERATED DAMPER. DAMPER SHALL OPEN WHEN EXHAUST FAN IS ENERGIZED

M-2 DEMOLISH & REPLACE GRAVITY VENTILATOR. PROVIDE COOK MODEL GR OR APPROVED EQUAL. PROVIDE WITH BIRD SCREEN. EXISTING ROOF CURB SHALL REMAIN FOR RE-USE. SEE GRAVITY VENT SCHEDULE FOR SIZES

M-3 DEMOLISH & REPLACE 2 TON DUCTLESS SPLIT HEAT PUMP AND ASSOCIATED EVAPORATOR UNIT. RETAIN EXISTING ROOF CURBS AND ROOF PENETRATION FOR RE-USE.

M-4 DEMOLISH & REPLACE ROOF-MOUNTED EXHAUST FAN AND ASSOCIATED DAMPERS. DEMOLISH AND REPLACE EXISTING ROOF CURB PER DETAIL ON DRAWING M-500. PROVIDE ROOFING AS REQUIRED TO PATCH EXISTING CURB OPENINGS.



1
M-103

ROOF EQUIPMENT REPLACEMENT PLAN

SCALE: 1/32" = 1'-0"

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MARK	DESCRIPTION	DATE
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SHEET TITLE

ROOF MECHANICAL PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

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M-103

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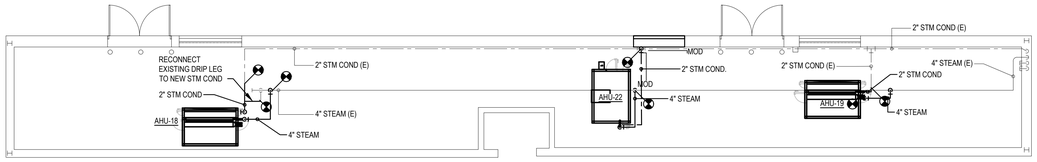
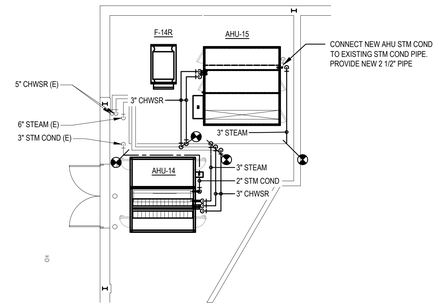


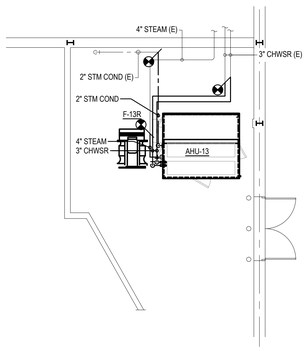
1 M-201 FAN ROOM #13 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



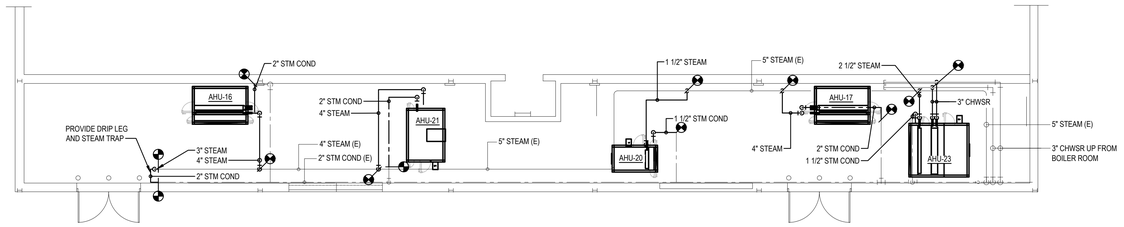
3 M-201 FAN ROOM #10 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



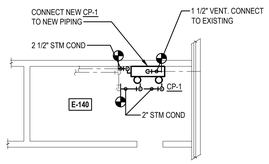
4 M-201 FAN ROOM #11 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



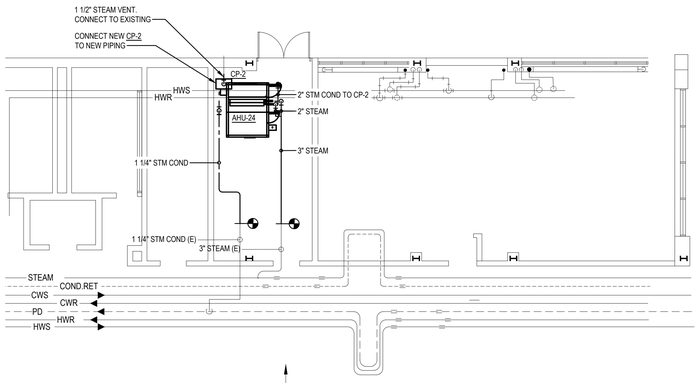
2 M-201 FAN ROOM #14 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



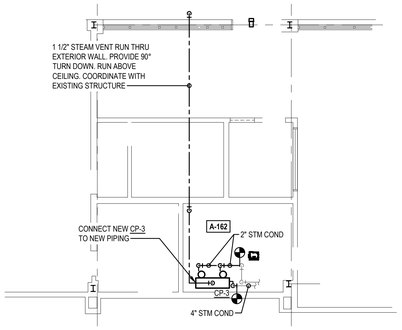
6 M-201 ROOM E140 MECH NEW PLAN

SCALE: 1/8" = 1'-0"



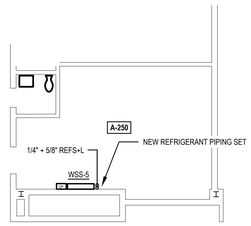
5 M-201 ROOM D104 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



7 M-201 ROOM A162 MECH PLAN

SCALE: 1/8" = 1'-0"



8 M-201 ROOM A250 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

PIPING NEW WORK NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE ALL PIPING INSULATION IN FAN ROOMS 10, 11, 13 & 14. DEMOLISH AND REPLACE ALL PIPING INSULATION IN ROOM D104. PROVIDE NEW INSULATION PER SPECIFICATIONS.
3. DEMOLISH AND REPLACE ALL ISOLATION VALVES AND COOLING CONDENSATE PIPING IN FAN ROOMS 10, 11, 13 & 14. ALL NEW COOLING CONDENSATE PIPING SHALL BE 1 1/4" PVC. PIPE TO NEAREST FLOOR DRAIN
4. PROVIDE NEW CONTROL VALVE DETAILS FOR ALL NEW COILS AS SHOWN ON M-500
5. PROVIDE NEW CONTROL VALVES FOR ALL NEW COILS

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REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

INTERIOR PIPING NEW WORK PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

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M-201

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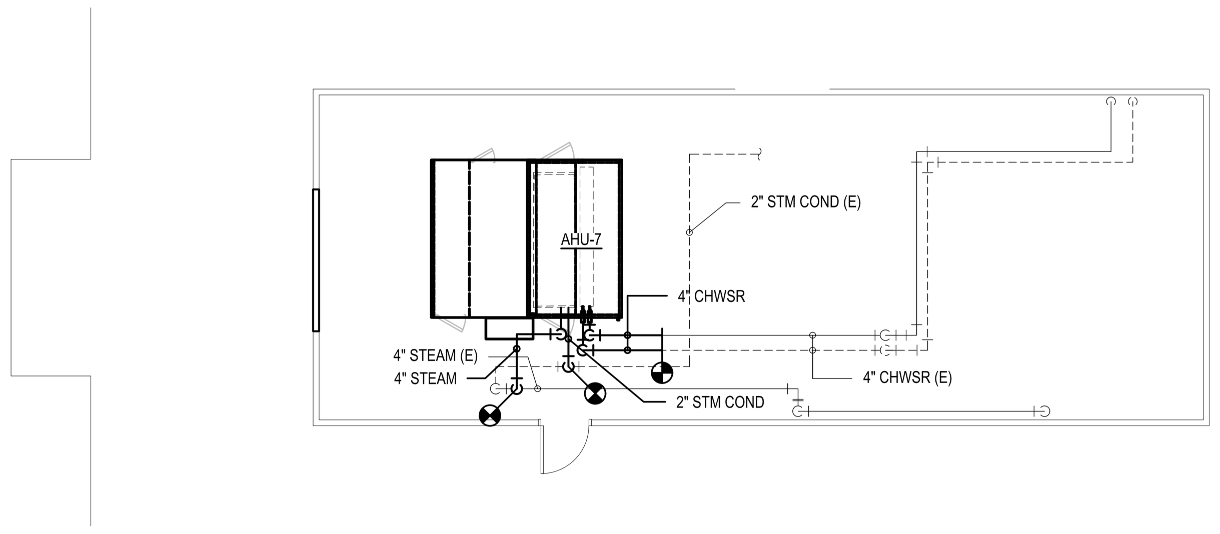
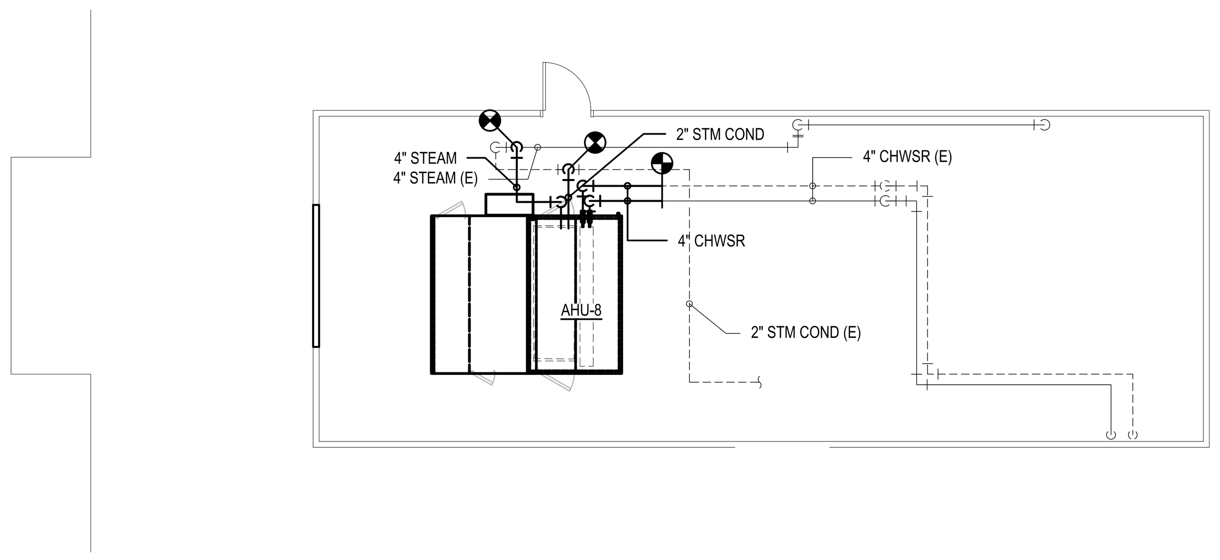
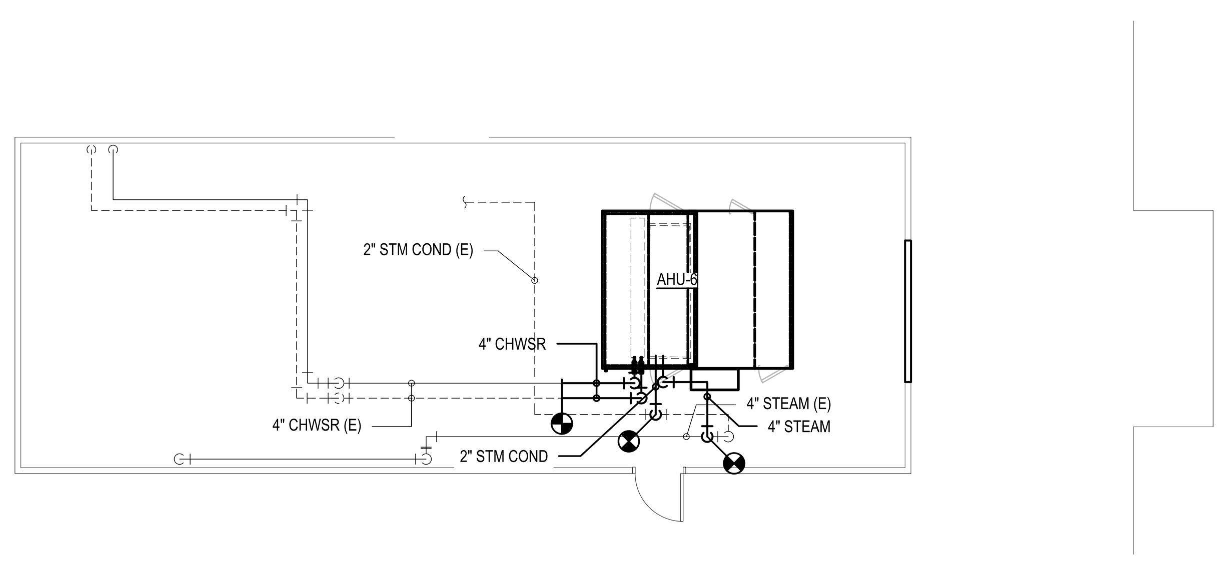


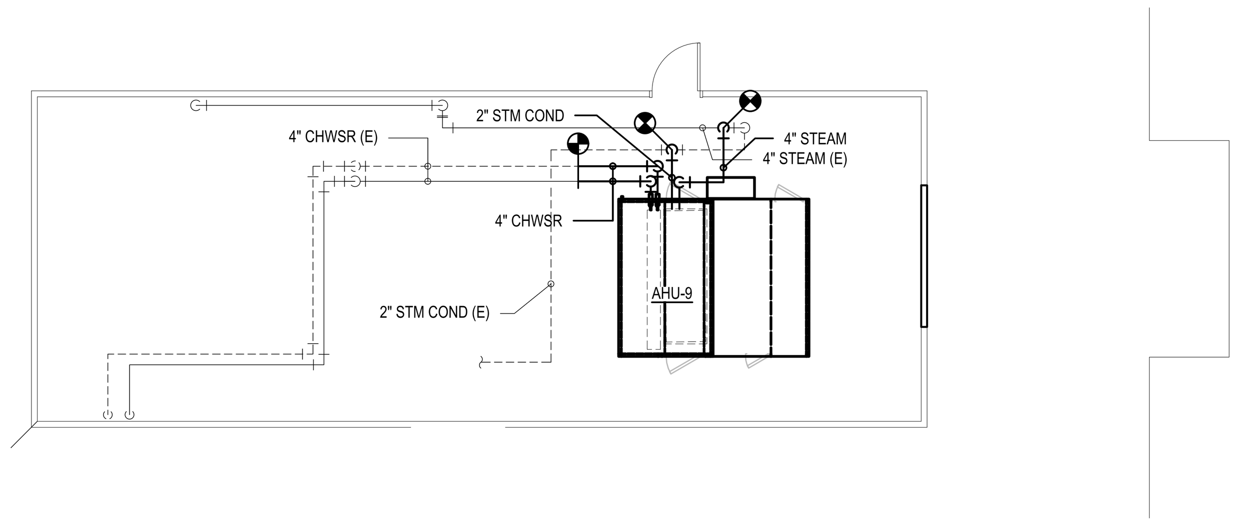
1 / M-202 PENTHOUSE #7 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



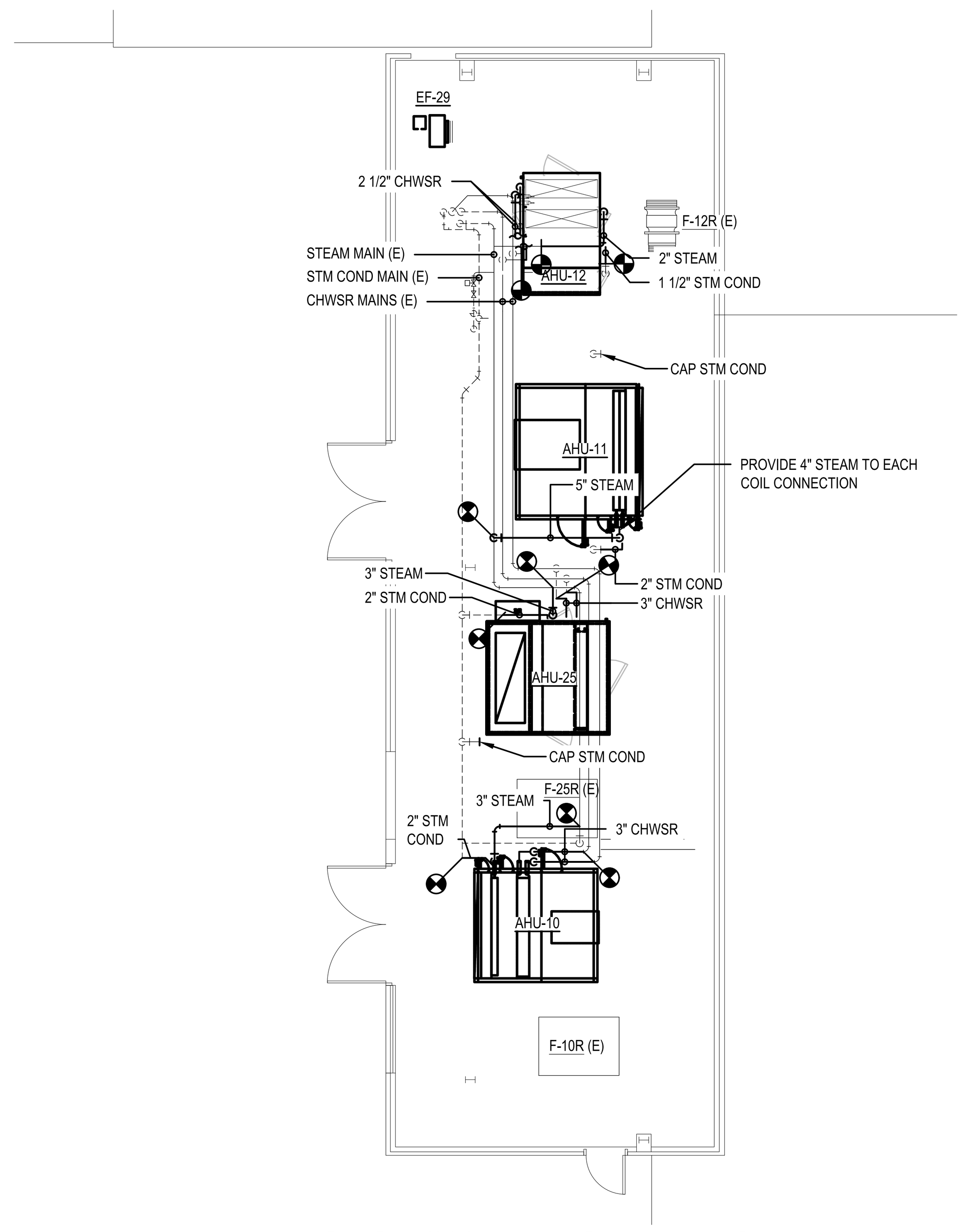
2 / M-202 PENTHOUSE #8 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



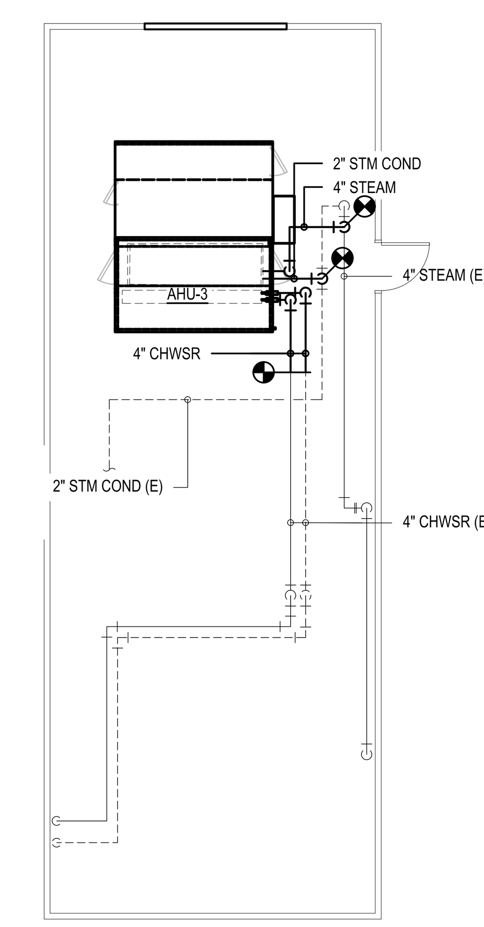
3 / M-202 PENTHOUSE #6 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



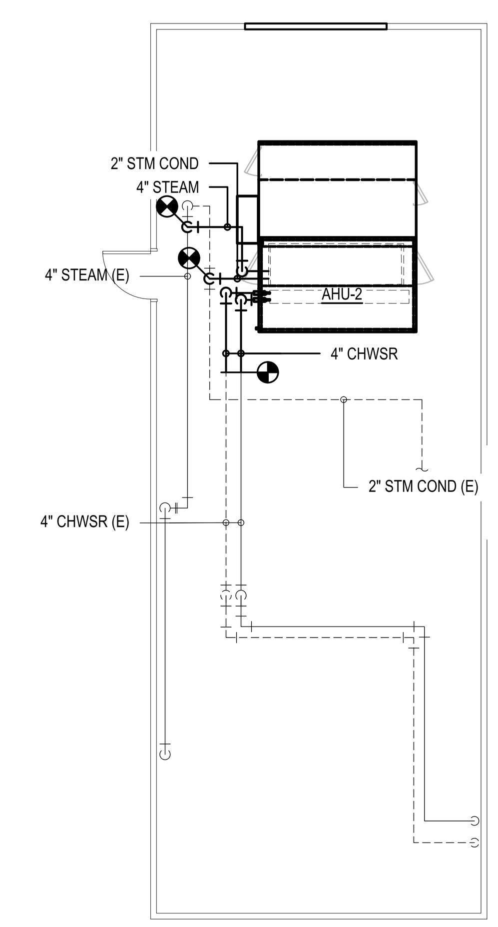
4 / M-202 PENTHOUSE #9 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



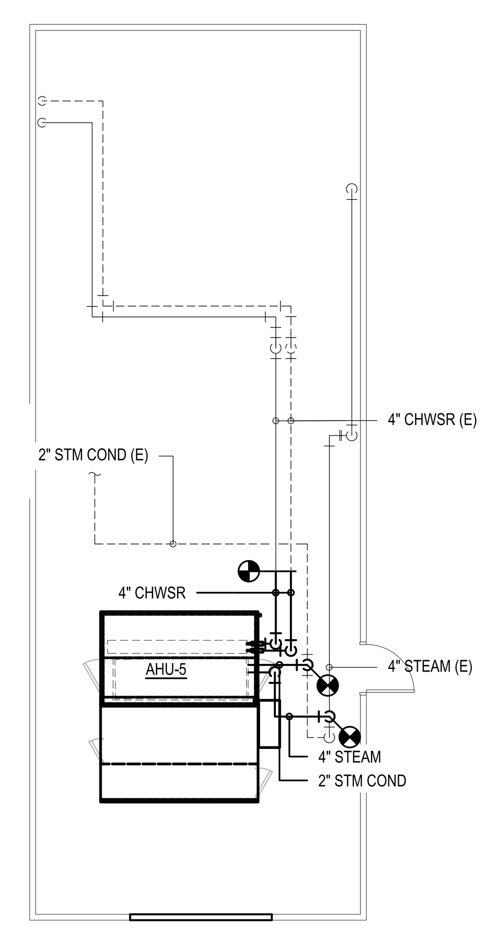
10 / M-202 PENTHOUSE #12 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



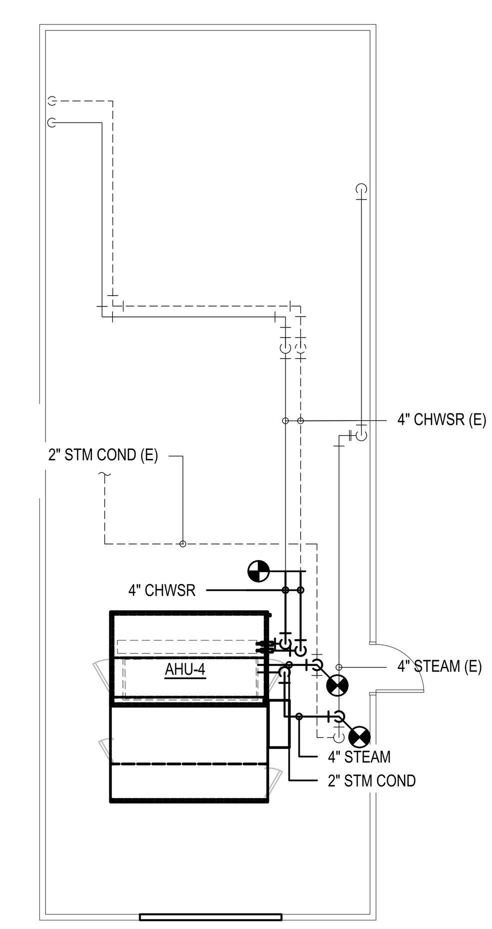
5 / M-202 PENTHOUSE #3 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



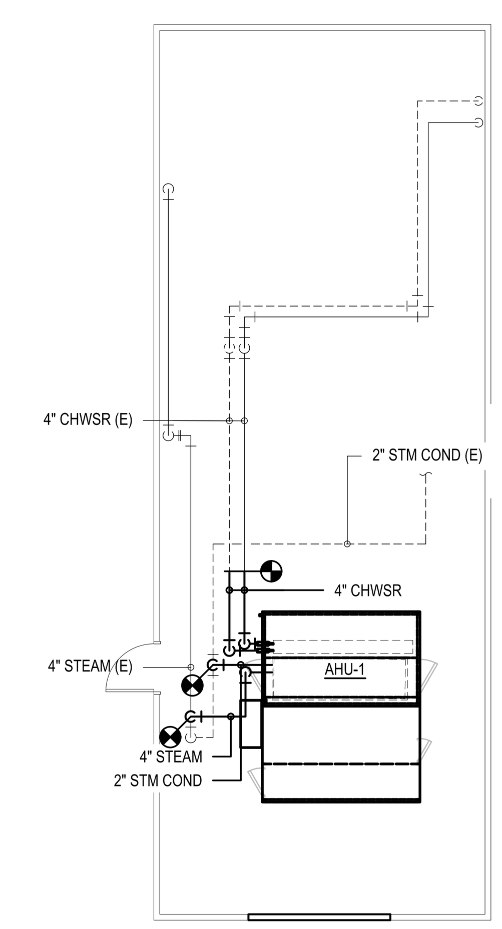
6 / M-202 PENTHOUSE #2 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



7 / M-202 PENTHOUSE #5 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



8 / M-202 PENTHOUSE #4 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"



9 / M-202 PENTHOUSE #1 PIPING NEW WORK PLAN
SCALE: 1/8" = 1'-0"

MECHANICAL NEW WORK NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE ALL PIPING INSULATION IN ALL PENTHOUSE MECHANICAL ROOMS SHOWN THIS DRAWING. PROVIDE INSULATION PER SPECIFICATIONS.
3. DEMOLISH AND REPLACE ALL ISOLATION VALVES AND COOLING CONDENSATE PIPING IN ALL PENTHOUSE MECHANICAL ROOMS SHOWN THIS DRAWING. ALL NEW COOLING CONDENSATE PIPING SHALL BE 1 1/4" PVC. PIPE TO NEAREST FLOOR DRAIN
4. PROVIDE NEW CONTROL VALVE DETAILS FOR ALL NEW COILS AS SHOWN ON M-500
5. PROVIDE NEW CONTROL VALVES FOR ALL NEW COILS

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AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

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SHEET TITLE

PENTHOUSE PIPING
NEW WORK PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-202

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8/11/2023 10:23 AM

AHU - #

AIR HANDLING UNIT SCHEDULE (CHILLED WATER COOLING, STEAM HEATING)

UNIT NUMBER	TYPE	AIRFLOW (CFM)	OA (CFM)	E.S.P (IN H20)	COOLING COIL								HEATING COIL					SUPPLY FAN HP	SUPPLY FAN QTY	ELEC	MFR	MODEL #	AREA SERVED	REMARKS
					EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	SENS MBH	TOTAL MBH	GPM	EWT/LWT	EAT (°F)	LAT (°F)	MBH	STEAM PRESSURE (PSI)	FLOW (LB/HR)							
AHU-1	DOUBLE-DECK MULTI ZONE	30,600	6600	1.5	80	67	54.6	54.3	855	1188	173	42/56	60	101	1352	5	1408	27	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-2	DOUBLE-DECK MULTI ZONE	31,350	6700	2.0	80	67	54.9	54.5	869	1200	173	42/56	60	100	1364	5	1505	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-3	DOUBLE-DECK MULTI ZONE	35,165	6500	1.75	80	67	54.6	54.4	985	1354	173	42/58	60	100	1510	5	1572	39	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-4	DOUBLE-DECK MULTI ZONE	31,950	6600	2.0	80	67	55.0	54.7	879	1210	173	42/56	60	100	1373	5	1429	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-5	DOUBLE-DECK MULTI ZONE	32,210	6500	2.25	80	67	55.1	54.7	884	1213	173	42/56	60	99	1377	5	1433	33	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA D	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-6	DOUBLE-DECK MULTI ZONE	32,020	8000	1.75	80	67	55.0	54.7	881	1210	173	42/56	60	100	1374	5	1430	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-7	DOUBLE-DECK MULTI ZONE	28,945	8300	2.5	80	67	54.1	53.8	825	1161	173	42/55	60	102	1327	5	1380	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-8	DOUBLE-DECK MULTI ZONE	27,350	8000	2.0	80	67	53.6	53.3	796	1133	173	42/55	60	104	1300	5	1353	24	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-9	DOUBLE-DECK MULTI ZONE	30,700	7600	2.0	80	67	54.7	54.3	857	1190	173	42/56	60	101	1354	5	1409	27	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-10	SINGLE ZONE	12,000	TBD	0.75	80	67	55.4	53.8	319	476	72	42/55	60	117	745	5	753	10	1	460/3/60	JCI	XTI-51X93	MULTI-PURPOSE ROOM	
AHU-11	SINGLE ZONE	22,000	TBD	1.5	-	-	-	-	-	-	-	-	0	104	2466	5	2511	15	1	460/3/60	JCI	XTI-75X111	POOL	PROVIDE DUAL INLINE STEAM COILS. COIL PERFORMANCE LISTED IS TOTAL PERFORMANCE
AHU-12	DOUBLE-DECK MULTIZONE	6700	1575	2.0	80	67	55.0	54.6	185	255	39	42/55	60	103	309	5	321	9	1	460/3/60	NORTEK	VENTROL CUSTOM	MIDDLE SCHOOL MUSIC SUITE	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-13	DOUBLE-DECK MULTIZONE	18,000	TBD	2.0	80	67	54.4	53.8	507	724	108	42/55	60	100	789	5	821	27	1	460/3/60	NORTEK	VENTROL CUSTOM	AUDITORIUM	PROVIDE FILTER ACCESS AT REAR OF UNIT. PROVIDE REMOTE MOUNT ELECTRICAL PANEL
AHU-14	DOUBLE-DECK MULTIZONE	14,000	1950	2.0	80	67	55.2	54.1	376	543	84	42/55	60	92.5	491	5	498	20	1	460/3/60	JCI	XTI-54X102	HIGH SCHOOL MUSIC SUITE	
AHU-15	SINGLE ZONE	12,000	TBD	2.0	80	67	51.6	51.4	374	557	115	42/52	60	109	635	5	661	12	1	460/3/60	NORTEK	VENTROL CUSTOM	CAFETERIA	
AHU-16	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	NOTE: PROVIDE AHU-16 THRU 19 WITH BLANK SECTION FOR FUTURE COOLING COIL. FANS ARE SIZED TO ACCOUNT FOR P.D. THROUGH FUTURE COOLING COIL
AHU-17	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-18	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-19	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-20	SINGLE ZONE	3000	TBD	0.75	-	-	-	-	-	-	-	-	50	103	171	5	176	1.5	1	460/3/60	JCI	XTI-39X42	GYM LOBBY	
AHU-21	SINGLE ZONE	8000	TBD	1.5	-	-	-	-	-	-	-	-	0	91	787	5	787	10	1	460/3/60	JCI	XTI-42X84	LOCKER ROOMS	
AHU-22	SINGLE ZONE	8000	TBD	1.5	-	-	-	-	-	-	-	-	0	91	787	5	787	10	1	460/3/60	JCI	XTI-42X84	LOCKER ROOMS	
AHU-23	SINGLE ZONE	8000	550	0.75	80	67	55.4	53.7	212	319	48	42/55	50	103	459	5	469	10	1	460/3/60	JCI	XTI-42X84	AUDITORIUM LOBBY	
AHU-24	SINGLE ZONE	7000	TBD	0.5	-	-	-	-	-	-	-	-	0	95	711	5	726	7.5	1	460/3/60	JCI	XTI-36X66	STUDENT KITCHEN	PROVIDE DUAL INLINE STEAM COILS. COIL PERFORMANCE LISTED IS TOTAL PERFORMANCE
AHU-25	DOUBLE-DECK MULTIZONE	10,000	2200	2.0	80	67	54.0	53.6	286	407	81	42/52	60	110	549	5	571	12	1	460/3/60	NORTEK	VENTROL CUSTOM	THEATRE	PROVIDE TOP RETURN CONNECTION AND FILTER BOX

NOTE: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL UNITS WITH G90 GALVANIZED STEEL DOUBLE WALL CONSTRUCTION, MIN. 2" FOAM INSULATION. PROVIDE ALL CUSTOM (NORTEK) UNITS WITH FANWALL FANS. PROVIDE ALL JCI UNITS WITH AIRFOIL FANS. PROVIDE AHU-1 THRU AHU-9 WITH STAINLESS STEEL COOLING SECTION. PROVIDE ALL FANS WITH VARIABLE FREQUENCY DRIVES (EXCEPT WHERE VFDS ARE TO BE REUSED; SEE ELECTRICAL DRAWINGS). VFDS TO CONFORM TO SPECIFICATION SECTION 26 29 23. VFDS TO BE INSTALLED BY ELECTRICAL CONTRACTOR. ALL UNITS SHALL BE SHIPPED KNOCKDOWN AT SHIPPING SPLITS TO FACILITATE PASSAGE THROUGH NEW DOORS OR LOUVER OPENINGS. CONTRACTOR IS RESPONSIBLE FOR FIELD-ASSEMBLING UNITS. CONTRACTOR TO CONFIRM PRIOR TO RELEASE OF EQUIPMENT IF CUSTOM (NORTEK) UNITS REQUIRE ADDITIONAL KNOCKDOWN AND FIELD ASSEMBLY. PROVIDE JCI UNITS WITH INTERNAL SPRING ISOLATORS WITH 2" DEFLECTION. INSTALL DUCT DETECTORS IN SUPPLY SECTION OF ALL MULTI-ZONE AIR HANDLING UNITS. MAXIMUM 1% AIR LEAKAGE AT +/- 1" OF INTERNAL STATIC PRESSURE. MAXIMUM L/240 PANEL DEFLECTION AT +/- 8" OF INTERNAL STATIC PRESSURE. PROVIDE DOUBLE WALL HINGED ACCESS DOORS WITH DOUBLE PANE VIEWING PORTS AND TEST PORTS. PROVIDE LED LIGHTING IN ALL ACCESS SECTIONS. PROVIDE GFCI CONVENIENCE OUTLET ON THE EXTERIOR OF THE SUPPLY FAN SECTION. PROVIDE MAGNEHELIC FILTER GAUGE. CHILLED WATER COIL SHALL HAVE 5/8" TUBES WITH 0.035" WALL THICKNESS. CHILLED WATER COIL CASING, COIL SUPPORTS, BULKHEAD AND DRAIN PAN SHALL BE STAINLESS STEEL CONSTRUCTION. PROVIDE FACTORY MOUNTED AEGIS SHAFT GROUNDING RING AND INVERTER DRIVE FOR SUPPLY FAN. REMOTE VFD TO BE PROVIDED BY ELECTRICAL CONTRACTOR AS SPECIFIED. CONTROLS SHALL BE FIELD FURNISHED AND INSTALLED BY THE CONTROLS CONTRACTOR.

NOTE: THE CONTRACTOR SHALL PERFORM PRE-DEMOLITION TESTING OF AIR FLOW, STEAM FLOW AND WATER FLOW AND STATIC PRESSURES FOR ALL AIR HANDLING UNITS. THE SYSTEM SHALL BE IN OCCUPIED MODE WITH THE AIR HANDLING UNITS COMMANDED TO 100% SETPOINT. TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS. PROVIDE REPORT TO ENGINEER FOR REVIEW PRIOR TO AIR HANDLING UNIT SUBMITTAL.

F - #

FAN SCHEDULE

UNIT NUMBER	LOCATION	CFM	ESP	DRIVE	ELECTRIC	POWER (HP)	MOUNT	MANUFACTURER	MODEL	REMARKS
F-13R	FAN RM #11	15,000	0.5	BELT	460/3/60	2	FLOOR	COOK	270TMX	
F-14R	FAN RM #10	11,000	0.5	BELT	460/3/60	2	FLOOR	COOK	270TMX	

NOTE: PROVIDE FANS AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL FANS WITH VARIABLE FREQUENCY DRIVES. VFDS TO CONFORM TO SPECIFICATION SECTION 26 29 23. VFDS TO BE INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECTRICAL PLANS. PROVIDE ALL FANS WITH FLEXIBLE CONNECTIONS AT INLET AND OUTLET AND HOUSED SPRING FLOOR ISOLATORS WITH MIN. 1" DEFLECTION.

EF - #

EXHAUST FAN SCHEDULE

UNIT NUMBER	LOCATION	TYPE	CFM	ESP	DRIVE	ELECTRIC	POWER (HP)	MOUNT	MANUFACTURER	MODEL	REMARKS
EF-1	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-2	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-3	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-4	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-5	ROOF	CENTRIFUGAL DNBLAST	2650	0.375	DIRECT	460/3/60	3/4	CURB	COOK	150C17D VF2	
EF-6	ROOF	CENTRIFUGAL DNBLAST	2200	0.375	DIRECT	460/3/60	1/2	CURB	COOK	150C17D VF	
EF-7	ROOF	CENTRIFUGAL DNBLAST	1640	0.25	DIRECT	115/1/60	1/4	CURB	COOK	150C17D VF	
EF-8	ROOF	CENTRIFUGAL DNBLST	11,000	0.125	BELT	460/3/60	1 1/2	CURB	COOK	365C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-9	ROOF	CENTRIFUGAL DNBLST	11,000	0.125	BELT	460/3/60	1 1/2	CURB	COOK	365C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-10	ROOF	CENTRIFUGAL DNBLAST	3400	0.25	DIRECT	277/1/60	3/4	CURB	COOK	165C17D VF	
EF-11	ROOF	CENTRIFUGAL DNBLAST	6100	0.25	DIRECT	460/3/60	3	CURB	COOK	195C17D VF2	
EF-12	ROOF	CENTRIFUGAL DNBLAST	7750	0.25	DIRECT	460/3/60	5	CURB	COOK	195C17D VF2	
EF-13	ROOF	CENTRIFUGAL DNBLAST	2450	0.25	DIRECT	115/1/60	1/2	CURB	COOK	150C17D VF	
EF-14	ROOF	CENTRIFUGAL DNBLAST	2500	0.25	DIRECT	277/1/60	1/2	CURB	COOK	150C17D VF	
EF-15	ROOF	CENTRIFUGAL DNBLAST	800	0.125	DIRECT	115/1/60	1/4	CURB	COOK	100C17DEC	
EF-16	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	
EF-17	ROOF	CENTRIFUGAL DNBLAST	1650	0.125	DIRECT	115/1/60	1/2	CURB	COOK	120C17DEC	
EF-18	ROOF	CENTRIFUGAL DNBLAST	3000	0.25	DIRECT	460/3/60	3/4	CURB	COOK	165C17D VF2	
EF-19	ROOF	CENTRIFUGAL DNBLAST	1350	0.25	DIRECT	115/1/60	1/4	CURB	COOK	120C17D VF	
EF-20	ROOF	CENTRIFUGAL DNBLAST	800	0.125	DIRECT	115/1/60	1/4	CURB	COOK	100C17DEC	
EF-21	ROOF	CENTRIFUGAL DNBLAST	5200	0.25	DIRECT	460/3/60	2	CURB	COOK	195C17D VF2	
EF-22	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	
EF-23	ROOF	CENTRIFUGAL DNBLAST	6200	0.25	DIRECT	460/3/60	3	CURB	COOK	195C17D VF2	
EF-24	ROOF	CENTRIFUGAL DNBLAST	1900	0.125	DIRECT	115/1/60	1/4	CURB	COOK	150C17D VF	
EF-25	ROOF	CENTRIFUGAL DNBLAST	850	0.125	DIRECT	115/1/60	1/8	CURB	COOK	135C17D VF	
EF-26	-	-	-	-	-	-	-	-	-	-	NOT USED
EF-27	ROOF	CENTRIFUGAL UPBLAST	8000	0.5	DIRECT	460/3/60	5	CURB	COOK	195R17D VF2	PROVIDE WITH NEW 16" ROOF CURB & HINGED BASE
EF-28	ROOF	CENTRIFUGAL DNBLAST	1200	0.25	DIRECT	115/1/60	1/6	CURB	COOK	120C17D VF	
EF-29	PENTHOUSE #12	CENTRIFUGAL BLOWER	2500	0.25	DIRECT	460/3/60	1/2	FLOOR	COOK	180CPS VF2	CONTRACTOR TO VERIFY FLOW ARRANGEMENT AND DIRECTION
EF-30	ROOF	CENTRIFUGAL UPBLAST	7500	0.5	DIRECT	460/3/60	5	ROOF	COOK	195R17D VF2	PROVIDE WITH NEW ROOF CURB & HINGED BASE
EF-31	ROOF	LABORATORY TUBULAR CENTRIFUGAL INLINE	1600	1.75	DIRECT	460/3/60	3	ROOF	COOK	150TCNHBLE08	PROVIDE WITH NEW ROOF CURB, PHENOLIC EPOXY COATING AND DISCHARGE NOZZLE. OVERALL HEIGHT 10'
EF-32	ROOF	LABORATORY TUBULAR CENTRIFUGAL INLINE	1600	1.75	DIRECT	460/3/60	3	ROOF	COOK	150TCNHBLE08	PROVIDE WITH NEW ROOF CURB, PHENOLIC EPOXY COATING AND DISCHARGE NOZZLE. OVERALL HEIGHT 10'
EF-33	A162	CEILING	100	0.25	DIRECT	115/1/60	0.25A	CEILING		GCVF-100	PROVIDE W/ WALL CAP & INTEGRATED BACKDRAFT DAMPER
EF-99	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	FIRING RANGE RELIEF

NOTES: PROVIDE FANS AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL FANS EXCEPT EF-1,2,3,4,8 & 9 WITH EC MOTORS. PROVIDE FANS EF-1,2,3,4,8 & 9 WITH STANDARD MOTORS. PROVIDE EC MOTOR UNITS WITH UNIT MOUNTED SPEED ADJUSTMENT FOR BALANCING. PROVIDE ALL UNITS WITH CURB CAP ADAPTER, ALUMINUM BIRD SCREEN, AND NEW BACKDRAFT DAMPER IN EXISTING CURB. PROVIDE TIE-IN TO EXISTING BAS FOR OCCUPANCY SCHEDULING AND STATUS MONITORING. CONTRACTOR TO VERIFY EXISTING CURB DIMENSIONS IN FIELD.

WSS - #
CU - #

WALL MOUNTED DUCTLESS FAN COIL SCHEDULE

UNIT NUMBER (INDOOR/OUTDOOR)	SYSTEM MCA / MOCP	OUTDOOR UNIT	ELEC	EER	SAMSUNG MODEL #	INDOOR UNIT	REMARKS
		COOLING CAP. (MBh)				SAMSUNG MODEL #	
WSS-1/CU-1	12.5 / 20	14.5	208-230/1/60	12.05	AR12TSFYBWKXCV	AR12TSFYBWKNCV	

NOTES: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. PROVIDE THERMOSTAT AND LITTLE GIANT VCMA-15 CONDENSATE PUMP (120V) PER UNIT. PROVIDE DIVERITECH CONDENSING UNIT SUPPORTS TO SUPPORT EACH CONDENSING UNIT. PROVIDE MIRO PIPE SUPPORTS TO SUPPORT REFRIGERANT PIPING AS REQUIRED. PROVIDE WITH LOW AMBIENT KIT FOR COOLING DOWN TO 0F.

CP - #

STEAM CONDENSATE PUMP SCHEDULE

UNIT NUMBER	MANUFACTURER	MODEL #	RPM	GPM	TDH (PSI)	MOTOR HP	RECEIVER SIZE (GAL)	ELEC	REMARKS
CP-1	B&G	153CC	3500	15	30	3/4	14	460/3/60	
CP-2	B&G	93CC	3500	9	30	3/4	14	460/3/60	
CP-3	B&G	303CC	3500	30	30	1	36	460/3/60	

NOTE: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. ALL UNITS SHALL BE DUPLEX TYPE. PROVIDE ALL UNITS WITH CONTROL PANELS INCLUDING MAGNETIC STARTERS, FUSED DISCONNECT SWITCH, 'AUTO-OFF-HAND' SELECTOR SWITCHES, ELECTRIC ALTERNATOR, TRANSFORMER, PILOT LIGHTS & AUDIBLE ALARM. PROVIDE ALL UNITS WITH BASKET TYPE INLET STRAINERS. PROVIDE WITH SINGLE-POINT POWER CONNECTION

D - #

DIFFUSER SCHEDULE

UNIT NUMBER	SIZE (FACE / NECK)	DESCRIPTION	MANUFACTURER	MODEL NUMBER	REMARKS
D-1	24"x24"/10"Ø	ALUMINUM SQUARE CONE DIFFUSER	KRUEGER	51450	
D-2	24"x24"/12"Ø	ALUMINUM SQUARE CONE DIFFUSER	KRUEGER	51450	

NOTE: PROVIDE EQUIPMENT BY KRUEGER OR APPROVED EQUAL. ALL DIFFUSERS SHALL HAVE FACE OPERABLE DAMPERS. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE.

R - #

RETURN GRILLE SCHEDULE

UNIT NUMBER	SIZE (FACE / NECK)	DESCRIPTION	MANUFACTURER	MODEL NUMBER	REMARKS
R-1	24"X24" / 12"X12"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	
R-2	24"X24" / 16"X16"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	
R-3	24"X24" / 22"X22"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	

NOTE: PROVIDE EQUIPMENT BY KRUEGER OR APPROVED EQUAL. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE.

GV - #

GRAVITY VENT SCHEDULE

UNIT NUMBER	THROAT SIZE	MANUFACTURER	MODEL #	REMARKS
GV-1	44"X44"	COOK	GR	
GV-2	44"X44"	COOK	GR	
GV-3	45"X92"	COOK	GR	

NOTES: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. ALL GRAVITY VENTS SHALL BE ALUMINUM. PROVIDE ALL UNITS WITH COUNTERBALANCED BACKDRAFT DAMPERS AND BIRD SCREENS.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

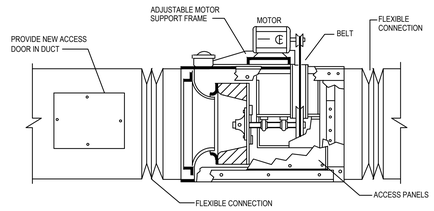
MECHANICAL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-500

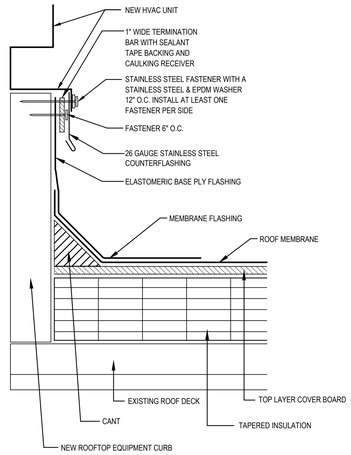


NOTES:

1. ACCESS DOOR SHALL BE HINGED-TYPE.

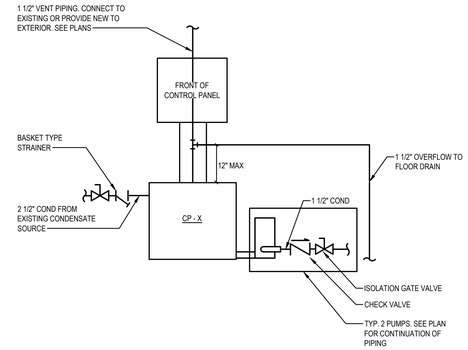
1 / M-600 TYPICAL IN-LINE FAN DETAIL

SCALE: NTS



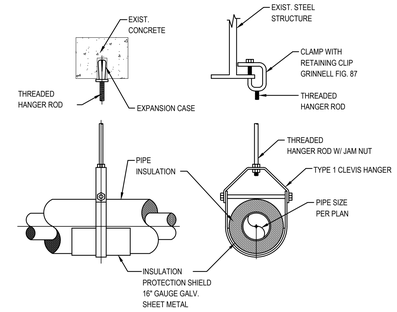
2 / M-600 ROOF CURB FLASHING DETAIL

SCALE: NTS



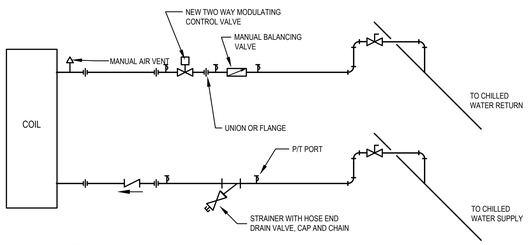
3 / M-600 STEAM CONDENSATE PUMP DETAIL

SCALE: NTS



4 / M-600 TYPICAL PIPE HANGER DETAIL

SCALE: NTS

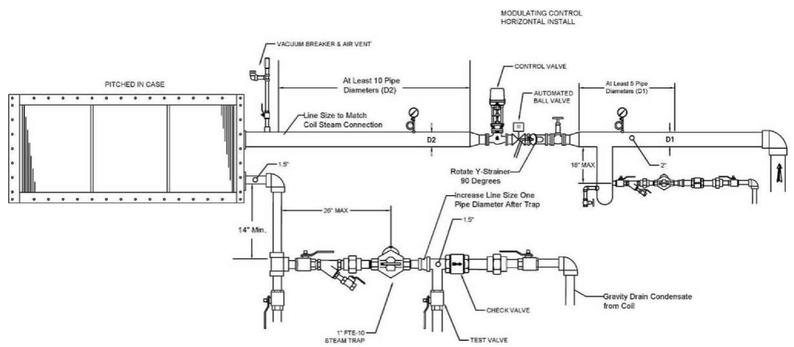


NOTE:

1. PROVIDE FLOW LIMITING DEVICE PER UNIT FLOW REQUIREMENTS AS SHOWN IN EQUIPMENT SCHEDULES.
2. THIS ARRANGEMENT IS TYPICAL FOR ALL CHILLED WATER COILS
3. PROVIDE COIL CONNECTIONS DESCRIBED ABOVE FOR AIR HANDLING UNITS AND ROOF TOP AIR HANDLING UNITS.

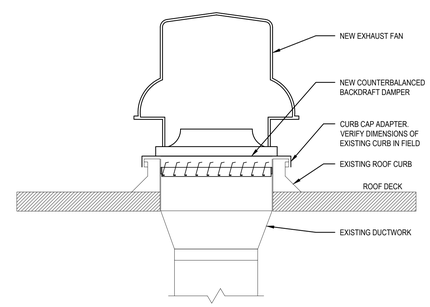
5 / M-600 TYPICAL 2-WAY VALVE DETAIL FOR AHUS

SCALE: NTS



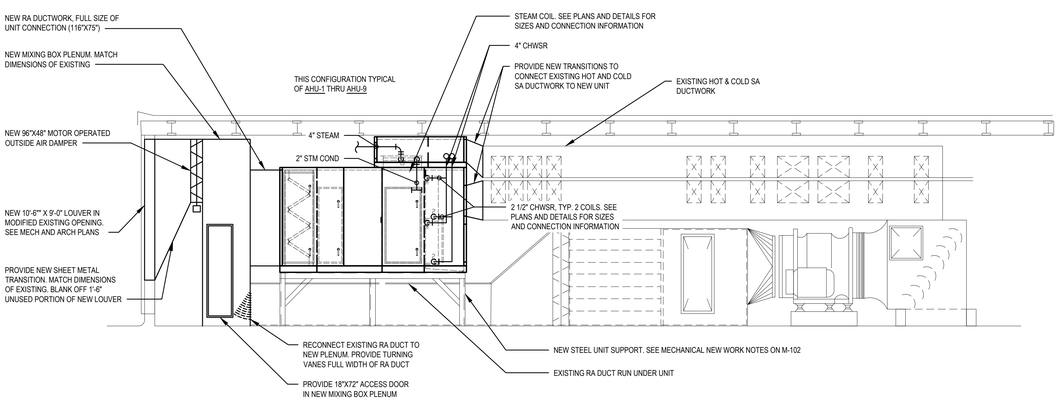
6 / M-600 TYPICAL STEAM COIL CONNECTION DETAIL

SCALE: NTS



7 / M-600 ROOF MOUNTED EXHAUST FAN DETAIL

SCALE: NTS



8 / M-600 PENTHOUSE 1 THRU 9 TYPICAL SECTION

SCALE: NTS

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIEREPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

MECHANICAL DETAILS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-600

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8/11/2023 10:23 AM

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8/11/2023 10:23 AM

AH-1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14, 25: (Multizone Air Handling Unit)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode-(adj). The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will modulate to maintain a 55F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fans have tripped OFF on low limit whether the fans are running or not, the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within 1 Hour, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has been acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run subject to heating coil discharge freezestat status and supply and return air duct smoke detectors.

When the fans run, the outside air and relief/exhaust dampers will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) in unison to maintain a hot deck the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the average space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run subject to heating coil discharge freezestat status and supply and return air duct smoke detectors.

If the outdoor air dry bulb temperature is less than the economizer enable setpoint of 75°F (adj). during the cool-down mode, the AHU will operate in the economizing mode. If the outdoor air dry bulb temperature is more than the economizer enable setpoint during the cool down mode, the outside and relief/exhaust dampers will remain closed, with the return air damper open. The EMCS will modulate the cooling coil control valve(s) to maintain a cold deck supply air temperature setpoint 50°F (adj).

In the economizer mode, the EMCS will modulate the outside/return/exhaust air dampers to maintain a mixed air temperature setpoint of: 50°F (adj)

Mechanical cooling will be available if the chiller is enabled to run, and the system will operate with outside and relief/exhaust dampers closed and the return air damper open.

The system will continue to run in cool-down mode until the average space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run subject to heating coil discharge freezestat status and supply and return air duct smoke detectors.

Supply and return fans will continue to run, and the outside air damper will open to minimum position subject to economizer control and CO2 control as stated below.

The EMCS will reset the supply air static pressure setpoint in response to zone damper position to modulate supply air fan speed. Return air fan speed will modulate to run a pre-determined offset (set by balancer).

When one (adj) or more zone dampers are more than 90% (adj) open to the hot deck, supply fan VFD signal will be reset upward 5% over base speed setpoint of 70 (adj) every 10 minutes that multiple zones are open 90%. This will continue at a frequency of 10 minutes (adj) until no more than one (adj) damper is more than 90% (adj) open or supply fan VFD signal has reset upward to the system maximum setting (maximum setpoint be determined and documented during final balancing). The return fan speed will be modulated in proportion to the supply fan speed.

When one (adj) or more zone dampers are more than 90% (adj) open to the cold deck, the supply fan VFD signal) all be reset upward 5% over base speed setpoint of 70 (adj) every 10 minutes that multiple zones are open 90%. This will continue at a frequency of 10 minutes (adj) until no more than one (adj) damper is more than 90 percent (adj) open supply fan VFD signal has reset upward to the system maximum setting (maximum setpoint be determined and documented during final balancing). The return fan speed will be modulated in proportion to the supply fan speed.

When all but one (adj) zone dampers are less than 80% (adj) open to the hot or cold deck, the supply fan VFD signal will be reset downward, until at least two (adj) dampers are more than 80% open or supply fan VFD signal has reset to the system minimum setting (minimum setpoint to be determined and documented during final balancing).

When CO2 levels are greater than 1000ppm (adj), the outside air, relief air, and return air dampers will modulate to maintain CO2 levels at or below 1000ppm (adj). Mixed air temperature will be used as a low limit to override the CO2 control to maintain 50°F (adj). When CO2 override is initiated, CO2 control will be highest priority for dampers.

The economizer will be disabled when the outside air temperature is above 75°F (adj) and the chiller is running and when the heating control valve(s) are open. When the economizer is enabled, the highest space temperature will modulate the outside, return, and relief dampers to maintain the following reset schedule:

High Space Temperature	Mixed Air Temperature
75°F (adj)	55°F (adj)
65°F (adj)	65°F (adj)

Lowest space temperature* will reset the hot deck supply air by modulating the coil heating valve(s) in unison to maintain the following reset schedule:

Lowest Space Temperature	Hot Deck Supply Air Temperature
75°F (adj)	55°F (adj)
65°F (adj)	120°F (adj)

Chilled water cooling will be available for the cold deck when the chiller is enabled.

Highest space temperature* will reset the cold deck supply air temperature setpoint by modulating the cooling coil valve(s) to maintain the following reset schedule:

Highest Space Temperature	Cold Deck Supply Air Temperature
75°F (adj)	55°F (adj)
65°F (adj)	65°F (adj)

Notes: -Reset schedule above is not applicable for units without chilled water valve(s).
-* Average space temp limits apply to any space temperature between 40°F & 100°F. Any space temperature sensor reading below 40°F or above 100°F are removed from min/max averaging calculations in programming.

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run request, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when any space temperature drops below 60°F (adj) - 2°F deadband. When the lowest space temperature rises + 2°F (adj) above the NSB setpoint the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cool-down mode when average space temperature rises above 85°F (adj) +/- 2°F deadband. When the average space temperature drops - 2°F (adj) below the NSU setpoint, the system will return to the unoccupied mode of operation.

Alarms:

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature(s) has not met the applicable setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature and the heating valve(s) has been fully opened for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

Zone Damper Control:

The zone damper will modulate to maintain the zone space temperature setpoint. This is done by mixing hot deck and cold deck air into a single supply duct.

As the zone space temperature rises above the zone temperature setpoint, the zone damper will modulate to allow additional cool air from the cold deck to mix with air from the hot deck.

As the zone space temperature drops below the zone temperature setpoint, the zone damper will modulate to allow additional warm air from the hot deck to mix with air from the cold deck.

Alarms:

The EMCS will issue and alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit enabled. This time will be extended to 1 Hour (adj) right after a change of status from unoccupied to Occupied mode. In the unoccupied mode an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

The EMCS will issue an alarm at the OWS if the space CO2 level rises above 1100ppm (adj) for more than 10 minutes (adj). This alarm will automatically reset when the level returns to 1100ppm (adj).

Air Handling Unit AH-10 Control: (Multi-Purpose Room)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode-(adj). The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating control valve(s) will modulate to maintain a 55°F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fans have tripped OFF on low limit whether running or not, the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has ben acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run at full speed subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain a supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run at full speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If the outdoor air dry bulb temperature is less than the economizer enable setpoint of 75°F (adj) during the cool-down mode, the AHU will operate in the economizing mode. If the outdoor air dry bulb temperature is more than the economizer enable setpoint during the cool-down mode, the outside and relief/exhaust dampers will remain closed, with the return air damper open. The EMCS will modulate the cooling coil control valve(s) to maintain a cold-deck supply air temperature setpoint of: 50°F(adj).

In the economizer mode, the EMCS will modulate the outside/return/exhaust air dampers to maintain a mixed air temperature setpoint of: 50°F (adj).

Mechanical cooling will be available if the chiller is enabled to run, and the system will operate with outside and relief/exhaust dampers closed and the return air damper open.

The system will continue to run in cool-down mode until the space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

Supply air return fans will continue to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled.

The EMCS will reset the supply air or VFD speed signal setpoint is response to space temperature deviation from setpoint in order to modulate supply air fan speed. Return air fan speed will track supply air fan speed at pre-determined offset (set by balancer).

The economizer cycle will be disabled when the heating control valve(s) is active (not closed).

When CO2 levels are greater than 1000ppm (adj), the outside air, relief air, and return air dampers will modulate to maintain CO2 levels at or below 1000ppm (adj). Mixed air temperature will be used as a low limit to override the CO2 control to maintain 50°F (adj). When CO2 override is initiated, CO2 control will be highest priority for dampers.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint, and the economizer mode supply air setpoint will be the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating or cooling valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

Unoccupied Mode:

Unoccupied mode will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up (setback) mode when space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises +2°F (adj) above the NSB setpoint the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cool-down (setup) mode when space temperature rises above 85°F (adj) +2°F deadband. When the space temperature drops -2°F (adj) below the NSU setpoint, the system will return to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

The EMCS will issue an alarm at the OWS if the space CO2 level rises above 1100ppm (adj) for more than 10 minutes (adj). This alarm will automatically reset the level return to 1100ppm (adj).

Air Handling Unit AH-11 Control: (Pool)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm. All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating control valve(s) will modulate to maintain a 55°F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fans have tripped OFF on low limit whether running or not, the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has been acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cooldown Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If the outdoor air dry bulb is less than the economizer enable setpoint of 75°F (adj) during the cool-down mode, the AHU will operate in the economizing mode during the morning cool-down mode. If the outdoor air bulb is more than the economizer enable setpoint, the unit will remain off. The EMCS will modulate the outside air and return air dampers to maintain a supply air temperature setpoint of: 55°F (adj).

The system will continue to run in cool-down mode until space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode will be indicated on the AHU graphics screen of the Operator Workstation.

Supply fan and Exhaust Fans #8 & #9 will be enabled to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled.

The economizer cycle will be disabled when the heating control valve(s) are active (not closed).

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint.

The vestibule space temperature sensor will reset supply air temperature by modulating the heating valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when the space temperature drops below 65°F (adj) -2°F deadband. When the space temperature drops 2°F (adj) below the NSB setpoint and a 1 hour (adj) minimum runtime has been met, the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cooldown mode when space temperature rises above 85°F +2°F deadband. When the space temperature drops 2°F (adj) below the NSU setpoint, the system will return to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes(adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

Air Handling Unit AH-15 Control: (Cafeteria)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will modulate to maintain 55°F mixed air temperature, unless the unit has tripped on freezestat. If the fan has tripped off on freezestat whether the fan is running or not, the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on freezestat, the freezestat alarm will require a manual reset prior to restarting. If the freezestat has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F supply air temperature.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run at full speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If the outdoor air dry bulb is less than the economizer enable setpoint during the cool-down mode, the AHU will operate in the economizing mode. If the outdoor air dry bulb is less than the economizer enable setpoint, and cooling is off, the unit will remain off.

The EMCS will modulate the outside air and return air dampers to maintain a supply air temperature setpoint of: 55°F(adj).

When cooling system is enabled the EMCS will modulate the chilled water valve(s) to maintain a supply air temperature setpoint of: 55°F (adj).

The system will continue to run in cool-down mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

The system will be enabled to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled.

The economizer cycle will be disabled when the heating control valve(s) is active (not closed).

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be 2°F. The occupied heating setpoint will be 1°F below the occupied setpoint, and the cooling setpoint will be 1°F above the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating valve(s), and chilled water valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F) and outside air enthalpy economizer switchover. The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

Unoccupied Mode:

Unoccupied mode will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises 2°F (adj) above the NSB setpoint the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cooldown mode when space temperature rises above 85°F (adj) +2°F deadband. When the space temperature drops 2°F (adj) below the NSU setpoint the system will return to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes(adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

SEQUENCE OF OPERATIONS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-700

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8/11/2023 10:23 AM

Air Handling Unit AH-16, 17, 18, 19, 20 Control: (Gymnasium)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled. When the AHU is off, the heating valve(s) will modulate to maintain a 55°F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fan has tripped OFF on low limit whether the fan is running or not, the EMCS will command the heating valve(s)to 100 percent open for 5 minutes (adj), the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has been acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan(s) will start speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start subject to heating coil discharge low temperature thermostat and supply and return duct smoke detectors.

If space temperature is above the cool-down mode setpoint of 85°F (adj) +2°F deadband, the AHU will operate in the cool-down mode.

If the outdoor air dry bulb is less than the economizer enable setpoint 75°F (adj) during the cool down cycle, the AHU will operate in the economizing mode. If the outdoor air dry bulb is more than the economizer enable setpoint, the outside and relief/exhaust dampers will remain closed, with the return air damper open.

When cooling system is enabled the EMCS will modulate the chilled water valve(s) to maintain a supply air temperature setpoint of: 55°F (adj).

The system will continue to run in cool-down mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

Supply fan will continue to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled.

The EMCS will reset the supply air or VFD speed signal setpoint in response to space temperature deviation from setpoint in order to modulate supply air fan speed. Return air fan speed will modulate to run at a pre-determined offset (set by balancer).

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint, and the economizer mode supply air setpoint will be the Occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating or cooling valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

When CO2 levels are greater than 1100ppm (adj), the outside air, relief air, and return air dampers will modulate to maintain CO2 levels at or below 1000ppm (adj). Mixed air temperature will be used as a low limit to override the CO2 control to maintain 50°F (adj).

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when the space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises 2°F (adj) above the NSB setpoint, the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cool-down mode when space temperature rises above 85°F (adj) + 2°F deadband. When the space temperature drops 2°F (adj) below the NSU setpoint, the system will return to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

The EMCS will issue an alarm at the OWS if the space CO2 level rises above 1200ppm (adj) for more than 10 minutes (adj). This alarm will automatically reset when the level returns to 1100ppm (adj).

Air Handling Unit AH-21, 22 Control: (Locker Rooms)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm. All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 65°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will modulate to maintain 55°F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fans have tripped off on low limit (whether the fans are running or not), the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within 1 hour, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has been acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fans run, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If space temperature is above the cool-down mode setpoint of 85°F (adj) +2°F deadband, the AHU will operate in the cool-down mode.

If the outdoor air dry bulb temperature is less than the economizer enable setpoint of 75°F (adj) during the cool-down mode, the AHU will operate in the economizing mode. If the outdoor air dry bulb temperature is more than the economizer enable setpoint during the cool-down mode, the outside and relief/exhaust dampers will remain closed, with the return air damper open.

The supply will continue to run in cool-down mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

Supply and return fan(s) will start and run subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

Supply and return fan(s) continue to run, and the outside air damper will open to minimum position, unless free cooling economizer is enabled.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run request, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises 2°F (adj) above the NSB setpoint and a 2 hour (adj) minimum runtime has been met, the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cooldown mode when space temperature rises above 85°F (adj) +2°F deadband. When the space temperature drops 2°F (adj) below the NSU setpoint, the system will remain to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

Air Handling Unit AH-23 Control: (lobby)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will modulate to maintain 55F mixed air temperature, unless the unit has tripped on temperature low limit (TLL). If the fan has tripped off on low limit (whether running or not), the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F supply air temperature.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run at full speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run at full speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If the outdoor air dry bulb is less than the economizer enable setpoint during the cool down cycle, the AHU will operate in the economizing mode during the morning cool-down cycle. If the outdoor air dry bulb is more than the economizer enable setpoint, and cooling system is off, the unit will remain off.

The EMCS will modulate the outside air and return air dampers to maintain a supply air temperature setpoint of: 55°F (adj).

When cooling system is enabled the EMCS will modulate the chilled water valve(s) to maintain a supply air temperature setpoint of: 55°F (adj).

The system will continue to run in cool-down mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

Supply and return fan(s) will continue to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled.

The EMCS will reset the supply or VFD speed signal setpoint in response to space temperature deviation from setpoint in order to modulate supply air fan speed. Return air fan speed will modulate to run at pre-determined offset (set by balancer).

The economizer cycle will be disabled when the heating control valve(s) is active (not closed).

When CO2 levels are greater than 1000ppm (adj), the outside air, relief air, and return air dampers will modulate to maintain CO2 levels at or below 1000ppm (adj). Mixed air temperature will be used as a low limit to override the CO2 control to maintain 50°F (adj). When CO2 override is initiated, CO2 control will be highest priority for dampers.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating valve(s) or cooling valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises 2°F (adj) above the NSB setpoint and a 1 hour (adj) minimum runtime has been met, the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cooldown mode when space temperature rises above 85°F (adj). When the space temperature drops 2°F (adj) above the NSU setpoint, the system will return to the unoccupied period mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

The EMCS will issue an alarm at the OWS if the space CO2 level rises above 1200ppm (adj) for more than 10 minutes (adj). This alarm will automatically reset when the level returns to 1100ppm (adj).

Air Handling Unit AH-24 Control: (Student Kitchen)

The student kitchen hood exhaust fan EF-30 will be locally started/stopped manually and is monitored for operation by the EMCS.

When the exhaust fan is running, the AH-24 system will be enabled, the outside air damper will open and the supply fan will run subject to heating coil discharge freezestat, outside air damper end switch status and supply duct smoke detector.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will commanded fully closed, unless the unit has tripped on temperature low limit (TLL). If the fan has tripped off on low limit (whether running or not), the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air damper will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F supply air temperature.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating valve. The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

When the unit is off, the outside air damper will close, the fan will de-energize and the heating valve(s) will be modulated by the coil entering temperature sensor to maintain 55°F.

There is no unoccupied setback/setup, cooldown or warmup modes of operation for this AHU.

Exhaust Fan Control: (EF-30)

Fan will be commanded on during Occupied mode and will remain off during unoccupied mode.

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

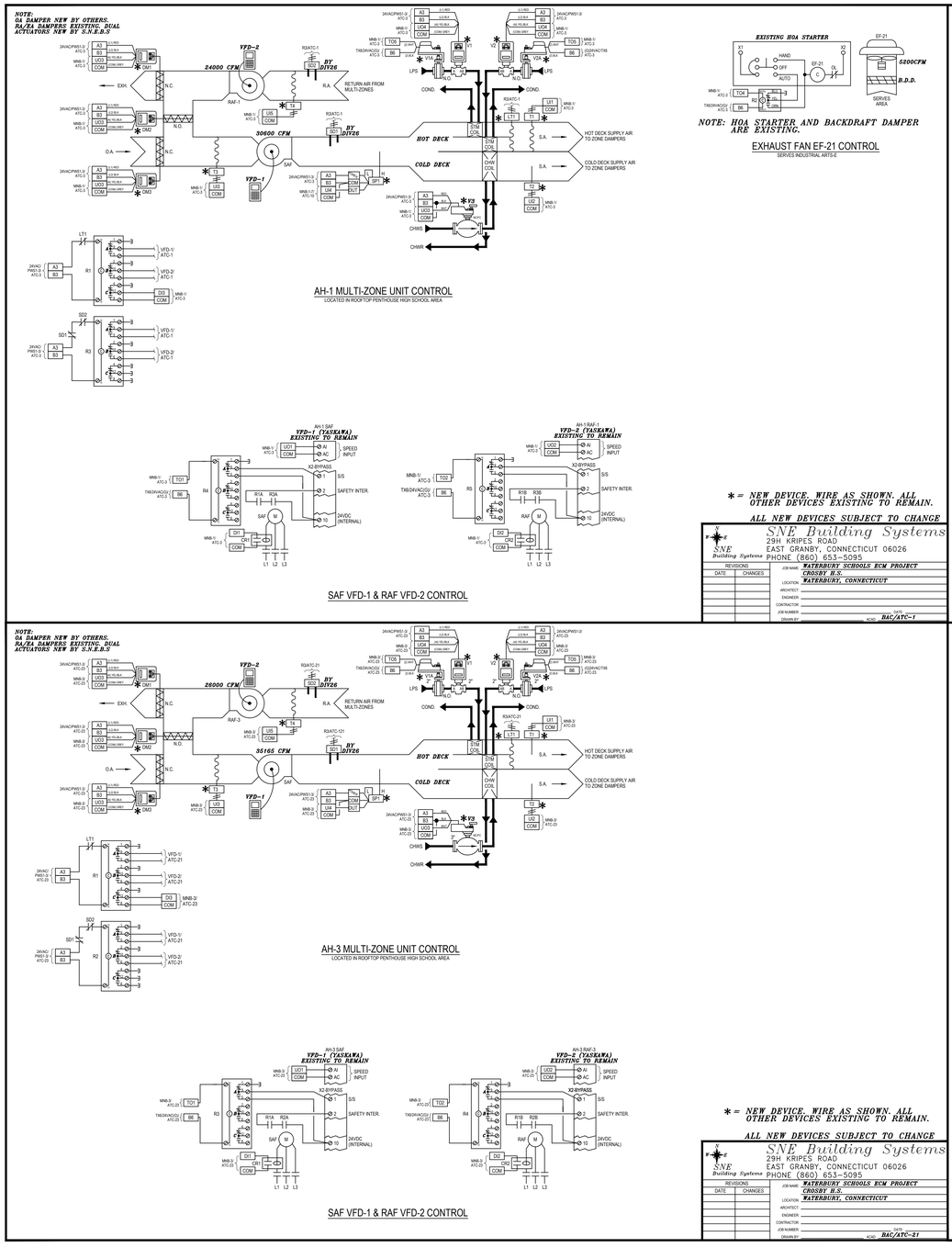
SEQUENCE OF OPERATIONS

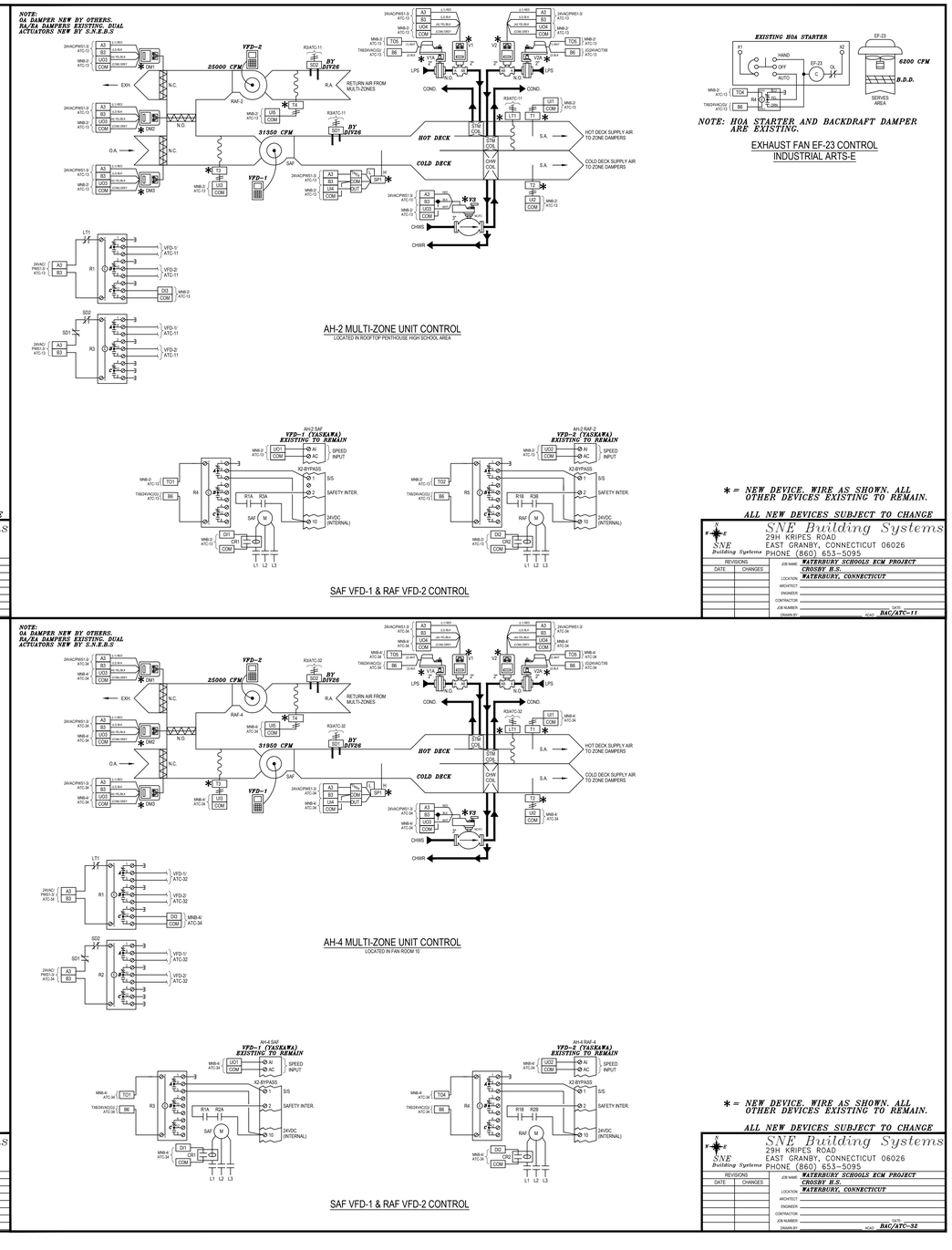
100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-701





NOTE: THESE ARE EXISTING CONTROL DIAGRAMS TO BE MODIFIED AND REAPPLIED TO NEW UNITS BY CONTROLS CONTRACTOR

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHKD	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-800

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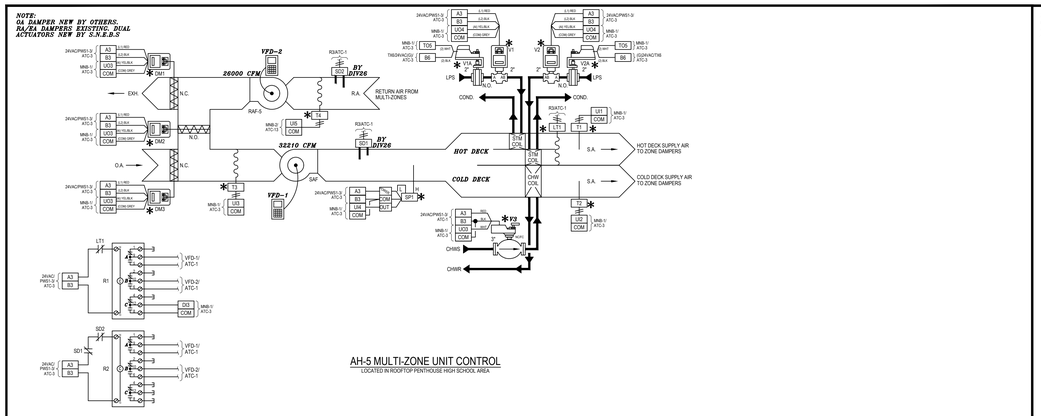
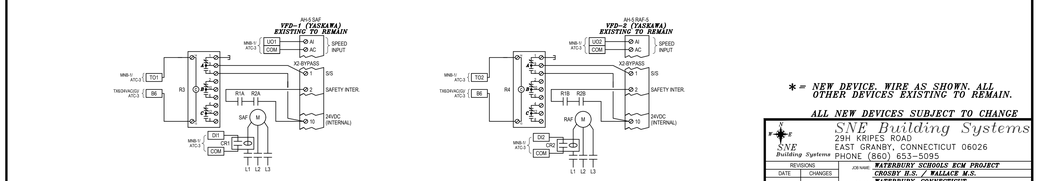


AH-5 MULTI-ZONE UNIT CONTROL
LOCATED IN ROOFTOP PENTHOUSE HIGH SCHOOL AREA



SAF VFD-1 & RAF VFD-2 CONTROL

* = NEW DEVICE. WIRE AS SHOWN. ALL OTHER DEVICES EXISTING TO REMAIN.

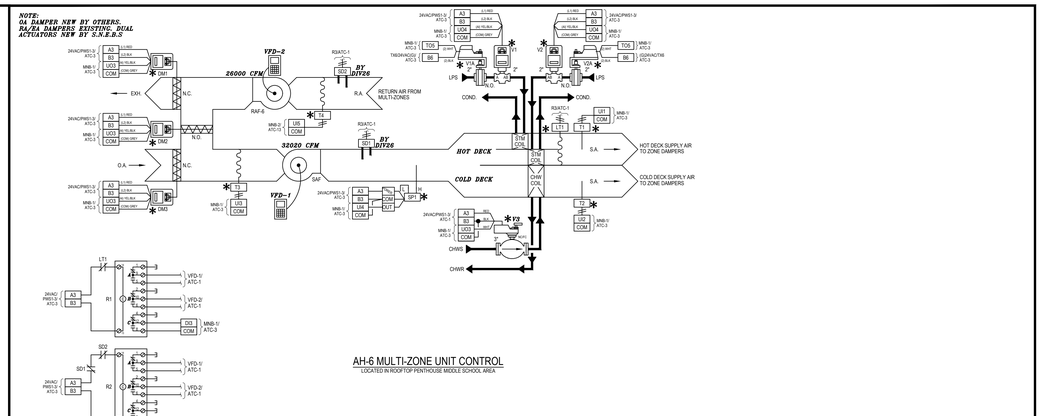
ALL NEW DEVICES SUBJECT TO CHANGE

SNE Building Systems
29H KRIPES ROAD
EAST GRANBY, CONNECTICUT 06026
PHONE (860) 653-5095

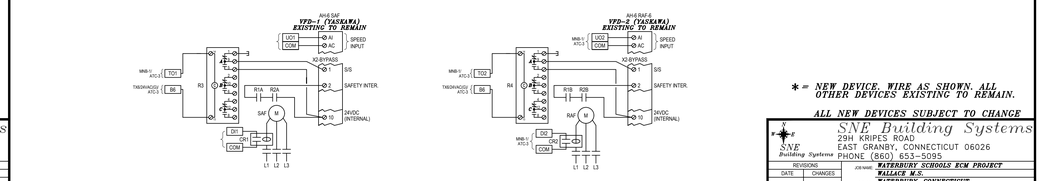
REVISIONS

DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
LOCATION: CROSBY H.S. / WALLACE M.S.
ARCHITECT: WATERBURY, CONNECTICUT
ENGINEER:
CONTRACTOR:
JOB NUMBER:
DRAWN BY:
SCALE: BAC/ATC-1



AH-6 MULTI-ZONE UNIT CONTROL
LOCATED IN ROOFTOP PENTHOUSE MIDDLE SCHOOL AREA



SAF VFD-1 & RAF VFD-2 CONTROL

* = NEW DEVICE. WIRE AS SHOWN. ALL OTHER DEVICES EXISTING TO REMAIN.

ALL NEW DEVICES SUBJECT TO CHANGE

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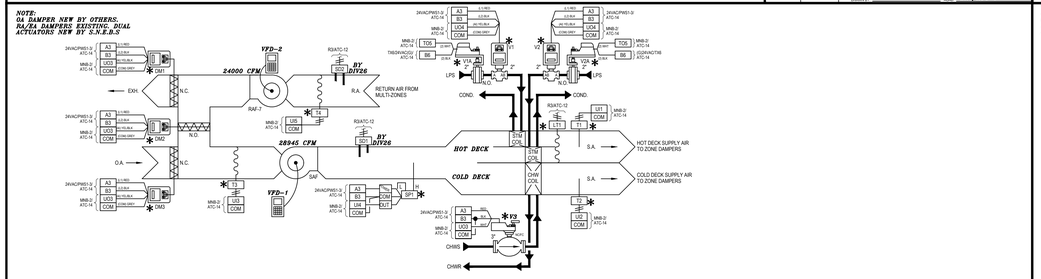
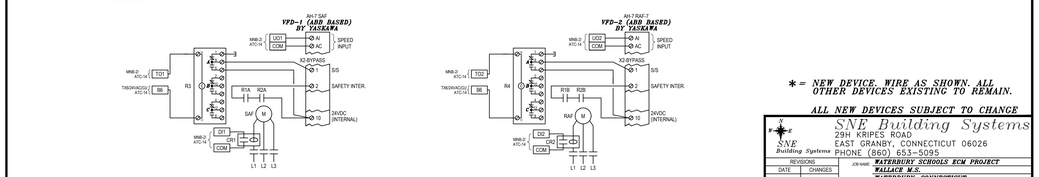
REVISIONS

DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
LOCATION: WALLACE M.S.
ARCHITECT: WATERBURY, CONNECTICUT
ENGINEER:
CONTRACTOR:
JOB NUMBER:
DRAWN BY:
SCALE: BAC/ATC-1



AH-7 MULTI-ZONE UNIT CONTROL
LOCATED IN ROOFTOP PENTHOUSE MIDDLE SCHOOL AREA



SAF VFD-1 & RAF VFD-2 CONTROL

* = NEW DEVICE. WIRE AS SHOWN. ALL OTHER DEVICES EXISTING TO REMAIN.

ALL NEW DEVICES SUBJECT TO CHANGE

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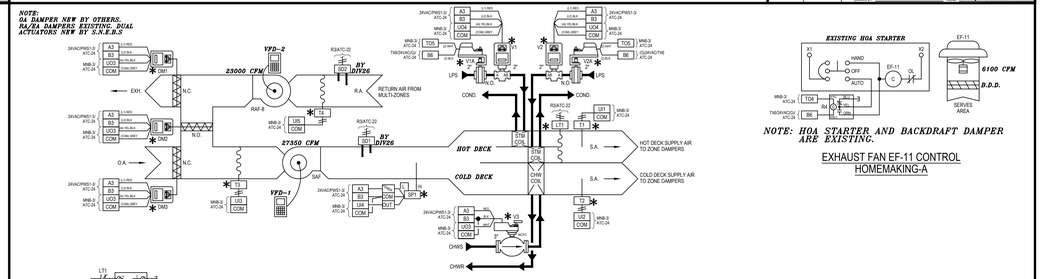
REVISIONS

DATE	CHANGES

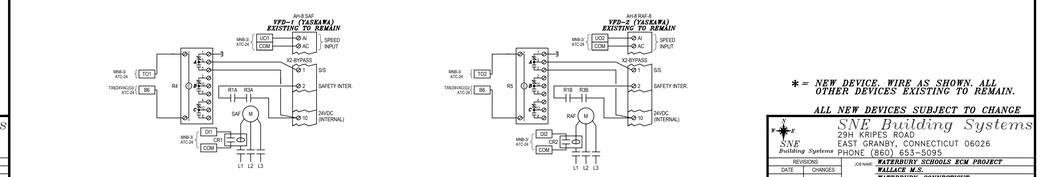
JOB NAME: WATERBURY SCHOOLS ECM PROJECT
LOCATION: WALLACE M.S.
ARCHITECT: WATERBURY, CONNECTICUT
ENGINEER:
CONTRACTOR:
JOB NUMBER:
DRAWN BY:
SCALE: BAC/ATC-12



NOTE: HOA STARTER AND BACKDRAFT DAMPER ARE EXISTING.

EXHAUST FAN EF-11 CONTROL
HOMEMAKING-A

AH-8 MULTI-ZONE UNIT CONTROL
LOCATED IN ROOFTOP PENTHOUSE MIDDLE SCHOOL AREA



SAF VFD-1 & RAF VFD-2 CONTROL

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ALL NEW DEVICES SUBJECT TO CHANGE

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REVISIONS

DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
LOCATION: WALLACE M.S.
ARCHITECT: WATERBURY, CONNECTICUT
ENGINEER:
CONTRACTOR:
JOB NUMBER:
DRAWN BY:
SCALE: BAC/ATC-22

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY

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08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-801

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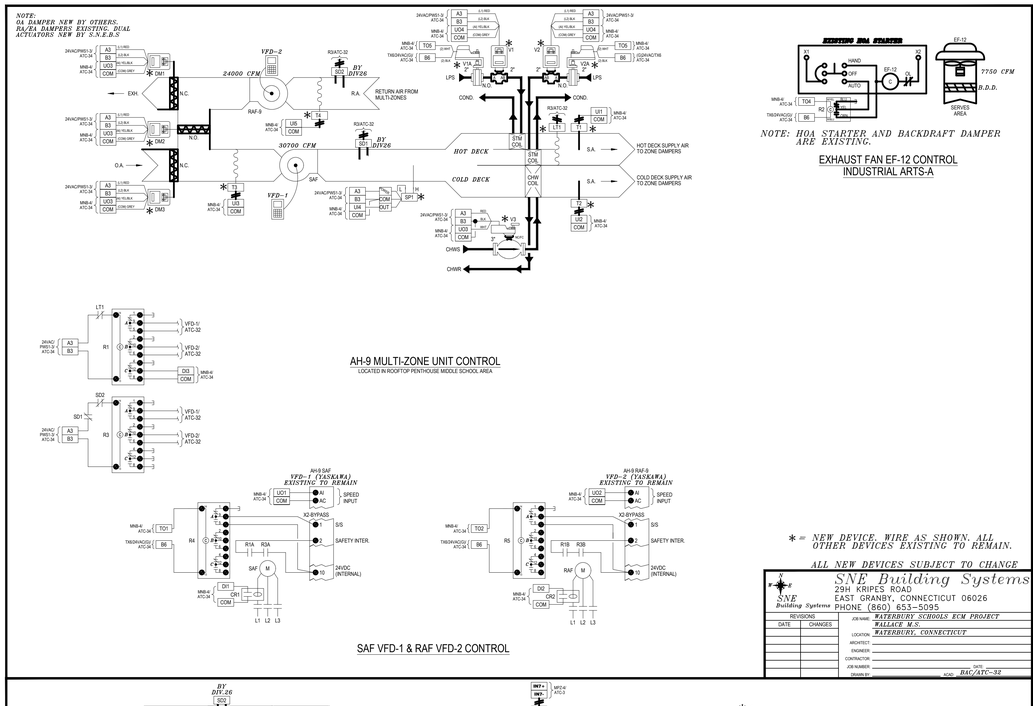
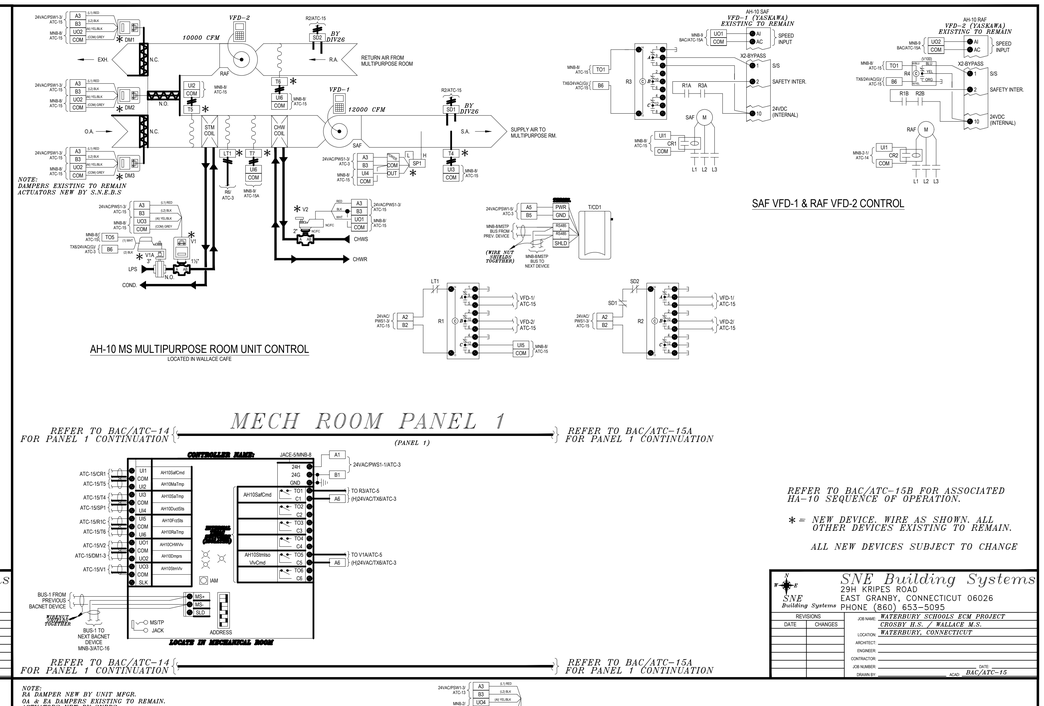


NOTE: HOA STARTER AND BACKDRAFT DAMPER ARE EXISTING.

EXHAUST FAN EF-12 CONTROL
INDUSTRIAL ARTS-A



* = NEW DEVICE. WIRE AS SHOWN. ALL OTHER DEVICES EXISTING TO REMAIN.

ALL NEW DEVICES SUBJECT TO CHANGE

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EAST GRANBY, CONNECTICUT 06026
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REVISIONS	
DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
WALLACE M.S.
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT
ENGINEER
CONTRACTOR
JOB NUMBER
DRAWN BY
DATE
SCALE: BAC/ATC-32

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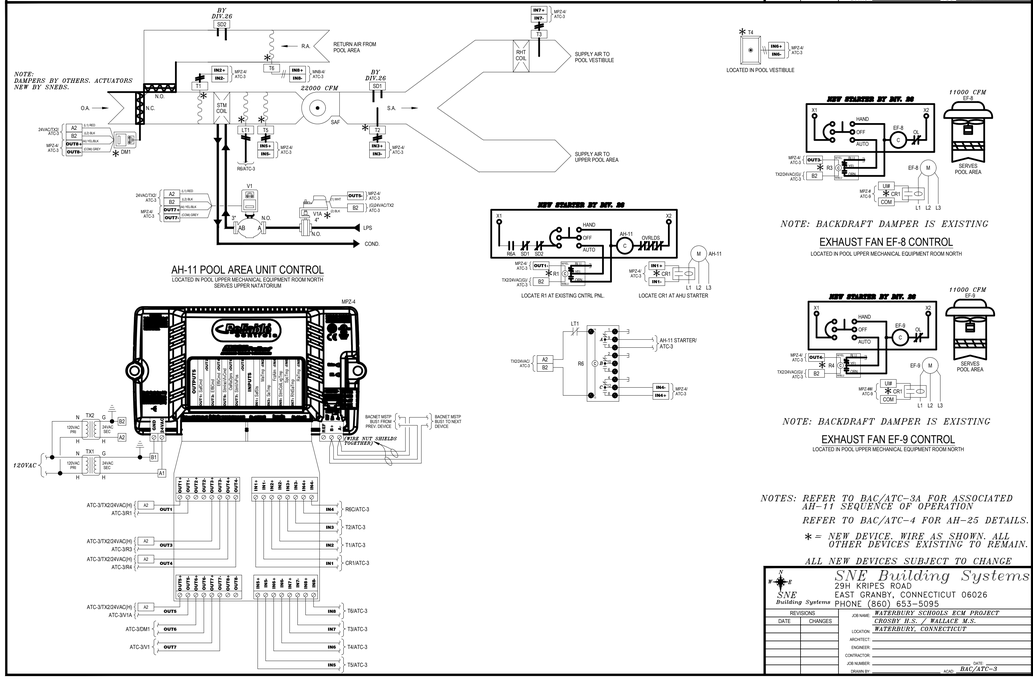
REVISIONS	
DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
CROSBY H.S. / WALLACE M.S.
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT
ENGINEER
CONTRACTOR
JOB NUMBER
DRAWN BY
DATE
SCALE: BAC/ATC-15



NOTES: REFER TO BAC/ATC-3A FOR ASSOCIATED AH-11 SEQUENCE OF OPERATION

REFER TO BAC/ATC-4 FOR AH-25 DETAILS.

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REVISIONS	
DATE	CHANGES

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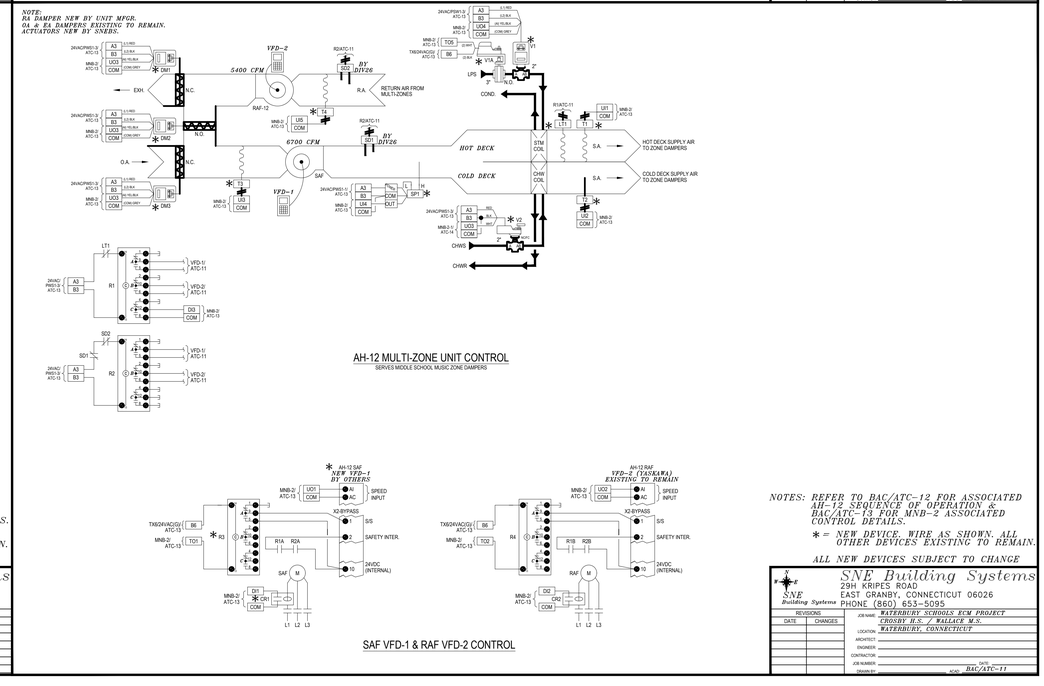
ARCHITECT
ENGINEER
CONTRACTOR
JOB NUMBER
DRAWN BY
DATE
SCALE: BAC/ATC-3



NOTES: REFER TO BAC/ATC-12 FOR ASSOCIATED AH-12 SEQUENCE OF OPERATION & BAC/ATC-13 FOR MNB-2 ASSOCIATED CONTROL DETAILS.

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DATE	CHANGES

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PROJECT

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WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY

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08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-802

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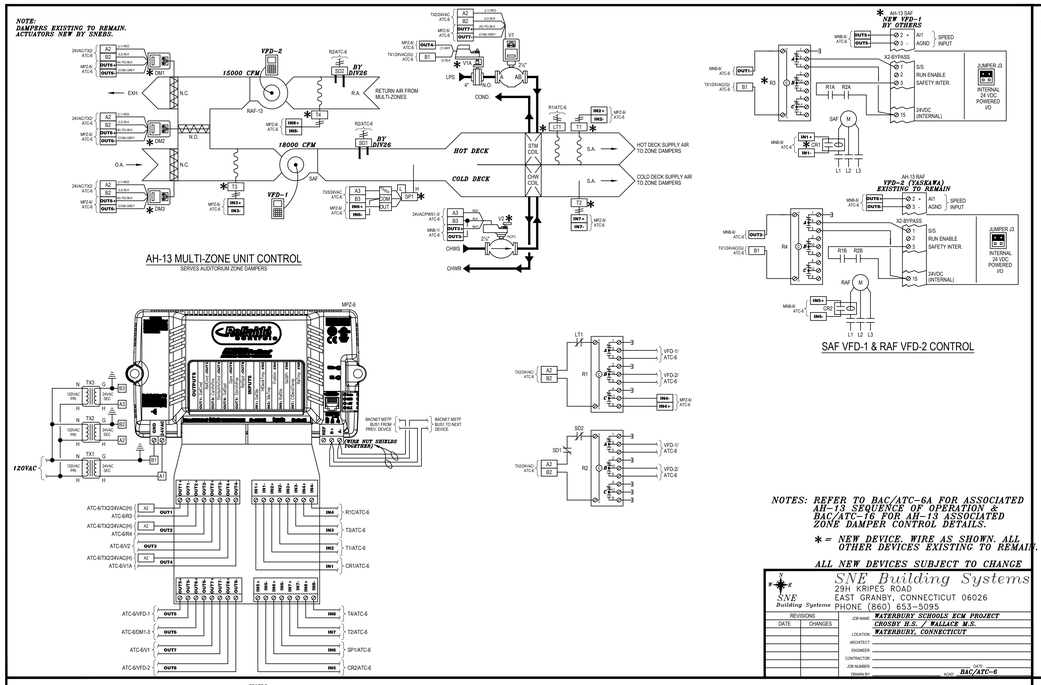
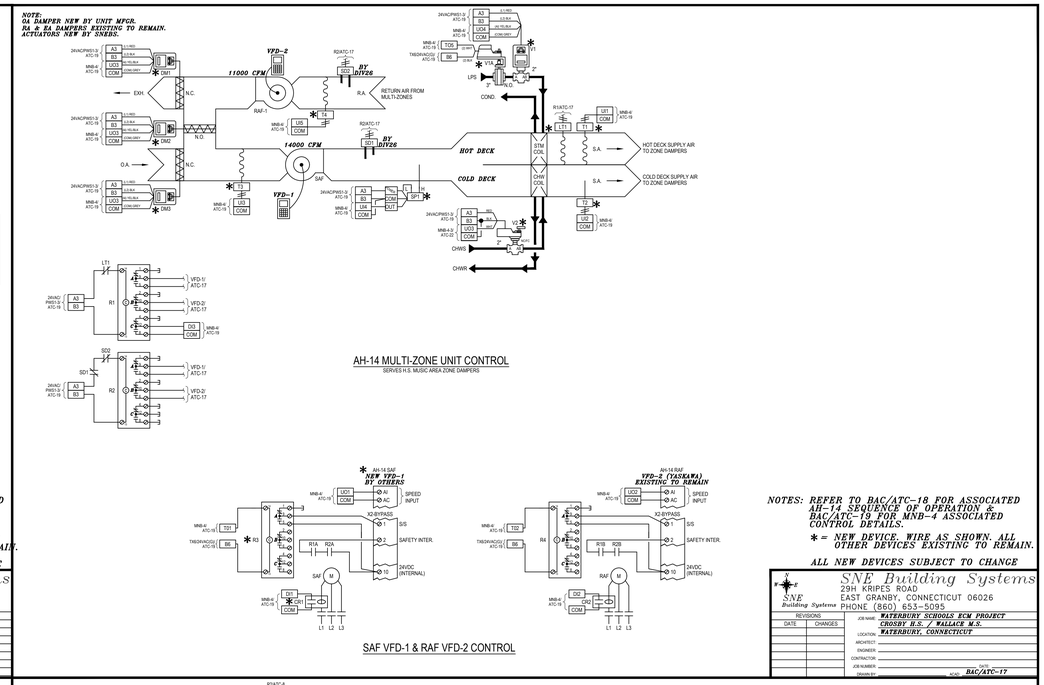


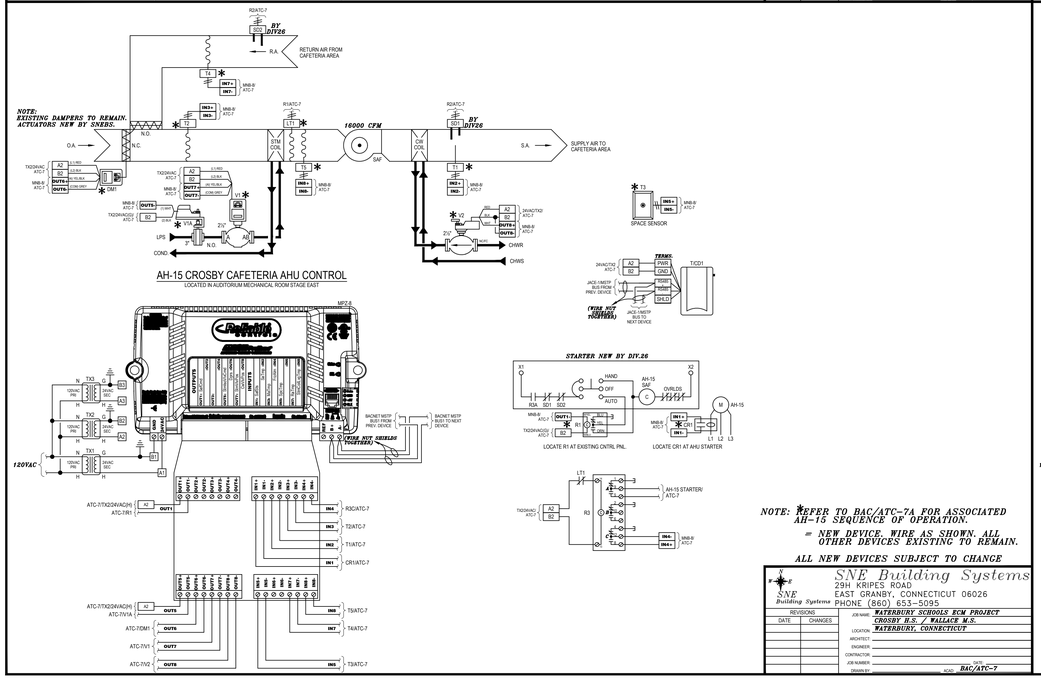
AH-13 MULTI-ZONE UNIT CONTROL
SERVES AUDITORIUM ZONE DAMPERS

SAF VFD-1 & RAF VFD-2 CONTROL

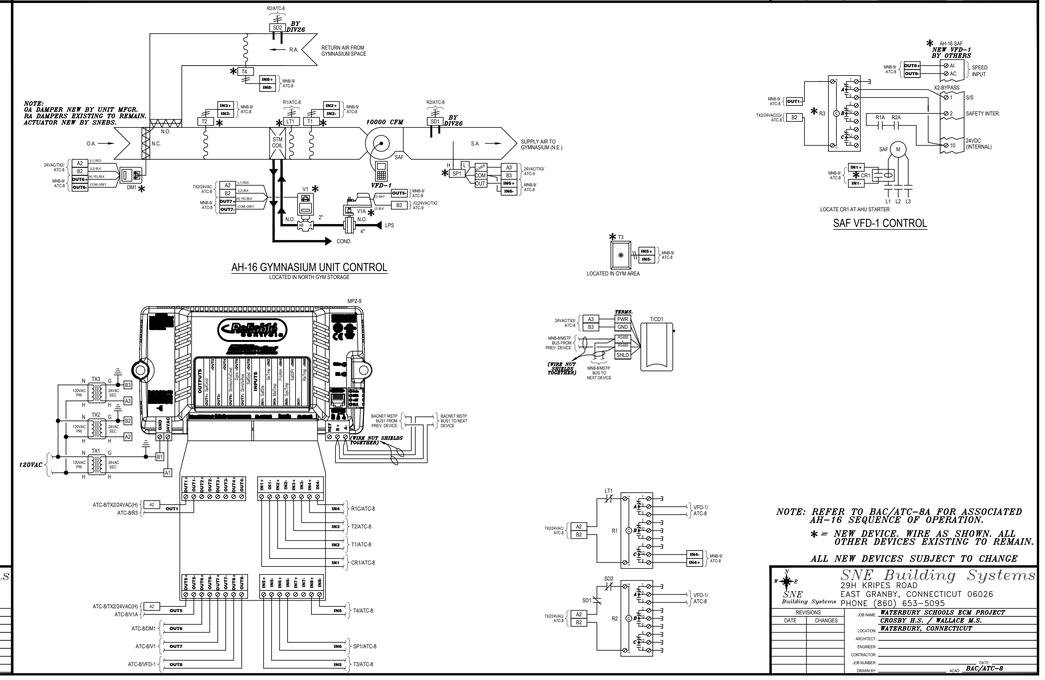


AH-14 MULTI-ZONE UNIT CONTROL
SERVES H.S. MUSIC AREA ZONE DAMPERS

SAF VFD-1 & RAF VFD-2 CONTROL



AH-15 CROSBY CAFETERIA AHU CONTROL
LOCATED IN AUDITORIUM MECHANICAL ROOM STAGE EAST



AH-16 GYMNASIUM UNIT CONTROL
LOCATED IN NORTH GYM STORAGE

SAF VFD-1 CONTROL

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY

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08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-803

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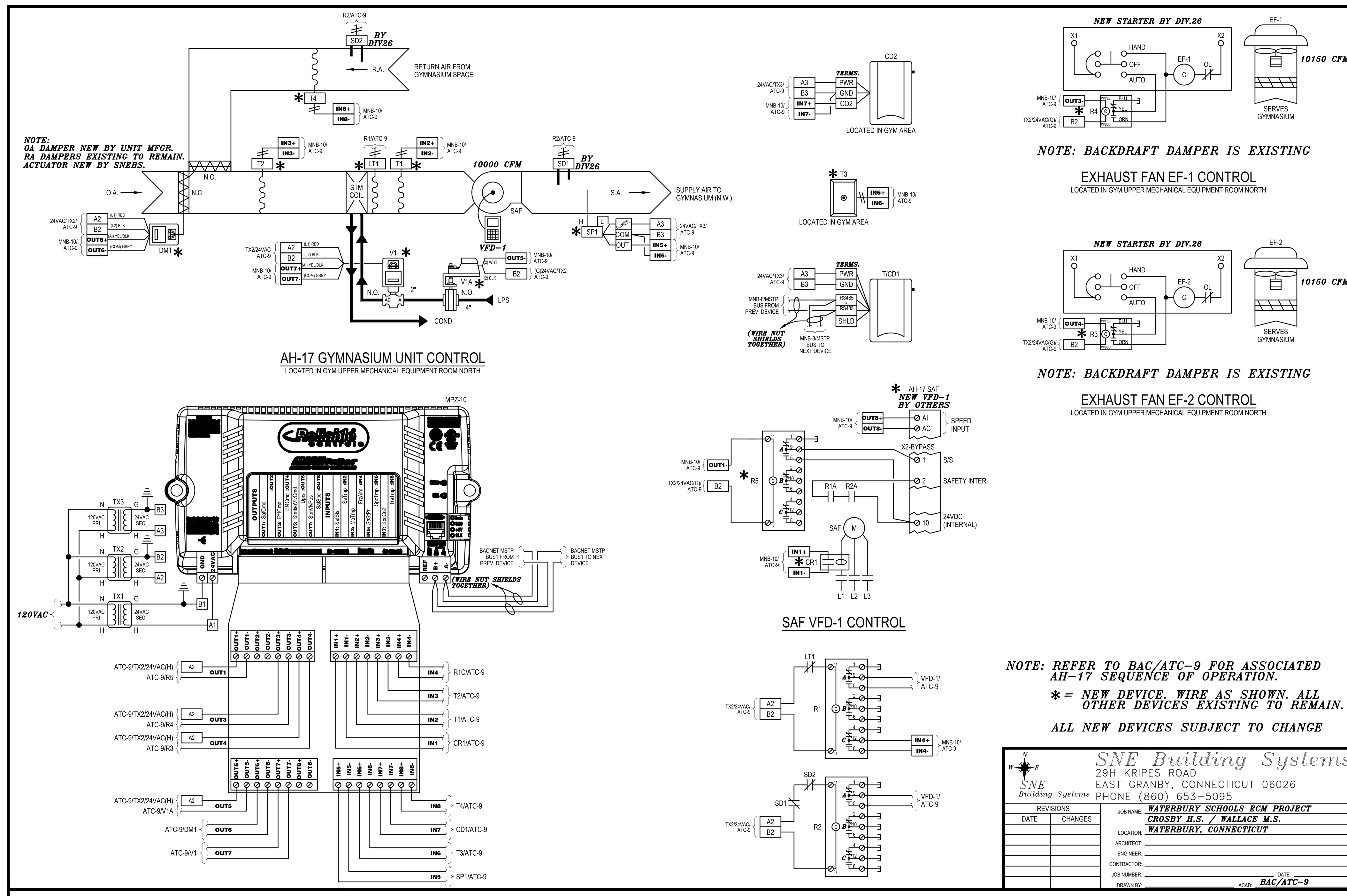

NOTE: REFER TO BAC/ATC-9 FOR ASSOCIATED AH-17 SEQUENCE OF OPERATION.
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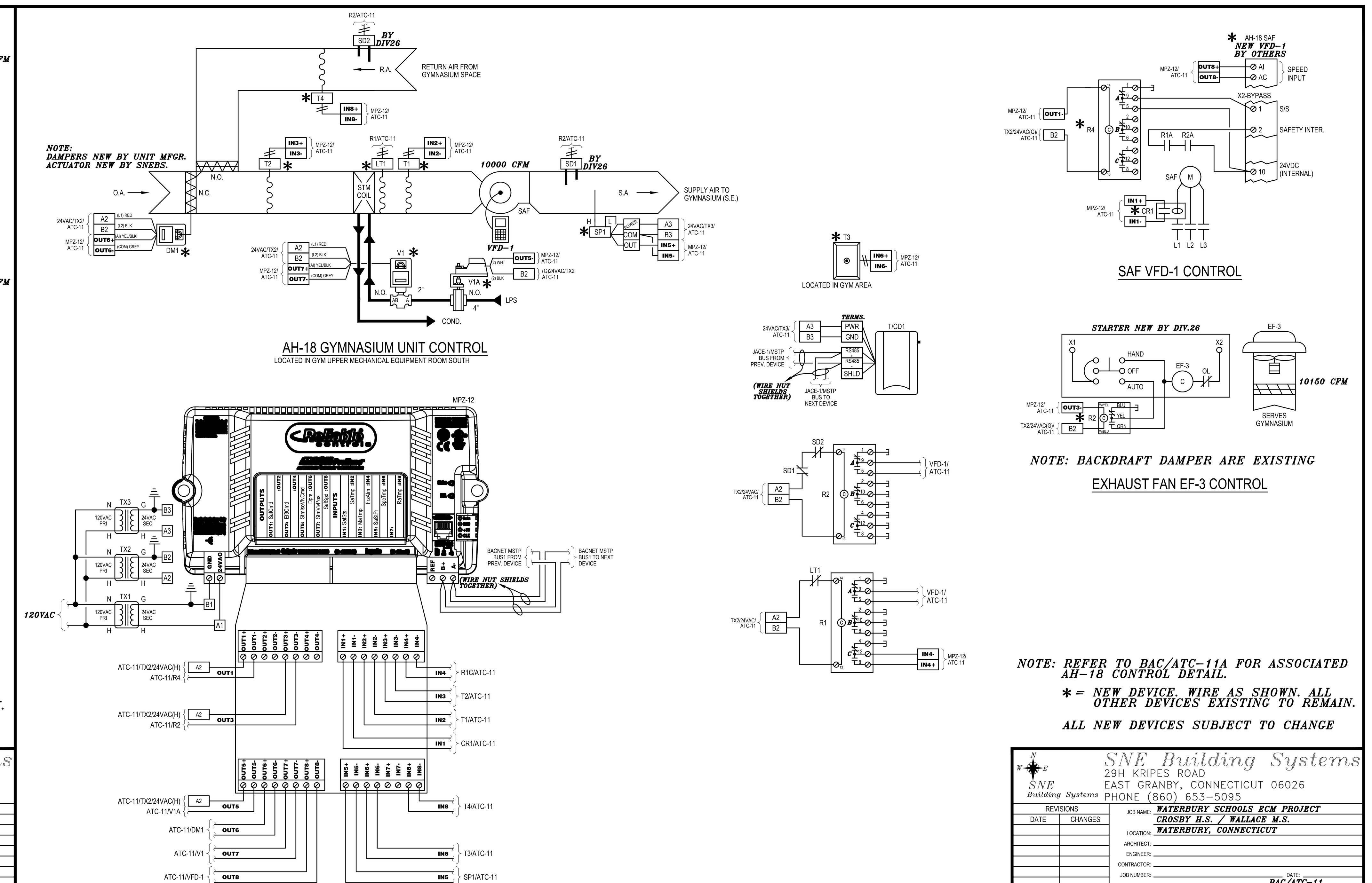
EAST GRANBY, CONNECTICUT 06026
PHONE (860) 653-5095
JOB NAME: WATERBURY SCHOOLS ECM PROJECT
CROSBY H.S. / WALLACE M.S.
LOCATION: WATERBURY, CONNECTICUT
ACAD: BAC/ATC-9



NOTE: REFER TO BAC/ATC-11A FOR ASSOCIATED AH-18 CONTROL DETAIL.
* = NEW DEVICE. WIRE AS SHOWN. ALL OTHER DEVICES EXISTING TO REMAIN.
ALL NEW DEVICES SUBJECT TO CHANGE

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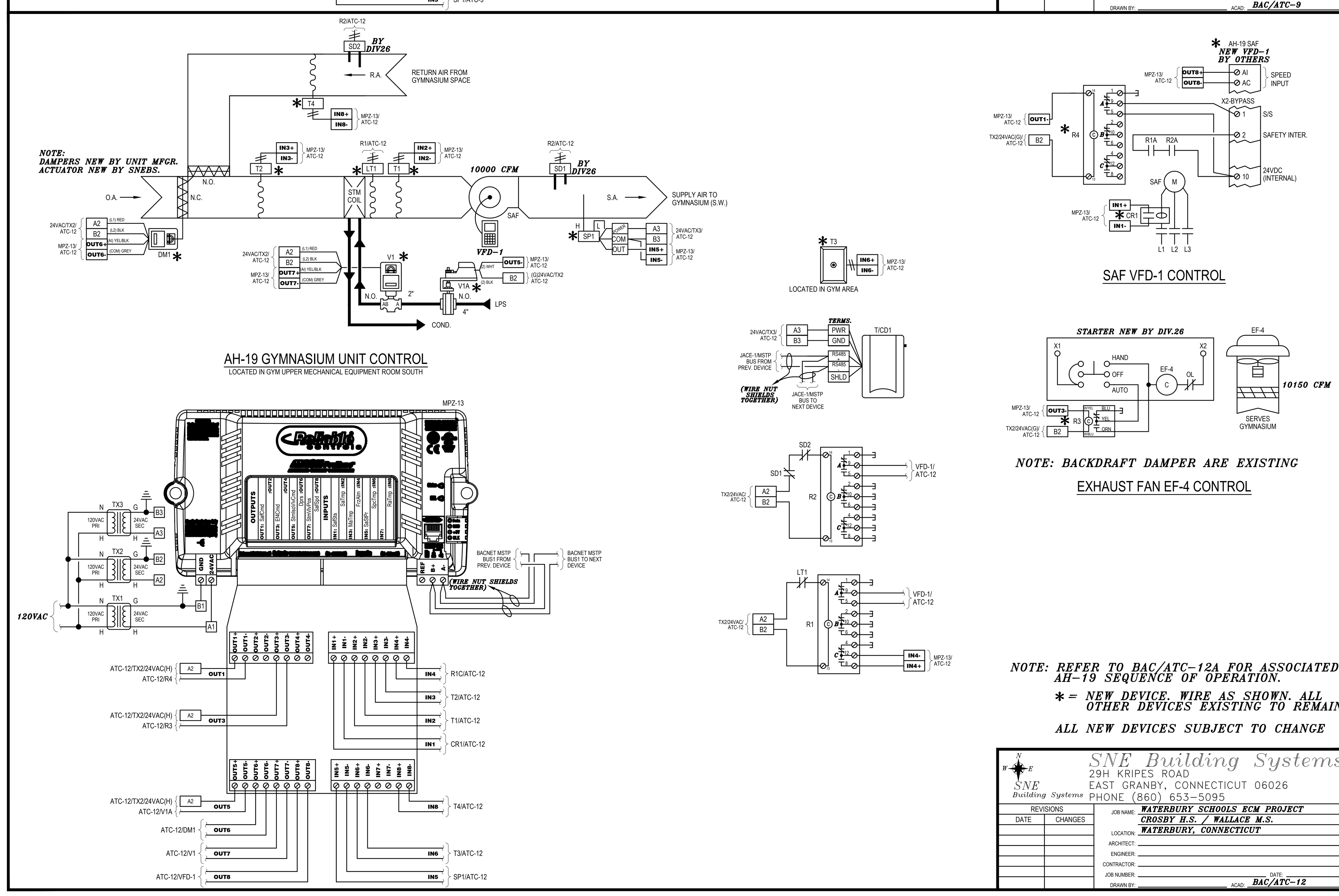
LOCATION: WATERBURY, CONNECTICUT
ACAD: BAC/ATC-11



NOTE: REFER TO BAC/ATC-12A FOR ASSOCIATED AH-19 SEQUENCE OF OPERATION.
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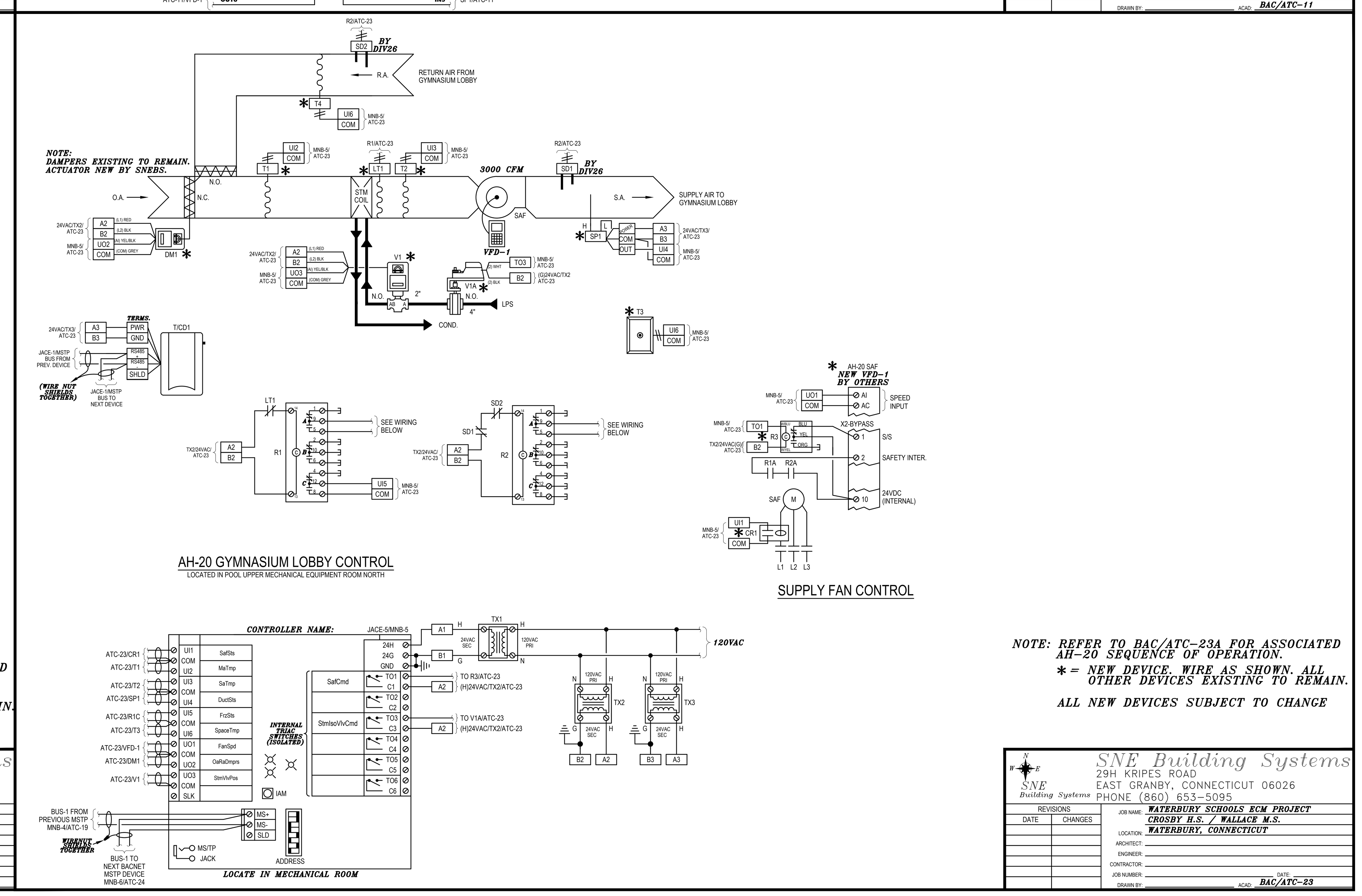
ACAD: BAC/ATC-12



NOTE: REFER TO BAC/ATC-23A FOR ASSOCIATED AH-20 SEQUENCE OF OPERATION.
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LOCATION: WATERBURY, CONNECTICUT
ACAD: BAC/ATC-23

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ARCHITECT / ENGINEER SEAL

PROJECT
WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

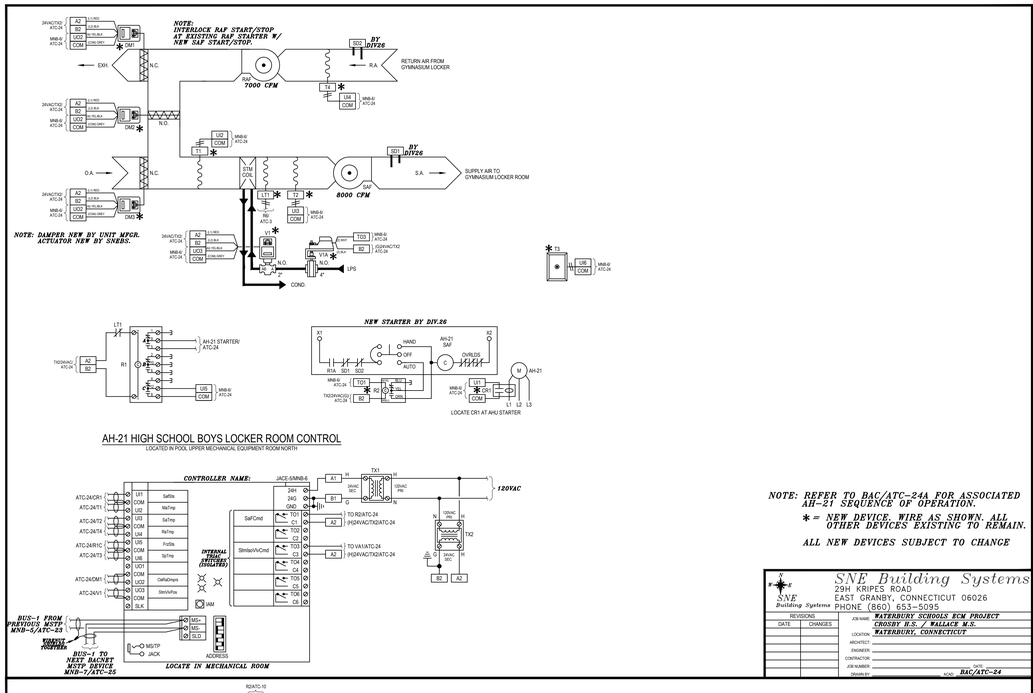
SHEET TITLE

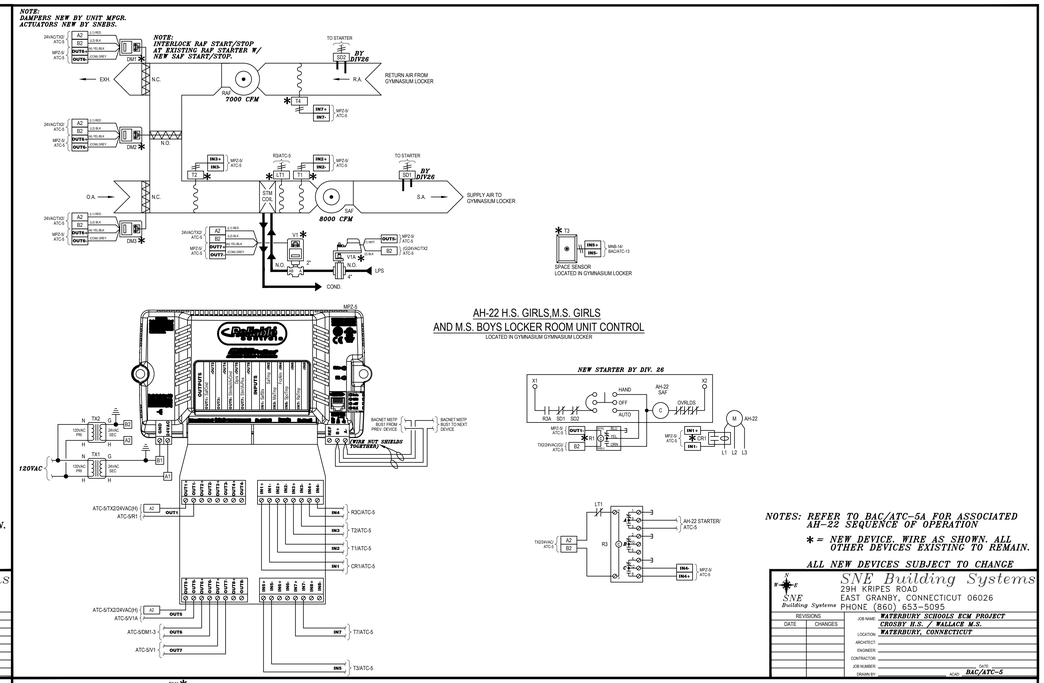
EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY

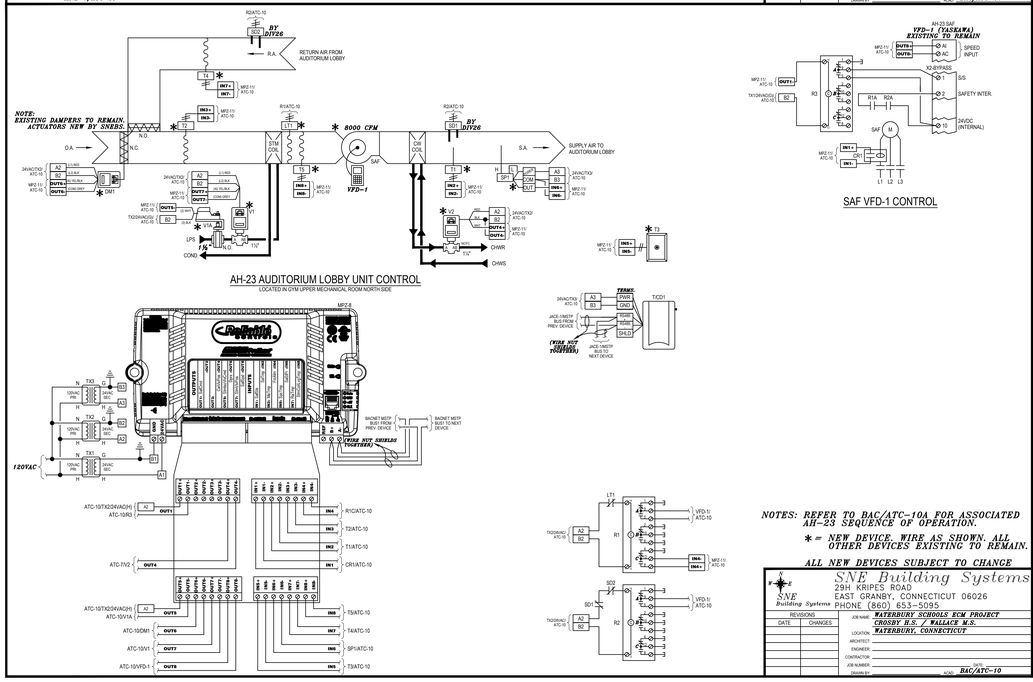
100% CONSTRUCTION DOCUMENTS
08/11/2023

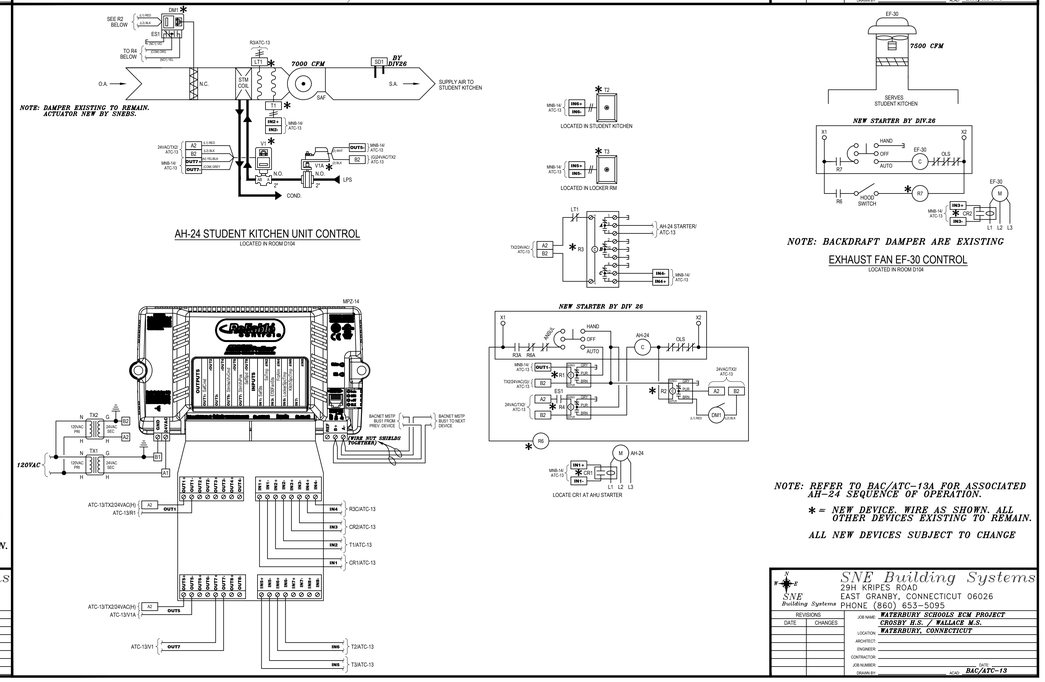
DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.
M-804









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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

EXISTING CONTROL DIAGRAMS - FOR REFERENCE ONLY

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-805

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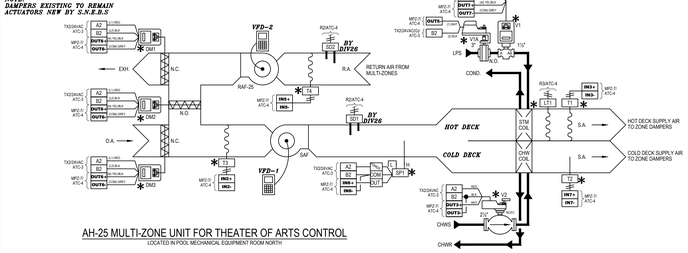
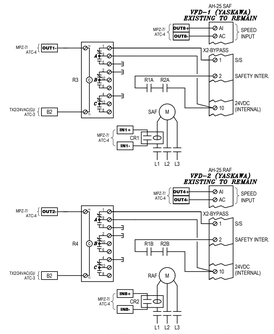
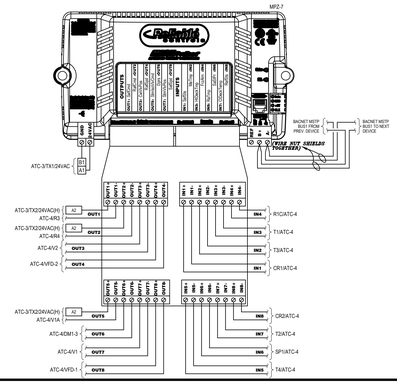


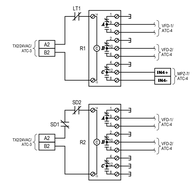
AH-25 MULTI-ZONE UNIT FOR THEATER OF ARTS CONTROL

LOCATED IN POOL MECHANICAL EQUIPMENT ROOM NORTH



SAF VFD-1 & RAF VFD-2 CONTROL





NOTES: REFER TO BAC/ATC-4A FOR ASSOCIATED AH-25 SEQUENCE OF OPERATION & BAC/ATC-2S FOR AH-25 ASSOCIATED ZONE DAMPER CONTROL DETAILS.

* = NEW DEVICE. WIRE AS SHOWN. ALL OTHER DEVICES EXISTING TO REMAIN.

ALL NEW DEVICES SUBJECT TO CHANGE

SNE Building Systems
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EAST GRANBY, CONNECTICUT 06026
PHONE (860) 653-5095

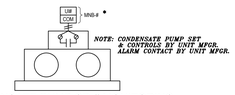
REVISIONS	
DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
CROSBY H.S. / WALLACE M.S.
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT:
ENGINEER:
CONTRACTOR:
JOB NUMBER: DATE:
DRAWN BY: ACAD: BAC/ATC-4

Sequence of Operations

Condensate pump Alarm Monitoring:

The BMS will monitor the Condensate pump set alarm status.



CONDENSATE PUMP CP-# MONITORING

TYPICAL FOR CP-1 THRU 3

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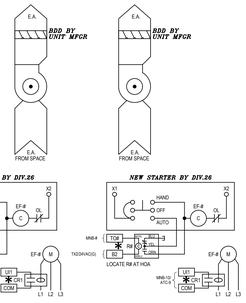
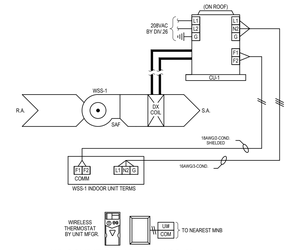
PHONE (860) 653-5095

REVISIONS	
DATE	CHANGES

JOB NAME: CROSBY/WALLACE SCHOOLS
ADDITIONS & ALTERATIONS
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT:
ENGINEER:
CONTRACTOR:
DRAWN BY: JOB NUMBER: DATE:
CHECKED BY: ACAD: BAC/ATC-11



EXHAUST FAN EF-31 & 32 CONTROL



AIR CONDITIONING UNIT WSS-1/ CU-1 SYSTEM CONTROL

Sequence of Operations

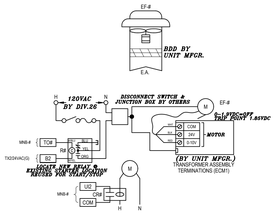
Split System WSS-1/CU-1 Control:

The factory space thermostat controller will cycle the split system fan and condensing unit to maintain setpoint.

Exhaust Fan Control (TYP):

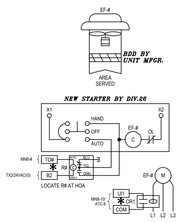
Exhaust fan will run through time program in the EMS system.

Fan status will be provided.



EXHAUST FAN EF-# CONTROL

TYP FOR EF-7, 13, 15, 16, 17, 19, 20, 22, 24, 25, 28, 33 & 99



EXHAUST FAN EF-# CONTROL

TYP FOR EF-5, 6, 8, 9, 10, 14, 18, 27, 29 & 30

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EAST GRANBY, CONNECTICUT 06026
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REVISIONS	
DATE	CHANGES

JOB NAME: WALLACE MIDDLE SCHOOL
ADDITIONS & ALTERATIONS
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT:
ENGINEER:
CONTRACTOR:
DRAWN BY: JOB NUMBER: DATE:
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PROJECT

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HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
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ELECTRICAL GENERAL NOTES

1. PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, COORDINATION, ADDITIONAL DESIGN AND ALL INCIDENTALS NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM AS DETAILED ON PLANS TO THE SATISFACTION OF THE ENGINEER AND THE OWNER. COORDINATE ALL WORK WITH THE ENGINEER BEFORE THE START OF WORK.
2. PRIOR TO SUBMITTING BID, THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION. CONTRACTOR SHALL INCLUDE IN THEIR BID ALL MATERIAL, LABOR, AND ALL INCIDENTALS FOR A COMPLETE INSTALLATION WHETHER SPECIFICALLY INDICATED OR NOT. ALL ERRORS, DISCREPANCIES AND MISSED ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS BY THE CONTRACTOR. THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE. NO EXTRA COST WILL BE ALLOWED FOR ANY DISCREPANCY WHICH COULD HAVE BEEN NOTICED AT THE SITE VISIT BY THE CONTRACTOR.
3. PERFORM WORK AS REQUIRED BY APPLICABLE CODES, REGULATIONS, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS AND OTHER AUTHORITIES WITH LAWFUL JURISDICTION. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE.
4. MATERIAL AND EQUIPMENT SHALL BE NEW (UNLESS NOTED), UL, NEMA, ANSI, IEEE, ADA & CMB APPROVED FOR INTENDED PURPOSE. MATERIAL AND INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND LOCAL ELECTRICAL CODE.
5. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS, AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
6. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE AND CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.
7. GUARANTEE WORK IN WRITING PER SPECIFICATIONS, REPAIR OR REPLACE DEFECTIVE MATERIALS OR INSTALLATION AT NO COST TO OWNER DURING THE GUARANTEE PERIOD. CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO COST TO OWNER. SUBMIT GUARANTEE TO OWNER BEFORE FINAL PAYMENT.
8. COORDINATE ALL ELECTRICAL ITEMS WITH EXISTING FIELD CONDITIONS. LOCATIONS SHOWN ARE APPROXIMATE AND MAY REQUIRE MINOR ADJUSTMENT IN THE FIELD TO SATISFY THE DESIGN INTENT.
9. DAMAGE TO EXISTING FACILITIES AND EQUIPMENT SHALL BE REPAIRED OR REPLACED IMMEDIATELY BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. THE LOCATIONS ON THESE PLANS ARE APPROXIMATE AND REQUIRE COORDINATION WITH ALL OTHER TRADES AND VERIFICATION OF EXISTING CONDITIONS. ROUTING OF CONDUIT IS DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW ALL REQUIRED OFFSETS AND DETAILS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING ASSOCIATED EQUIPMENT AND CONDITIONS. COORDINATE THE LOCATION OF ALL EQUIPMENT WITH THE ENGINEER AND THE OWNER. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL OTHER TRADE'S DRAWINGS AND SPECIFICATIONS AND COORDINATING WITH ALL OTHER TRADES DURING BIDDING AND CONSTRUCTION. THE CONTRACTOR IS TO INCLUDE CIRCUIT LENGTHS OF WIRE AND CONDUIT REQUIRED TO INSTALL CONNECTED DEVICES AND EQUIPMENT SUCH AS PANELBOARDS, SWITCHBOARDS, TRANSFORMERS, ETC. WITHIN 15 FEET OF THE LOCATION SHOWN.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUITY OF ALL POWER, CONTROL, FIRE ALARM, SECURITY SYSTEMS, AND COMMUNICATIONS FUNCTIONS TO ALL AREAS AFFECTED BY DEMOLITION AND/OR NEW CONSTRUCTION.
12. REPAIR AND PATCH ANY DISTURBED AREAS TO MATCH ADJACENT CONSTRUCTION.
13. DISCONNECT AND MAKE SAFE ANY EQUIPMENT TO BE REMOVED BY OTHERS. COORDINATE REMOVAL OF EQUIPMENT WITH OTHER TRADES PRIOR TO DEMOLITION.
14. IN ANY AREA REQUIRING THE PERFORMANCE OF ANY TRADE'S WORK, THIS CONTRACTOR SHALL CAREFULLY REMOVE AND STORE ANY OR ALL ELECTRICAL ITEMS IN PATH OF WORK, REINSTALLING, AND RECONNECTING SAME AS REQUIRED, IN ACCORDANCE WITH THE PLANS AND/OR AS DIRECTED AFTER COMPLETION OF OTHER TRADE'S WORK IN THAT AREA.
15. PRIOR TO THE START OF DEMOLITION, CONTRACTOR SHALL FIELD VERIFY ALL BRANCH CIRCUITS AND MAINTAIN THOSE CIRCUITS THAT EXTEND OUTSIDE THE SCOPE OF WORK.
16. AFTER RENOVATING EXISTING ELECTRICAL WORK, THE CONTRACTOR SHALL ENSURE THAT ALL REMAINING AND NEW EQUIPMENT WILL OPERATE PROPERLY, INCLUDING BUT NOT LIMITED TO BACKFEEDING OF EXISTING POWER AND LIGHTING CIRCUITS. REFER TO SINGLE LINE DIAGRAM.
17. ALL ELECTRICAL WORK INDICATED TO REMAIN SHALL BE SUITABLY PROTECTED TO PREVENT ANY DAMAGE.
18. WHERE ELECTRICAL SYSTEMS PASS THROUGH RENOVATED AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, SYSTEMS SHALL BE SUITABLY PROTECTED TO PREVENT DAMAGE OR RELOCATED AND THE SYSTEMS RESTORED TO NORMAL OPERATION. ANY OUTAGES IN SYSTEMS SHALL BE COORDINATED WITH OWNER. RESTORE POWER TO EXISTING TO REMAIN EQUIPMENT IF INTERRUPTED BY DEMOLISHED CIRCUITS IN THE AREA.
19. CONTRACTOR SHALL SUBMIT FOR REVIEW, SHOP DRAWINGS FOR ALL EQUIPMENT AND MATERIALS USED ON THE PROJECT. SUBMITTALS SHALL BE REVIEWED BY THE ENGINEER BEFORE PURCHASE OF MATERIALS.
20. ALL WIRING SHALL BE COPPER, 600V, 75°/90° RATED WITH FLAME-RETARDENT, HEAT AND MOISTURE RESISTANT INSULATION.
21. PERMANENTLY LABEL ALL NEW ELECTRICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO, DEVICE DESIGNATION AND SUPPLY CIRCUIT DESIGNATION. UPDATE OR REPLACE PANEL DIRECTORIES TO INCLUDE NEW CIRCUIT INFORMATION RESULTING FROM THIS PROJECT.
22. PROVIDE TEMPORARY POWER AND LIGHTING FOR ALL TRADES AS REQUIRED TO COMPLETE THE PROJECT. ALL TEMPORARY AND INTERIM EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS INCLUDING, BUT NOT LIMITED TO NFPA 110 AND NFPA 70.
23. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION THAT IS NOT SHOWN ON THE DRAWINGS.
24. OPENINGS IN EXISTING CONCRETE AND MASONRY WALLS AND FLOORS REQUIRED FOR CONDUIT INSTALLATION SHALL BE CORE DRILLED. MAXIMUM CORE DRILL SIZE SHALL BE 5" IN DIAMETER. CORE DRILL LOCATIONS SHALL BE SPACED A MINIMUM OF 6" FROM EACH OTHER MEASURED FROM THE OUTSIDE EDGE OF THE CORE DRILL. ALL CORE DRILL OPENINGS SHALL BE PROPERLY SEALED ACCORDING TO THEIR LOCATION AND APPLICATION.
25. ALL OUTAGES SHALL BE KEPT TO A MINIMUM. ALL WORK THAT REQUIRES A SUSTAINED EQUIPMENT OUTAGE SHALL BE PERFORMED CONTINUOUSLY AROUND THE CLOCK UNTIL WORK IS COMPLETED UNLESS NOTED OTHERWISE. COORDINATE OUTAGES WITH OWNER REPRESENTATIVE.
26. PROVIDE FOR EACH BRANCH CIRCUIT AND FEEDER CIRCUIT A DEDICATED EQUIPMENT GROUND WIRE. FOR SINGLE PHASE BRANCH CIRCUITS OF 120 V/1PH OR 277V/1 PH, PROVIDE DEDICATED HOT, DEDICATED NEUTRAL AND DEDICATED EQUIPMENT GROUND WIRES. SHARING OF NEUTRAL OR EQUIPMENT GROUND WIRES IS NOT PERMITTED. WIRING TO ALL HVAC EQUIPMENT OR OTHER TRADE EQUIPMENT SHALL BE IN CONDUIT. ALL EQUIPMENT AND FEEDER WIRING IN MECHANICAL ROOM/ELECTRICAL ROOM SHALL BE IN RIGID CONDUIT. USE OF MC CABLE IS LIMITED TO BRANCH CIRCUIT WIRING ABOVE RECESSED CEILING OR CONCEALED IN WALL. WIRING TO OUTLETS ON TABLE SHALL BE PROVIDE IN EITHER EMT CONDUIT OR FLEXIBLE METAL CONDUIT. DO NOT USE PLASTIC TIE WRAPS TO SUPPORT CONDUITS AND MC CABLES. MC CABLES SHALL BE SUPPORTED AT MAXIMUM OF 6'-0" WITH SECURELY FASTENED MC CABLE SUPPORT CLAMPS, J-HOOKS, OR METAL CABLE BRACKETS.
27. PROVIDE IDENTIFICATION LABELS FOR ALL BRANCH CIRCUITS AND FEEDERS CIRCUITS AT JUNCTION BOXES, PANELBOARDS, TROUGHS, AND SPLICE BOXES.
28. PROVIDE UNSPLICED FEEDERS FROM PANELBOARD OR SWITCHBOARD TO ALL EQUIPMENT, INCLUDING ALL 20 AMPERE, SINGLE POLE BRANCH CIRCUIT WIRING.
29. ALL WIRING DEVICES ARE TO BE RECESSED WHERE POSSIBLE. WHERE RECESSING IS NOT POSSIBLE, WIRING DEVICES ARE TO BE SURFACE MOUNTED WITH CIRCUIT WIRING ROUTED IN SURFACE MOUNTED CONDUIT PER SPECIFICATIONS.
30. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL (2) #14-3/4" FROM EACH VENDOR SUPPLIED DUCT SMOKE DETECTOR TO FACP. INSTALLATION OF DETECTOR BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY ELECTRICAL TERMINATIONS. EACH BLOWER COIL (BC) AND EACH ENERGY RECOVERY VENTILATOR (ERV) WILL HAVE (1) SUPPLY DUCT SMOKE DETECTOR AND (1) RETURN DUCT SMOKE DETECTOR.
31. VFD CABLE SHALL BE TYPE MC-HL (XHHW2). 3/C VFD CABLE SHALL BE RATED FOR 600 VAC WITH 2000 VOLT INSULATION WITHSTAND AND UL LISTED AS TYPE MC-HL CABLE PER UL2225(E38916). VFD CABLES SHALL HAVE UNCOATED SOFT COPPER STRANDED CONDUCTORS RATED FOR 90 DEG CENTIGRADE WET OR DRY , CROSS LINK POLYETHYLENE HIGH DIELECTRIC STRENGTH COLOR CODED INSULATION, AND THREE BARE SOFT STRANDED GROUND CONDUCTORS WITH NON-HYGROSCOPIC FILLER AND BINDER TAPE. SHEATH SHALL BE CLOSE FITTING, IMPERVIOUS, CONTINUOUS WELDED CORRUGATED ALUMINUM C-L-X PER UL1569. SHEATH SHALL BE PROTECTED WITH LOW TEMPERATURE BLACK PVC JACKET. CONTRACTOR SHALL PROVIDE PROPER FITTINGS FOR INSTALLATION OF VFD CABLE.
32. ALL CONDUIT PENETRATIONS THROUGH WALLS OR CEILINGS SHALL BE PATCHED AND SEALED WITH FIRE RATED FOAM SEALANT.
33. PROVIDE INSULATING BUSHINGS ON CONDUIT THREADS OR CONNECTORS WHERE RACEWAYS WITH CONDUITS OR MC CABLES ENTER A BOX OR ENCLOSURE. THIS BUSHING SHALL BE INSTALLED ON ALL CABLES AND CONDUITS.
34. PROVIDE FIRE ALARM RATED MC CABLE FOR CONNECTIONS BETWEEN FIRE ALARM DEVICES. MC CABLE SHALL RUN CONCEALED ABOVE CEILINGS AND IN DRYWALL. WHERE EXPOSED, PROVIDE EMT; NO EXPOSED MC CABLE IS PERMITTED.
35. CONTRACTOR TO PROVIDE A COORDINATION STUDY WHENEVER ANY FEEDER CIRCUITS ARE ADDED TO OR REMOVED FROM THE MAIN SWITCHBOARD / PANELBOARD OF A BUILDING. ADDITIONALLY, PROVIDE A COORDINATION STUDY WHENEVER A GENERATOR IS ADDED OR REPLACED. CONTRACTOR TO ADJUST THE TRIP OF THE MAIN CIRCUIT BREAKER AND/OR THE GENERATOR BREAKER ACCORDINGLY.

FIRE ALARM SYSTEM:

PROVIDE NEW FIRE ALARM SYSTEM DEVICES AND CONNECT TO EXISTING FIRE ALARM SYSTEMS (CROSBY HIGH SCHOOL FACP - NOTIFIER) (WALLACE MIDDLE SCHOOL FACP - NOTIFIER). ALL NEW DEVICES AND WIRING SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. PROVIDE REQUIRED TESTING AND INSPECTION AS REQUIRED BY STATE OF CONNECTICUT FIRE MARSHALL'S OFFICE.

TELECOMMUNICATION GENERAL NOTES

1. ALL LOW VOLTAGE CABLING MUST BE INSTALLED ACCORDING TO BICSI GUIDELINES.
2. ALL CABLING SHALL CONFORM TO THE LATEST EDITION OF THE EIA/TIA STANDARDS.
3. ALL CABLING SHALL BE APPROPRIATELY LABELED.
4. CONTRACTOR SHALL NOT INSTALL ANY EQUIPMENT PRIOR TO ITS APPROVAL BY THE ARCHITECT AND ENGINEER. CONTRACTOR WILL BE LIABLE FOR ITS REMOVAL IN ANY SUCH CASE.
5. PROVIDE A COMPLETE GROUNDING SYSTEM FOR ALL LOW VOLTAGE SYSTEMS AS SHOWN.
6. CONTRACTOR TO PROVIDE PATHWAYS FOR LOW VOLTAGE SYSTEMS. PATHWAYS SHALL CONSIST OF IN-WALL CONDUIT, SURFACE MOUNTED SPLIT CHANNEL METALLIC RACEWAY, BACK BOXES, SLEEVES, CHASES, CABLE TRAY AND J-HOOKS. ANY PENETRATION OF A FIRE-RATED BARRIER MUST BE FIRE-STOPPED IN ACCORDANCE WITH LOCAL AND STATE LAWS AND THE AUTHORITY HAVING JURISDICTION.
7. PRIOR TO BEGINNING ANY WORK, SECURE NECESSARY PERMITS OR CLEARANCES FROM THE AUTHORITIES HAVING JURISDICTION. PROVIDE ALL LABOR AND MATERIALS FOR A COMPLETE INSTALLATION. WORK SHALL BE EXECUTED BY EXPERIENCED TRADESMEN WHO ARE LICENSED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED.
8. CONDUITS SHALL BE RUN BEHIND FINISHED SURFACES WHERE POSSIBLE UNLESS OTHERWISE NOTED.
9. THE TELECOMMUNICATION PLANS ARE DIAGRAMMATIC ONLY. COORDINATE TECHNOLOGY EQUIPMENT LOCATION AND INSTALLATION WITH EQUIPMENT BEING SERVED.
10. CONTRACTOR SHALL INFORM THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION AND PRIOR TO COMPLETION OF CONSTRUCTION TO ALLOW SUFFICIENT TIME FOR COORDINATION OF EXISTING BUILDING ACTIVITIES WITH THE CONSTRUCTION WORK.
11. THE CONTRACTOR SHALL INCLUDE IN THE WORK, WITHOUT EXTRA COST, ANY LABOR, MATERIALS, SERVICES, APPARATUS, DRAWINGS (IN ADDITION TO CONTRACT DRAWINGS AND DOCUMENTS), IN ORDER TO COMPLY WITH ALL APPLICABLE LAWS, INDICATED AND/OR SPECIFIED.
12. BEFORE SUBMITTING BIDS, THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL ADJOINING EXISTING BUILDINGS, EQUIPMENT AND SPACE CONDITIONS ON WHICH HIS/HER WORK IS ANY WAY DEPENDENT FOR THE BEST WORKMANSHIP AND OPERATION ACCORDING TO THE INTENT OF THE SPECIFICATIONS AND DRAWINGS. HE/SHE SHALL REPORT TO THE ARCHITECT/ENGINEER ANY CONDITION WHICH MIGHT PREVENT HIM/HER FROM INSTALLING HIS/HER EQUIPMENT IN THE MANNER SPECIFIED TEN DAYS PRIOR TO SUBMISSION OF BIDS.
13. NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT THE SITE, NOR FOR ANY ALLEGED MISUNDERSTANDING OF MATERIALS TO BE FURNISHED OR WORK TO BE PERFORMED.
14. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCOVERED CONFLICTS BETWEEN EXISTING INSTALLATIONS WHICH ARE NOT SCHEDULED FOR DEMOLITION AND THE NEW WORK INDICATED WITHIN THE CONTRACT DOCUMENTS. SUCH NOTIFICATION SHALL BE ACCOMPANIED BY A DRAWING DELINEATING THE PROPOSED SOLUTION PRIOR TO STARTING ANY WORK IN THE AFFECTED AREA.
15. THE EXACT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL SYSTEMS. PROVIDE ALL WIRES AND CABLES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON PLAN OR NOT.
16. REFER TO ARCHITECTURAL DRAWINGS FOR THE FINISH, EXACT LOCATION, ELEVATION, MOUNTING HEIGHTS AND DETAILS OF ALL LIGHT FIXTURES AND DEVICES WITHIN THE CEILING GRID FOR COORDINATION WITH TECHNOLOGY EQUIPMENT. REPORT ANY DISCREPANCIES TO THE ARCHITECT IMMEDIATELY.
17. WHEREVER CONDUITS PENETRATE WALLS OR FLOORS, SPACE REMAINING IN SUCH PENETRATIONS SHALL BE FILLED. FILLING MATERIAL SHALL BE FIRE RESISTIVE WITH RATING EQUAL TO THE RATING OF THE FLOOR OR WALL ITSELF.
18. PROVIDE AND LEAVE ACCESSIBLE PULL STRINGS IN ALL CONDUITS, RACEWAYS, SLEEVES AND CHASES TO LOW VOLTAGE WIRING TO BE INSTALLED.
19. OUTLET BOXES INSTALLED ON OPPOSITE SIDES OF THE SAME PARTITION SHALL BE STAGGERED. DO NOT MOUNT OUTLET BOXES BACK TO BACK.
20. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS, CUT SHEETS, CALCULATIONS AND EQUIPMENT LITERATURE FOR ALL EQUIPMENT BEING PROVIDED AS PART OF THIS SCOPE OF WORK. THE EXACT DEVICE OR PIECE OF EQUIPMENT TO BE INSTALLED MUST BE CLEARLY CALLED OUT FOR THE DESIGN TEAM TO REVIEW.
21. CONTRACTOR SHALL PROVIDE COMPLETE AS-BUILT DRAWINGS FOR REVIEW AND APPROVAL BY THE DESIGN TEAM PRIOR TO JOB COMPLETION.
22. CONTRACTOR SHALL PROVIDE A COMPLETE PUNCH LIST OF ALL INSTALLED SYSTEMS TO THE CONSTRUCTION MANAGER WHEN THE INSTALLED WORK IS READY TO BE EXAMINED BY THE DESIGN TEAM. INCOMPLETE SYSTEMS SHALL NOT BE REVIEWED UNTIL IT IS DETERMINED THAT THE SYSTEMS ARE APPROXIMATELY COMPLETE.
23. ALL TELECOMMUNICATIONS CABLING SHALL BE PLENUM RATED CAT6, 4 PAIRS, UNSHIELDED TWISTED PAIR CABLE, HUBBELL CAT NO C6RPX OR EQUAL ROUTED BETWEEN TELE/DATA ROOM AND EACH VOICE AND/OR DATA JACK. THE USE OF J-HOOKS IS PERMITTED IN AREAS WITH A SUSPENDED CEILING WHERE ADEQUATE CLEARANCE CAN BE OBTAINED. ALL WIRING IN SPACES WITHOUT CEILINGS OR AREAS WITH INADEQUATE SPACE ABOVE THE CEILING SHALL BE RUN IN EMT. PROVIDE TERMINATIONS AT BOTH PATCH PANEL AND OUTLET. PROVIDE CAT6 PATCH CORDS (36" L) FOR CONNECTION OF PATCH PANEL TO FUTURE ETHERNET SWITCH. CONTRACTOR SHALL TONE/TEST/TERMINATE ALL CONNECTIONS. PROVIDE ADDITIONAL CAT6 48 PORT PATCH PANEL(S) IN MDF OR IDF, AS APPLICABLE, AS REQUIRED TO SUPPORT ADDITIONAL DATA CONNECTIONS IN MDF/IDF. DATA PATCH PANELS SHALL BE HUBBELL M/N HP648 OR APPROVED EQUAL.
24. CABLE AND JACKS SHALL BE OF TYPE AND COLOR SHOWN:

FUNCTION	TYPE	CABLE AND JACK
DATA	CAT6	MATCH EXISTING (COORDINATE WITH OWNER)
VOICE	CAT6	MATCH EXISTING (COORDINATE WITH OWNER)
VIDEO	CAT6	MATCH EXISTING (COORDINATE WITH OWNER)
WAP	CAT6A	MATCH EXISTING (COORDINATE WITH OWNER)
CATV	RG6	MATCH EXISTING (COORDINATE WITH OWNER)

25. CONNECT TELECOMMUNICATION OUTLETS TO APPROPRIATE MDF/IDF IN ACCORDANCE WITH OWNERS REQUIREMENTS AND DIRECTION.

LIGHTING FIXTURE SCHEDULE

TYPE	LAMPS	VOLTAGE	MOUNT	FIXTURE DESCRIPTION	MANUFACTURER/CATALOG NUMBER	REMARKS
A	LED 5500 LUMENS	120/277	SUSPENDED	4' WRAPAROUND FIXTURE	H E WILLIAMS / 17-4-8-40-AF-VBY-2-DRV-UNV OR APPROVED EQUAL	PROVIDE WITH MOUNTING HARDWARE. COORIDNATE MOUNTING HEIGHT AND LOCATION WITH MECHANICAL EQUIPMENT AND DUCTWORK.
B	LED 4760 LUMENS	120/277	RECESSED	2'X2' LED FLAT PANEL FIXTURE	MAXLITE / MLFP-22-G4-40-40 OR APPROVED EQUAL.	PROVIDE MOUNTING HARDWARE AS REQUIRED.

ELECTRICAL SYMBOL LEGEND

Power Devices

SYMBOL	DESCRIPTION
	GENERAL PURPOSE DUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP (MIN.).
	GENERAL PURPOSE QUADRUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP (MIN.).
GFCI OR GFCI	GENERAL PURPOSE GFCI RECEPTACLE (DUPLEX OR QUADRUPLEX) - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP.
WP/GFCI	GENERAL PURPOSE GFCI DUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP. OUTLETS INSTALLED OUTDOORS OR ON ROOF SHALL HAVE DIECAST ALUMINUM BOX 2-1/8" DEEP (MIN.), AND WHILE IN USE WEATHERPROOF COVER; THOMAS&BETTS CKSUV OR APPROVED EQUAL.
JB	JUNCTION BOX
SM	FRACTIONAL HORSEPOWER MOTOR STARTER WITH OVERLOAD IN NEMA 1 ENCLOSURE; SQ'D FG2P OR APPROVED EQUAL FOR INDOORS, FW2P FOR OUTDOORS WITH NEMA 4 ENCLOSURE
	FUSED DISCONNECT SWITCH-HEAVY DUTY, 3POLE WITH FUSE CLIPS SUITABLE FOR CLASS "R" FUSES. NEMA1 UNLESS NOTED. WP-WEATHER PROOF-NEMA3R ENCLOSURE. (NOMENCLATURE: 30A/20A = SWITCH SIZE/FUSE SIZE). SQ D CLASS 3110 OR EQUAL. DO NOT INSTALL ON TOP OF EQUIPMENT LABELS OR NAMEPLATES.
	COMBINATION MAGNETIC STARTER, FUSIBLE DISCONNECT SWITCH TYPE, 3POLE, FULL VOLTAGE NON-REVERSIBLE TYPE WITH: FUSED CONTROL TRANSFORMER, BI-METALLIC OVERLOAD RELAYS, ON/OFF PUSH BUTTONS OR HAND-OFF-AUTO.SELECTOR SWITCH, (1)N.O./(1)N.C., AUXILIARY CONTACTS AND LED PILOT LIGHT, CLASS "R" FUSE CLIPS. NEMA1 ENCLOSURE UNLESS NOTED- SQ D CLASS 8538 OR EQUAL. NEMA 1 - SIZE 1 UNLESS NOTED OTHERWISE.
VFD	VFD - SUPPLIED BY VENDOR, INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECTRICAL GENERAL NOTE #31 ON THIS SHEET FOR VFD CABLE REQUIREMENTS.

Lighting Controls

SYMBOL	DESCRIPTION
$	WALL SWITCH - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
$\$_{3K}$	KEYED WALL SWITCH (3-WAY) - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
$\$_{D}$	SLIDING DIMMER WITH ON/OFF SWITCH, RATED FOR 120/277V - 10/5 AMP, LEGRAND / CD4FBL3P OR APPROVED EQUAL. COLOR TO BE SELECTED BY ARCHITECT. PROVIDE LOW VOLTAGE WIRING BETWEEN SWITCH AND LIGHT FIXTURES.
EL	EMERGENCY LIGHTING CONTROL UNIT. WATTSTOPPER: ELCU-200 OR APPROVED EQUAL. SEE EMERGENCY LIGHTING RELAY DETAIL.
MS	MOTION SENSOR, CEILING MOUNTED, 2000 SQFT - HUBBELL / OMNI-DT-2000 OR APPROVED EQUAL. PROVIDE LOW VOLTAGE WIRING TO POWER PACK.
PP	POWER PACK - HUBBELL / UVPP OR APPROVED EQUAL. PROVIDE LOW VOLTAGE WIRING TO MOTION SENSOR. CONNECT TO LOCAL LIGHTING CIRCUIT WITH 2#12 + 1#12G - 3/4"C WIRING.

Fire Alarm Devices

SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
DD OR DD	DETECTION DEVICE - SMOKE DETECTOR - DUCT DETECTOR (INSTALLED BY MECHANICAL EQUIPMENT VENDOR, SUPPLIED AND WIRED BY ELECTRICAL CONTRACTOR). PROVIDE WITH CONTROL RELAY AND TEST SWITCH. SEE DUCT DETECTOR CONTROL WIRING DIAGRAM AND DUCT DETECTOR CONTROL WIRING DETAIL.
CTR	CONTROL RELAY - PROVIDE A CONTROL RELAY WITH EACH DUCT DETECTOR. PROVIDE LOW VOLTAGE WIRING TO FACP.
$\$_{DD}$	DUCT DETECTOR REMOTE TEST SWITCH - SEE DUCT DETECTOR CONTROL WIRING DIAGRAM & DUCT DETECTOR CONTROL WIRING DETAIL. COORDINATE LOCATION OF TEST SWITCH IN FIELD. PROVIDE A TEST SWITCH WITH EACH DUCT DETECTOR.
Xcd	FIELD CONFIGURABLE NOTIFICATION DEVICE (AUDIO/VISUAL) - CEILING MOUNTED HORN WITH STROBE AS SINGLE ASSEMBLY, REQUIRED CANDELA RATING 'X' INDICATED "X cd".
	DETECTION DEVICE - SMOKE DETECTOR - PHOTOELECTRIC PRODUCTS OF COMBUSTION DETECTOR

Communication Devices

SYMBOL	DESCRIPTION
X	TYPE CX TELECOMMUNICATION OUTLET - DATA WIRING DEVICE WITH RJ45, CAT6 JACKS. PROVIDE 4-PAIR, CAT-6 CABLE BETWEEN EACH JACK AND IDF, (TR) ROOM WITH ADEQUATE SLACK FOR FINAL TERMINATION TO NETWORK OR TELEPHONE PATCH PANEL. NUMBER INSCRIBED IN TRIANGLE SHOWS NUMBER OF JACKS/DROPS AT THAT OUTLET LOCATION. ELECTRICAL BOX TO BE 2-1/8" DEEP. SEE TYPE CX TELECOMMUNICATION OUTLET DETAIL ON SHEET E-500.
2 WAP	TYPE C2 TELECOMMUNICATION OUTLET - C2(WAP) - WITH TWO DATA CONNECTIONS FOR WIRELESS ACCESS POINT CONNECTION AND/OR PA SPEAKER CONNECTION. MOUNT ABOVE CEILING UNLESS OTHERWISE SHOWN OR STATED. SEE TYPE C2 TELECOMMUNICATION OUTLET FOR CEILING WIRELESS ACCESS POINT DETAIL ON SHEET E-500.
	WIRELESS ACCESS POINT - OWNER SUPPLIED, CONTRACTOR INSTALLED. SEE TYPICAL CEILING MOUNTED WIRELESS ACCESS POINT DETAIL ON SHEET E-500.
IFP	IFP - INTERACTIVE FLAT PANEL AND MOUNTING BRACKET PROVIDED BY OWNER.
IFP	IFP OUTLET - REFER TO IFP OUTLET DETAIL ON SHEET E-500 FOR DETAILS AND ALL REQUIRED ITEMS, ETC. TO BE PROVIDED.
T	TEACHER STATION OUTLET - MOUNT AT 18"AFF UNLESS OTHERWISE SHOWN OR STATED. PROVIDE ASSOCIATED CABLING, CONDUIT, DEVICES, ETC. REFER TO TEACHER STATION OUTLET DETAIL ON SHEET E-500 FOR FURTHER DETAILS AND ALL REQUIRED ITEMS, ETC. TO BE PROVIDED.
SP	PA SPEAKER - CEILING MOUNT
SP	SPEAKER/CLOCK COMBINATION UNIT - WALL MOUNT

GRAPHIC CONVENTIONS

Wiring Devices

HOMERUN PANEL DESIGNATION → PLA-11 ← BRANCH CIRCUIT DESIGNATION

OUTLETS TO BE MOUNTED AT STANDARD HEIGHT UNLESS OTHERWISE NOTED

Disconnects

30A, WP ← DISCONNECT SIZE, WP: WEATHER PROOF

20A, RK1 ← FUSE SIZE, TYPE RK1

Lighting Fixtures

TYPE: A ← LUMINAIRE TYPE - SEE LIGHT FIXTURE SCHEDULE

PLA-11-d

- CONTROL DEVICE IDENTIFICATION
- BRANCH CIRCUIT NUMBER
- PANEL DESIGNATION

Lighting Switches

$\$^{a}_{D}$

a ← CONTROL DEVICE IDENTIFICATION

D ← DEVICE TYPE DESIGNATION

ELECTRICAL ABBREVIATIONS

(D) - DENOTES EQUIPMENT OR WIRING TO BE DEMOLISHED
(E) - DENOTES EXISTING EQUIPMENT OR WIRING TO REMAIN
(N) - DENOTES NEW EQUIPMENT OR WIRING

A - AMPS
AF - AMPERE FRAME
AFF - ABOVE FINISHED FLOOR
AT - AMPERE TRIP
ATS - AUTOMATIC TRANSFER SWITCH
BLDG - BUILDING
C - CONDUIT
CB - CIRCUIT BREAKER
ENCL - ENCLOSURE
FA - FIRE ALARM
G - GROUND
GE - GENERAL ELECTRIC
KA - KILO AMPERE
KV - KILO VOLT
KVA - KILO VOLT AMPERE
LG - LG CORPORATION
LI - LONG TIME + INSTANTANEOUS
LSI - LONG TIME + SHORT TIME + INSTANTANEOUS
MCB - MAIN CIRCUIT BREAKER
MDP - MAIN DISTRIBUTION PANEL
MTS - MANUAL TRANSFER SWITCH
MVASC - MEGA VOLT AMPERE SHORT CIRCUIT
OC - ON CENTER
PH - PHASE
QO - QWIK OPEN PROTECTION
SPD - SURGE PROTECTIVE DEVICE
SW - SWITCH
SWBD - SWITCHBOARD
UG - UNDERGROUND
V - VOLTS
W - WATTS OR WIRE
Z - IMPEDANCE

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

ELECTRICAL COVER SHEET

100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

E-000

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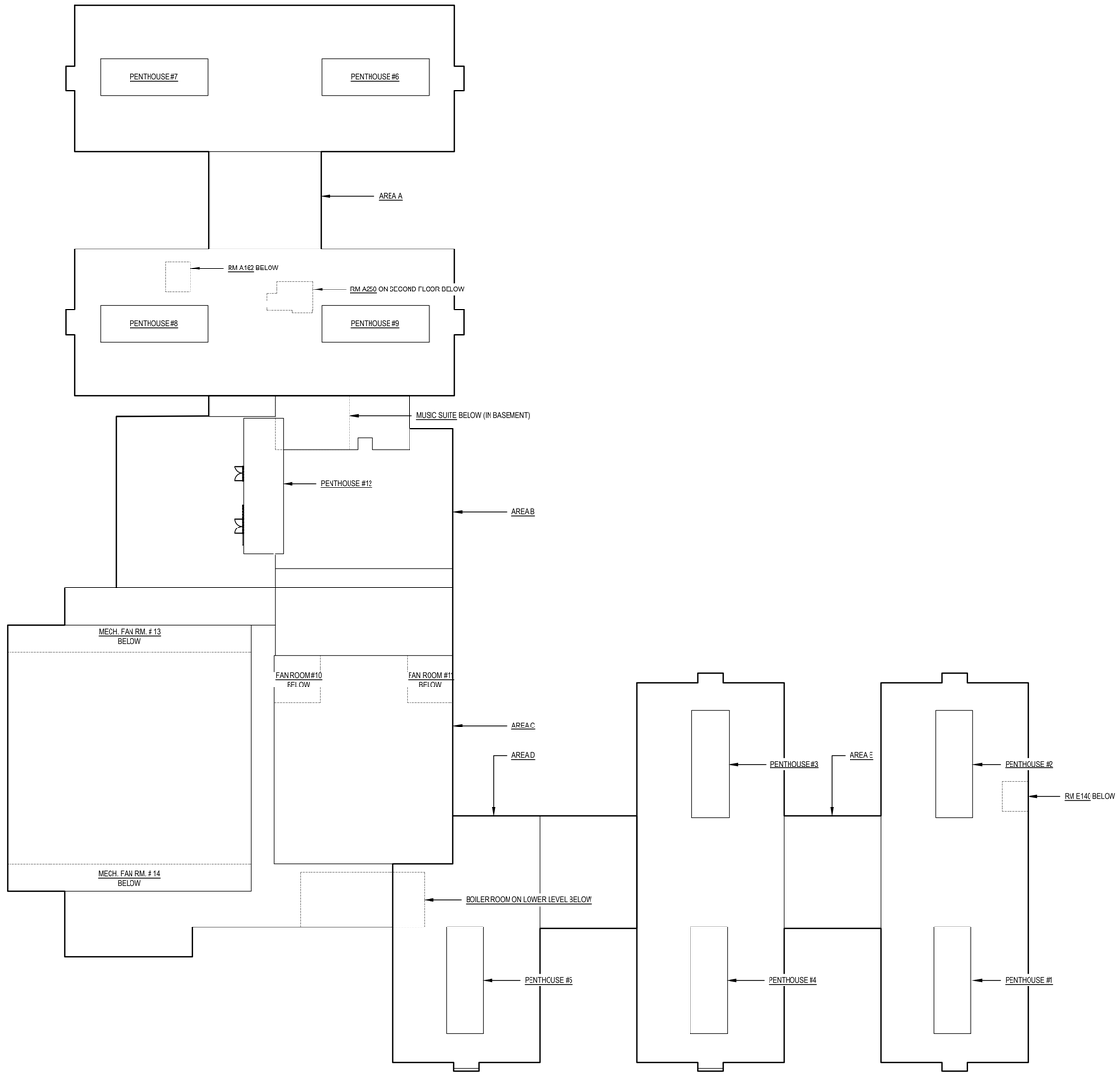

1
E-001

ELECTRICAL PENTHOUSE/FAN ROOM LOCATION PLAN

SCALE: 1/32" = 1'-0"

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

ELECTRICAL OVERALL PLAN

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08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

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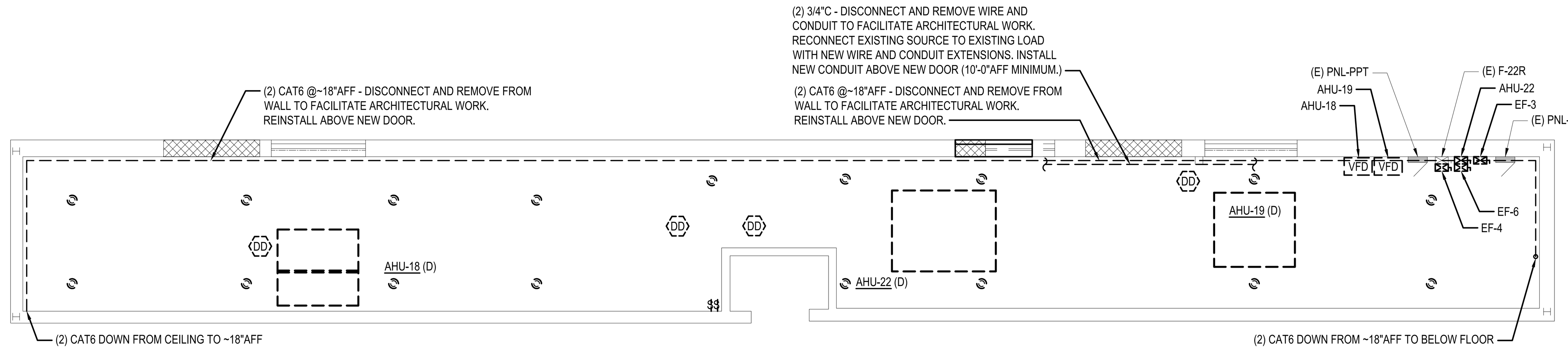
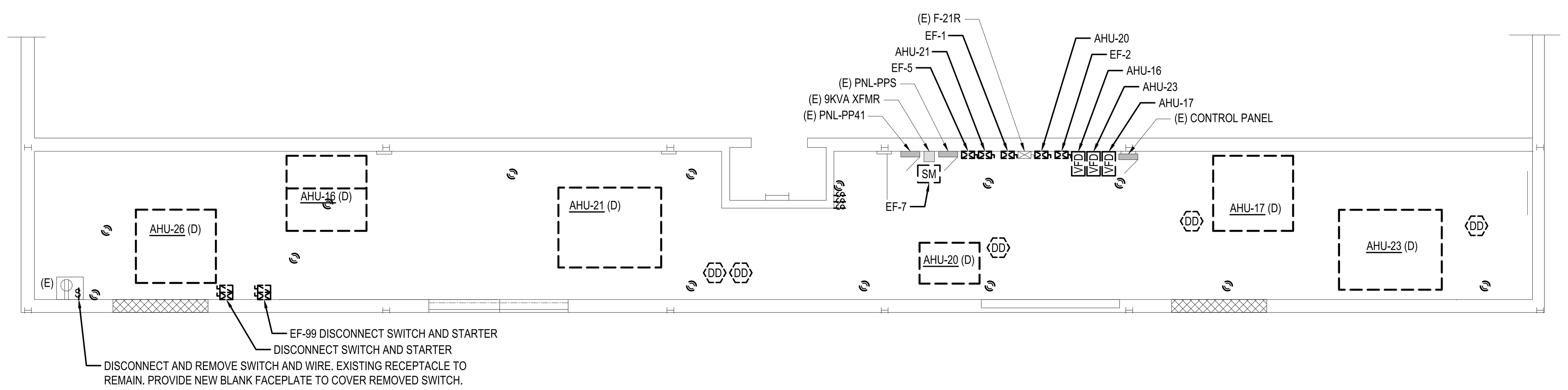


FAN ROOM #13 ELECTRICAL DEMOLITION PLAN

1 / ED101

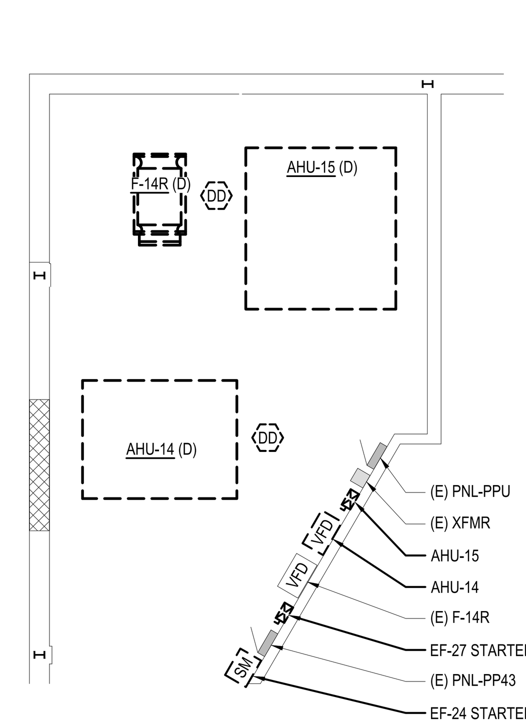
SCALE: 1/8" = 1'-0"



FAN ROOM #14 ELECTRICAL DEMOLITION PLAN

2 / ED101

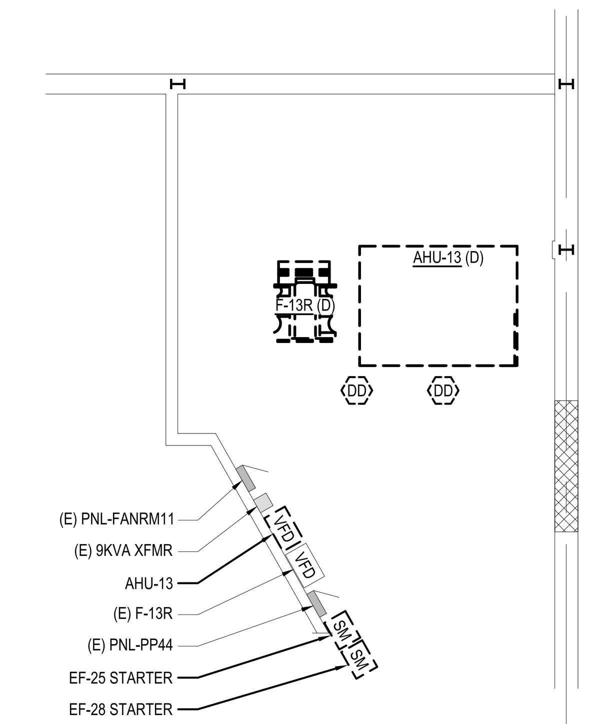
SCALE: 1/8" = 1'-0"



FAN ROOM #10 ELECTRICAL DEMOLITION PLAN

3 / ED101

SCALE: 1/8" = 1'-0"



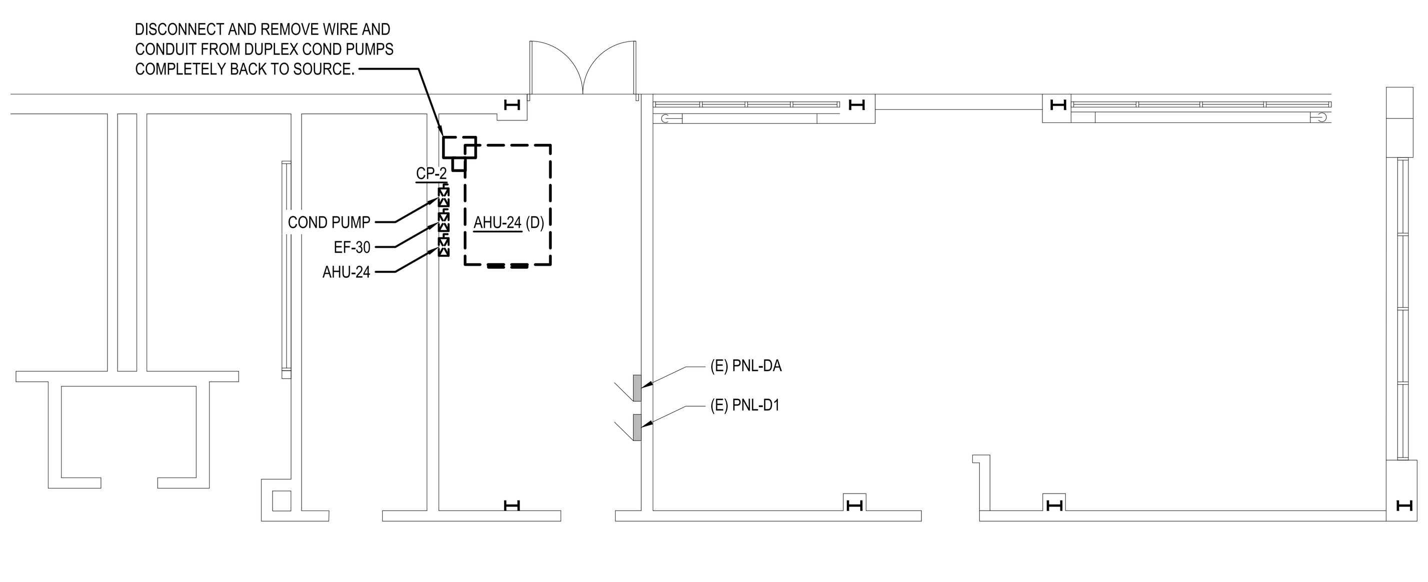
FAN ROOM #11 ELECTRICAL DEMOLITION PLAN

4 / ED101

SCALE: 1/8" = 1'-0"

ELECTRICAL DEMOLITION NOTE - FAN ROOMS #13 AND #14:

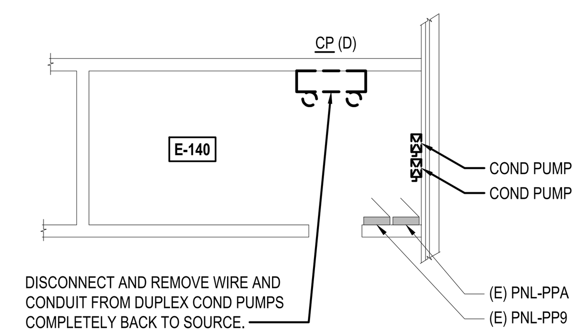
1. DISCONNECT AND REMOVE LIGHT FIXTURES, LIGHT SWITCH(ES), WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE. RETAIN CIRCUIT FOR RECONNECTION TO NEW LIGHT FIXTURES AND LIGHT SWITCH(ES).



ROOM D104 ELECTRICAL DEMOLITION PLAN

5 / ED101

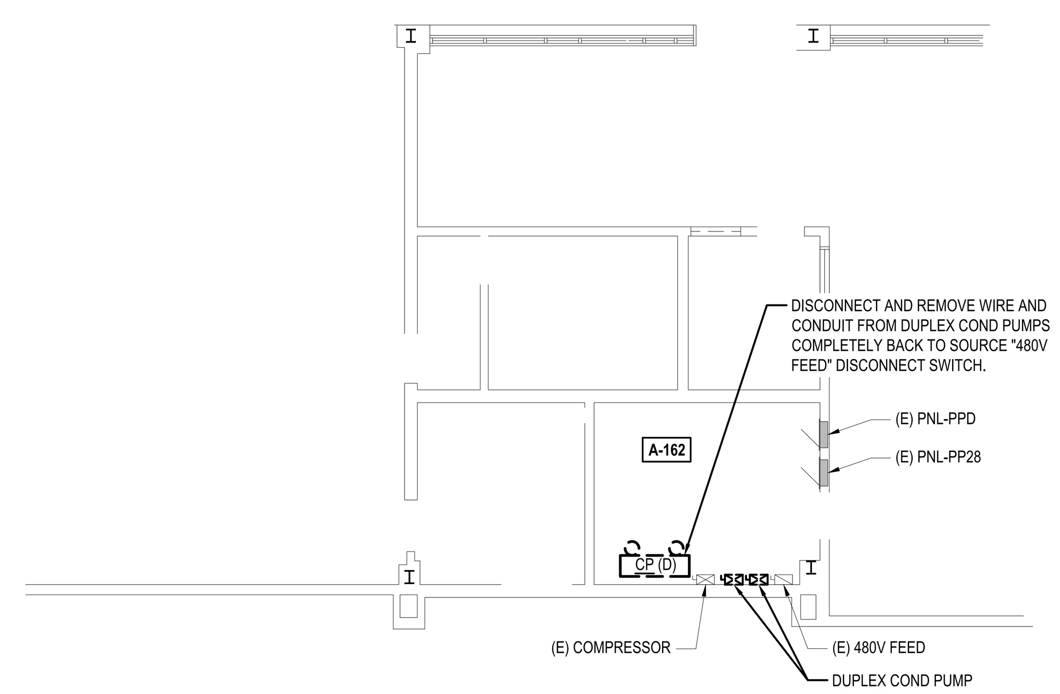
SCALE: 1/8" = 1'-0"



ROOM E140 ELEC DEMO PLAN

6 / ED101

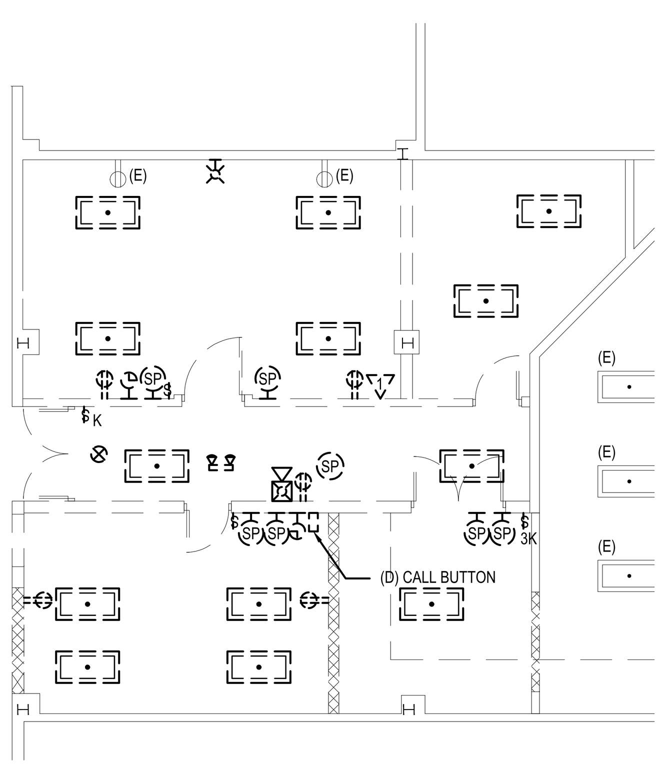
SCALE: 1/8" = 1'-0"



ROOM A162 ELEC DEMO PLAN

7 / ED101

SCALE: 1/8" = 1'-0"



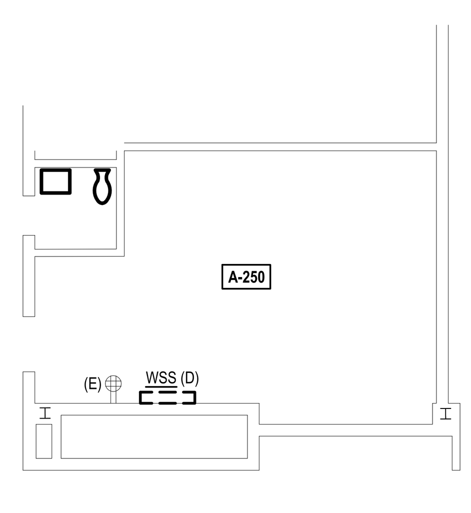
ELECTRICAL DEMOLITION NOTES - MUSIC SUITE:

1. DISCONNECT AND REMOVE LIGHT FIXTURES, LIGHT SWITCHES, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE. RETAIN CIRCUIT FOR RECONNECTION TO NEW LIGHT FIXTURES.
2. DISCONNECT AND REMOVE RECEPTACLES, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE.
3. DISCONNECT AND REMOVE TELECOMMUNICATION OUTLETS, SPEAKERS, CABLING, AND CONDUIT COMPLETELY BACK TO PATCH PANEL.
4. DISCONNECT AND REMOVE FIRE ALARM DEVICES, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE.
5. DISCONNECT AND REMOVE CALL BUTTONS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE.

MUSIC SUITE ELEC DEMO PLAN

8 / ED101

SCALE: 1/8" = 1'-0"



ROOM A250 ELEC DEMO PLAN

9 / ED101

SCALE: 1/8" = 1'-0"

ELECTRICAL DEMOLITION NOTES:

1. ANYWHERE EXISTING WIRE AND/OR CONDUIT ARE NOTED TO BE REMOVED COMPLETELY BACK TO SOURCE;
   1.1. REMOVE WIRE COMPLETELY BACK TO SOURCE ELECTRICAL PANEL.
   1.2. WHERE CONDUIT IS CONNECTED TO A UNIT BEING REPLACED AND THE NEW CONDUIT SPECIFIED ON THE ELECTRICAL PANEL SCHEDULE IS EQUAL IN SIZE TO THE EXISTING CONDUIT, THE EXISTING CONDUIT MAY BE REUSED FOR THE INSTALLATION OF NEW WIRE. DEMOLISH EXISTING CONDUIT TO THE EXTENT REQUIRED TO FACILITATE ARCHITECTURAL AND MECHANICAL WORK. NEW CONDUIT EXTENSIONS SHALL BE PROVIDED TO CONNECT TO NEW UNITS (AND SOURCE ELECTRICAL PANELS WHERE APPLICABLE). SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
2. UNLESS NOTED OTHERWISE, FROM ALL DEMO AHUs, DISCONNECT AND REMOVE STARTERS, DISCONNECT SWITCHES, CONTROLLERS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE PANEL. EXISTING VFDs TO REMAIN FOR REUSE.
3. EXISTING CIRCUIT BREAKERS TO REMAIN FOR REUSE WITH REPLACEMENT MECHANICAL EQUIPMENT.
4. UNLESS NOTED OTHERWISE, ALL NEW EXHAUST FANS SHOWN ARE REPLACEMENT EXHAUST FANS. DISCONNECT AND REMOVE STARTERS, DISCONNECT SWITCHES, WIRE, AND CONDUIT FROM EXISTING EXHAUST FANS COMPLETELY BACK TO SOURCE. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL STARTERS FOR DEMO EXHAUST FANS FOR REPLACEMENT.
5. FROM WALL MOUNTED DUCTLESS SPLIT AND CONDENSER (CU-5), DISCONNECT AND REMOVE DISCONNECT SWITCHES, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE. DISCONNECT AND REMOVE RECEPTACLE FROM CONDENSER (CU-5) WITH WIRE AND CONDUIT COMPLETELY BACK TO SOURCE.
6. DISCONNECT AND REMOVE WIRE AND CONDUIT FROM ALL DEMO MODs COMPLETELY BACK TO SOURCE. RETAIN CIRCUIT FOR RECONNECTION TO REPLACEMENT MODs.
7. UNLESS NOTED OTHERWISE, DISCONNECT AND REMOVE DUCT DETECTORS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE FOR REPLACEMENT.

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

INTERIOR ELECTRICAL DEMOLITION PLANS

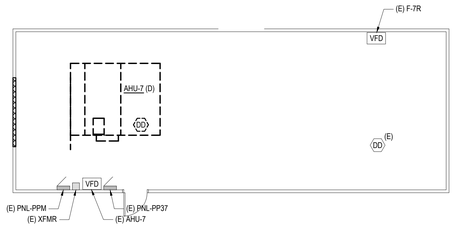
100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

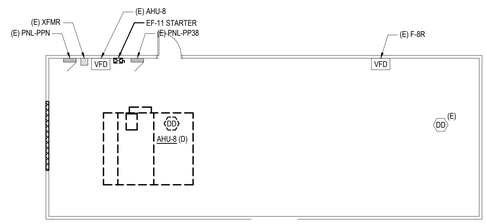
SHEET NO.

ED101



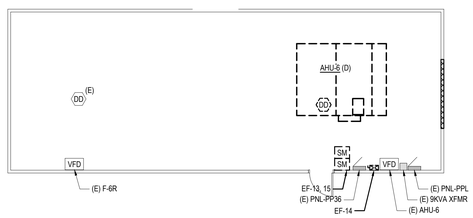
1 ED102 PENTHOUSE #7 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



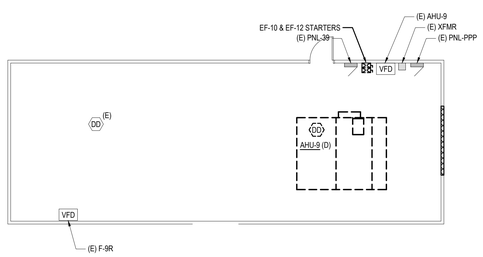
2 ED102 PENTHOUSE #8 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



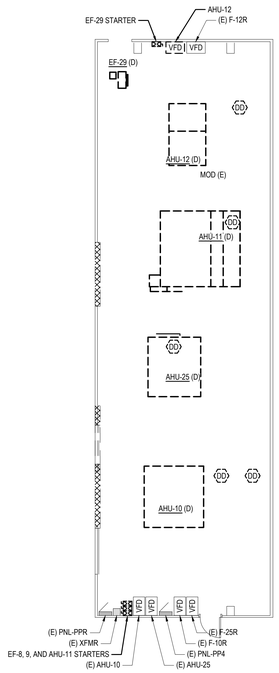
3 ED102 PENTHOUSE #6 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



4 ED102 PENTHOUSE #9 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



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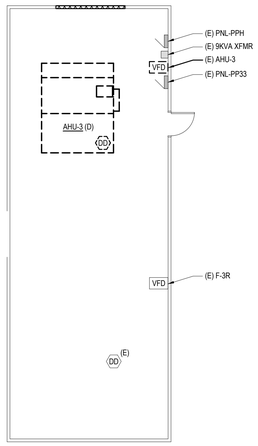
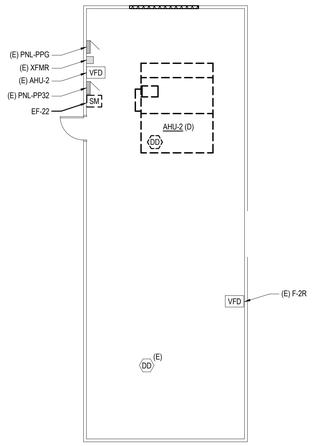
SCALE: 1/8" = 1'-0"



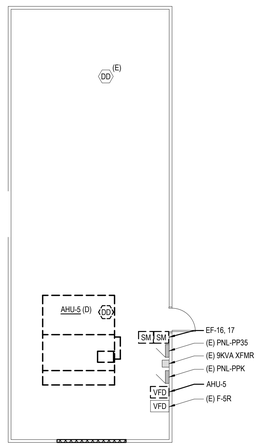
5 ED102 PENTHOUSE #3 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



6 ED102 PENTHOUSE #2 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



7 ED102 PENTHOUSE #5 ELECTRICAL DEMOLITION PLAN

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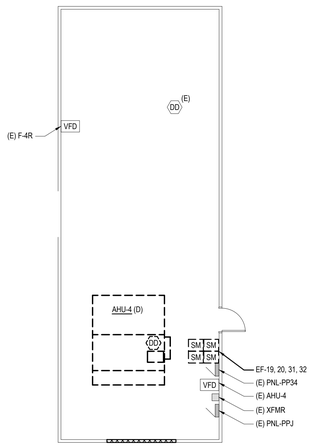
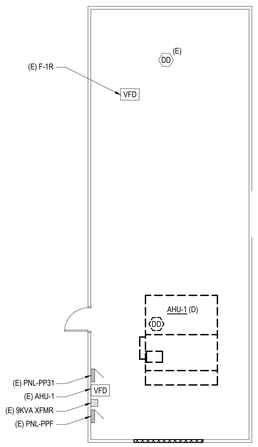


8 ED102 PENTHOUSE #4 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



9 ED102 PENTHOUSE #1 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

ELECTRICAL DEMOLITION NOTES:

1. ANYWHERE EXISTING WIRE AND/OR CONDUIT ARE NOTED TO BE REMOVED COMPLETELY BACK TO SOURCE;
   1.1. REMOVE WIRE COMPLETELY BACK TO SOURCE ELECTRICAL PANEL.
   1.2. WHERE CONDUIT IS CONNECTED TO A UNIT BEING REPLACED AND THE NEW CONDUIT SPECIFIED ON THE ELECTRICAL PANEL SCHEDULE IS EQUAL IN SIZE TO THE EXISTING CONDUIT, THE EXISTING CONDUIT MAY BE REUSED FOR THE INSTALLATION OF NEW WIRE. DEMOLISH EXISTING CONDUIT TO THE EXTENT REQUIRED TO FACILITATE ARCHITECTURAL AND MECHANICAL WORK. NEW CONDUIT EXTENSIONS SHALL BE PROVIDED TO CONNECT TO NEW UNITS (AND SOURCE ELECTRICAL PANELS WHERE APPLICABLE). SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
2. UNLESS NOTED OTHERWISE, FROM ALL DEMO AHUs, DISCONNECT AND REMOVE STARTERS, DISCONNECT SWITCHES, CONTROLLERS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE PANEL. EXISTING VFDs TO REMAIN FOR REUSE.
3. EXISTING CIRCUIT BREAKERS TO REMAIN FOR REUSE WITH REPLACEMENT MECHANICAL EQUIPMENT.
4. UNLESS NOTED OTHERWISE, ALL NEW EXHAUST FANS SHOWN ARE REPLACEMENT EXHAUST FANS. DISCONNECT AND REMOVE STARTERS, DISCONNECT SWITCHES, WIRE, AND CONDUIT FROM EXISTING EXHAUST FANS COMPLETELY BACK TO SOURCE. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL STARTERS FOR DEMO EXHAUST FANS FOR REPLACEMENT.
5. FROM WALL MOUNTED DUCTLESS SPLIT AND CONDENSER (CU-5), DISCONNECT AND REMOVE DISCONNECT SWITCHES, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE. DISCONNECT AND REMOVE RECEPTACLE FROM CONDENSER (CU-5) WITH WIRE AND CONDUIT COMPLETELY BACK TO SOURCE.
6. DISCONNECT AND REMOVE WIRE AND CONDUIT FROM ALL DEMO MODs COMPLETELY BACK TO SOURCE. RETAIN CIRCUIT FOR RECONNECTION TO REPLACEMENT MODs.
7. UNLESS NOTED OTHERWISE, DISCONNECT AND REMOVE DUCT DETECTORS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE FOR REPLACEMENT.

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WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

PENTHOUSE ELECTRICAL DEMOLITION PLAN

100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

ED102

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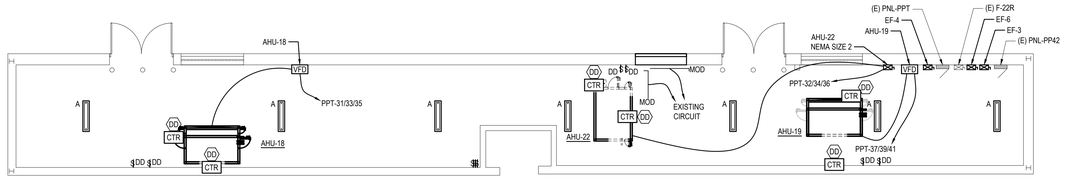
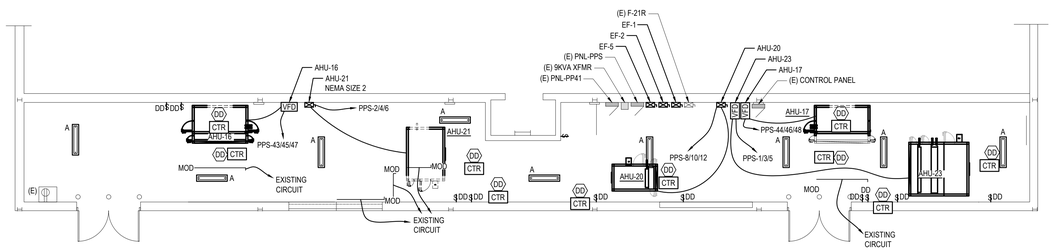


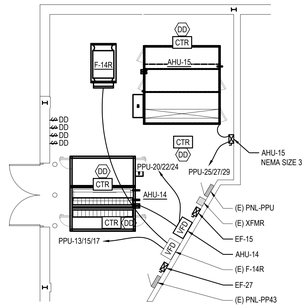
1 FAN ROOM #13 ELECTRICAL NEW WORK PLAN
E-101 SCALE: 1/8" = 1'-0"



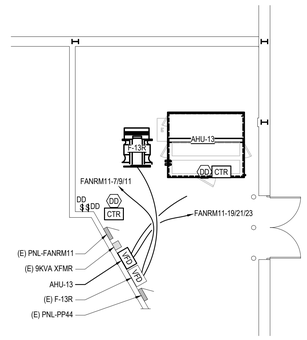
2 FAN ROOM #14 ELECTRICAL NEW WORK PLAN
E-101 SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTE - FAN ROOM #13 AND #14:

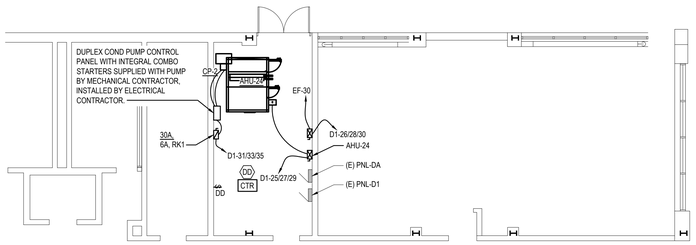
1. CONNECT NEW LIGHTING FIXTURES AND LIGHT SWITCH TO THE EXISTING LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.



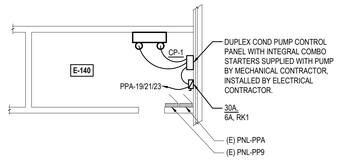
3 FAN ROOM #10 ELECTRICAL NEW WORK PLAN
E-101 SCALE: 1/8" = 1'-0"



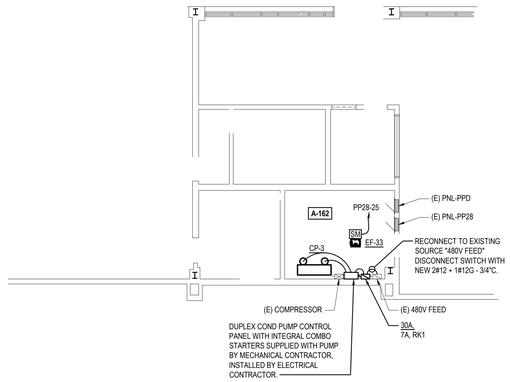
4 FAN ROOM #11 ELECTRICAL NEW WORK PLAN
E-101 SCALE: 1/8" = 1'-0"



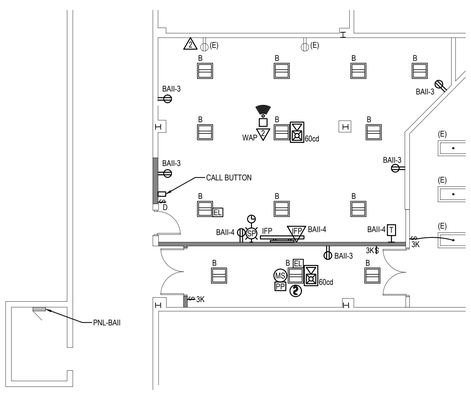
5 ROOM D104 ELECTRICAL NEW WORK PLAN
E-101 SCALE: 1/8" = 1'-0"



6 ROOM E140 ELEC NEW PLAN
E-101 SCALE: 1/8" = 1'-0"



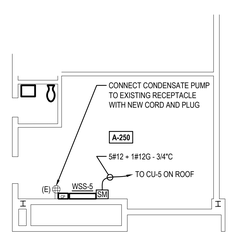
7 ROOM A162 ELEC DEMO PLAN
E-101 SCALE: 1/8" = 1'-0"



8 MUSIC SUITE ELEC NEW PLAN
E-101 SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTES - MUSIC SUITE:

1. CONNECT NEW LIGHTING FIXTURES TO THE NEW LIGHT SWITCHES AND MOTION SENSOR / POWER PACKS SHOWN. CONNECT TO THE EXISTING LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.
2. IN THE EXISTING MUSIC ROOM, CONNECT THE NEW LIGHT SWITCH TO THE EXISTING LIGHT FIXTURES / LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.
3. WHERE EMERGENCY LIGHTING CONTROL UNIT IS SHOWN, CONNECT TO A LOCAL EMERGENCY LIGHTING CIRCUIT. CONTRACTOR TO FIELD VERIFY THE LOCATION OF THE EXISTING EMERGENCY LIGHTING CIRCUIT.
4. WHERE CALL BUTTON IS INDICATED, PROVIDE A NEW CALL BUTTON AND CALL SPEAKER MATCHING EXISTING AND CONNECT TO THE SCHOOL'S EXISTING CALL BUTTON SYSTEM. COORDINATE SYSTEM TYPE AND REQUIREMENTS WITH OWNER. PROVIDE NEW WIRE AND CONDUIT AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. CONFIRM PROPER OPERATION AND MAKE ALL MODIFICATIONS AND REPAIRS TO ENSURE PROPER OPERATION.
5. PROVIDE NEW RECEPTACLES, WIRE, AND CONDUIT AND CONNECT TO THE PANEL INDICATED.
6. PROVIDE NEW TELECOMMUNICATION DEVICES WITH NEW CABLING AND CONDUIT.
7. PROVIDE NEW FIRE ALARM DEVICES WITH NEW WIRE AND CONDUIT.
8. PROVIDE A NEW SPEAKER / CLOCK COMBINATION UNIT MATCHING EXISTING. PROVIDE NEW CABLING, WIRE, AND CONDUIT TO CONNECT TO THE EXISTING SYSTEMS. CONFIRM PROPER OPERATION AND MAKE ALL MODIFICATIONS AND REPAIRS TO ENSURE PROPER OPERATION.



9 ROOM A250 ELEC NEW PLAN
E-101 SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTES:

1. UNLESS NOTED OTHERWISE, FOR ALL NEW AHU'S, PROVIDE NEW VFD CABLE FROM EXISTING VFD TO NEW AHU. SEE PANEL SCHEDULES FOR MORE INFORMATION. PROVIDE NEW WIRE AND CONDUIT EXISTING VFD TO SOURCE PANEL. SEE ELECTRICAL GENERAL NOTE #31 ON SHEET E-000 FOR VFD CABLE REQUIREMENTS.
2. PROVIDE NEW STARTERS FOR ALL NEW CONDENSATE PUMPS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
3. WHERE SHOWN, PROVIDE NEW FRACTIONAL HORSEPOWER MOTOR STARTERS FOR ALL NEW EXHAUST FANS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
4. WHERE SHOWN, FOR ALL EXHAUST FANS, PROVIDE A NEW DISCONNECT SWITCHES AT THE UNITS AND NEW COMBO STARTERS IN THE PENTHOUSES. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
5. CONNECT NEW MODs TO THE EXISTING SOURCE WITH NEW 2#12 + 1#12G - 3/4"C.

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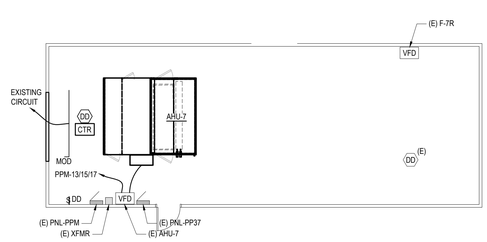
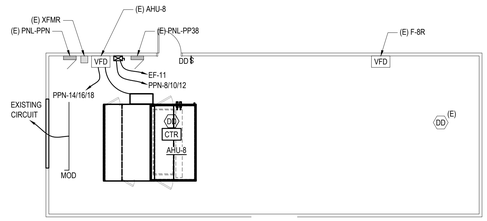


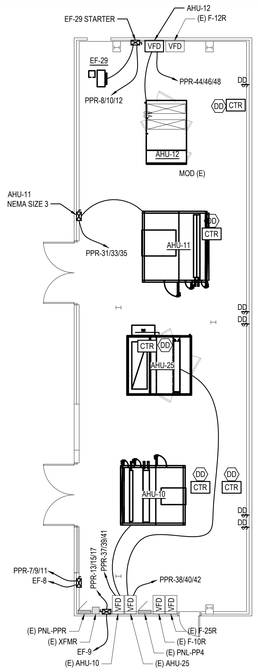
1 E-102 PENTHOUSE #7 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



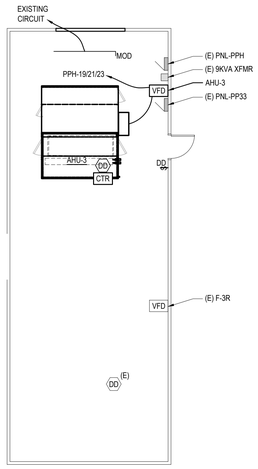
2 E-102 PENTHOUSE #8 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



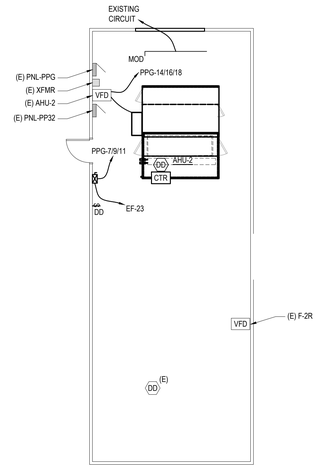
10 E-102 PENTHOUSE #12 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



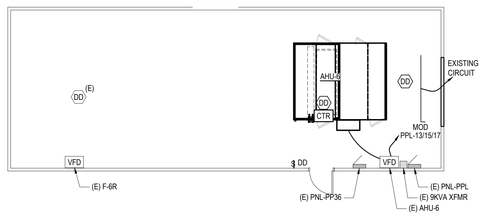
5 E-102 PENTHOUSE #3 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



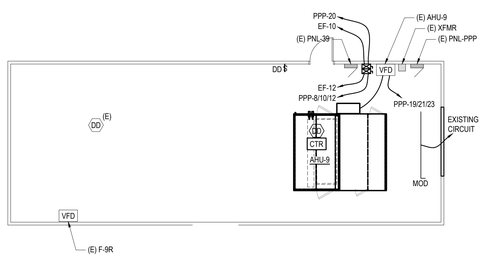
6 E-102 PENTHOUSE #2 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



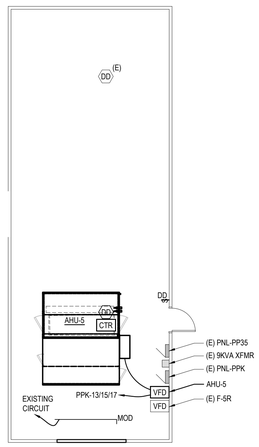
3 E-102 PENTHOUSE #6 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



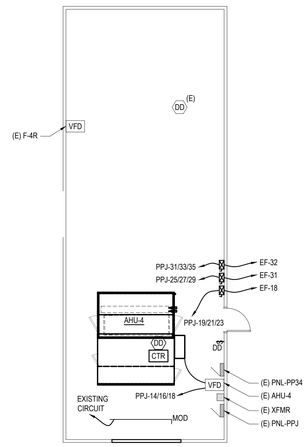
4 E-102 PENTHOUSE #9 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



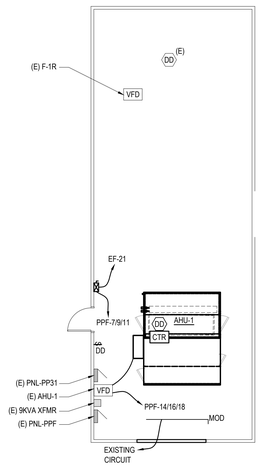
7 E-102 PENTHOUSE #5 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



8 E-102 PENTHOUSE #4 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



9 E-102 PENTHOUSE #1 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTES:

1. UNLESS NOTED OTHERWISE, FOR ALL NEW AHU'S, PROVIDE NEW VFD CABLE FROM EXISTING VFD TO NEW AHU. SEE PANEL SCHEDULES FOR MORE INFORMATION. PROVIDE NEW WIRE AND CONDUIT EXISTING VFD TO SOURCE PANEL. SEE ELECTRICAL GENERAL NOTE #31 ON SHEET E-000 FOR VFD CABLE REQUIREMENTS.
2. PROVIDE NEW STARTERS FOR ALL NEW CONDENSATE PUMPS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
3. WHERE SHOWN, PROVIDE NEW FRACTIONAL HORSEPOWER MOTOR STARTERS FOR ALL NEW EXHAUST FANS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
4. WHERE SHOWN, FOR ALL EXHAUST FANS, PROVIDE A NEW DISCONNECT SWITCHES AT THE UNITS AND NEW COMBO STARTERS IN THE PENTHOUSES. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
5. CONNECT NEW MODs TO THE EXISTING SOURCE WITH NEW 2#12 + 1#12G - 3/4"C.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
	-	-

SHEET TITLE

PENTHOUSE
ELECTRICAL PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

E-102

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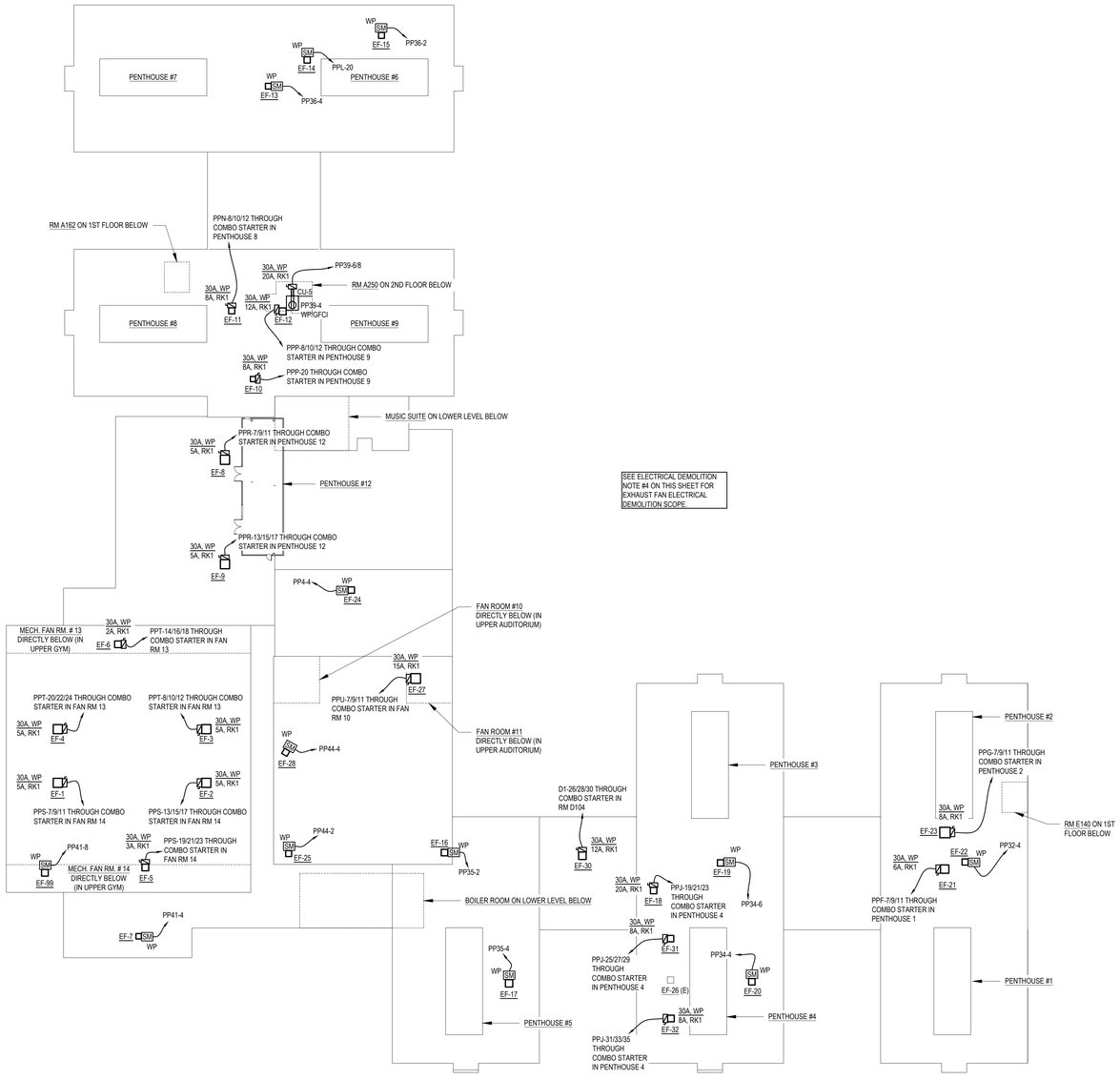
8/11/2023 10:23 AM



SEE ELECTRICAL DEMOLITION NOTE #4 ON THIS SHEET FOR EXHAUST FAN ELECTRICAL DEMOLITION SCOPE.

1 E-103

ROOF EXHAUST FAN ELECTRICAL PLAN

SCALE: 1/32" = 1'-0"

ELECTRICAL DEMOLITION NOTES:

1. ANYWHERE EXISTING WIRE AND/OR CONDUIT ARE NOTED TO BE REMOVED COMPLETELY BACK TO SOURCE;
   1.1. REMOVE WIRE COMPLETELY BACK TO SOURCE ELECTRICAL PANEL.
   1.2. WHERE CONDUIT IS CONNECTED TO A UNIT BEING REPLACED AND THE NEW CONDUIT SPECIFIED ON THE ELECTRICAL PANEL SCHEDULE IS EQUAL IN SIZE TO THE EXISTING CONDUIT, THE EXISTING CONDUIT MAY BE REUSED FOR THE INSTALLATION OF NEW WIRE. DEMOLISH EXISTING CONDUIT TO THE EXTENT REQUIRED TO FACILITATE ARCHITECTURAL AND MECHANICAL WORK. NEW CONDUIT EXTENSIONS SHALL BE PROVIDED TO CONNECT TO NEW UNITS (AND SOURCE ELECTRICAL PANELS WHERE APPLICABLE). SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
2. UNLESS NOTED OTHERWISE, FROM ALL DEMO AHUs, DISCONNECT AND REMOVE STARTERS, DISCONNECT SWITCHES, CONTROLLERS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE PANEL. EXISTING VFDs TO REMAIN FOR REUSE.
3. EXISTING CIRCUIT BREAKERS TO REMAIN FOR REUSE WITH REPLACEMENT MECHANICAL EQUIPMENT.
4. UNLESS NOTED OTHERWISE, ALL NEW EXHAUST FANS SHOWN ARE REPLACEMENT EXHAUST FANS. DISCONNECT AND REMOVE STARTERS, DISCONNECT SWITCHES, WIRE, AND CONDUIT FROM EXISTING EXHAUST FANS COMPLETELY BACK TO SOURCE. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL STARTERS FOR DEMO EXHAUST FANS FOR REPLACEMENT.
5. FROM WALL MOUNTED DUCTLESS SPLIT AND CONDENSER (CU-5), DISCONNECT AND REMOVE DISCONNECT SWITCHES, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE. DISCONNECT AND REMOVE RECEPTACLE FROM CONDENSER (CU-5) WITH WIRE AND CONDUIT COMPLETELY BACK TO SOURCE.
6. DISCONNECT AND REMOVE WIRE AND CONDUIT FROM ALL DEMO MODs COMPLETELY BACK TO SOURCE. RETAIN CIRCUIT FOR RECONNECTION TO REPLACEMENT MODs.
7. UNLESS NOTED OTHERWISE, DISCONNECT AND REMOVE DUCT DETECTORS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE FOR REPLACEMENT.

ELECTRICAL NEW WORK NOTES:

1. UNLESS NOTED OTHERWISE, FOR ALL NEW AHU'S, PROVIDE NEW VFD CABLE FROM EXISTING VFD TO NEW AHU. SEE PANEL SCHEDULES FOR MORE INFORMATION. PROVIDE NEW WIRE AND CONDUIT EXISTING VFD TO SOURCE PANEL. SEE ELECTRICAL GENERAL NOTE #31 ON SHEET E-000 FOR VFD CABLE REQUIREMENTS.
2. PROVIDE NEW STARTERS FOR ALL NEW CONDENSATE PUMPS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
3. WHERE SHOWN, PROVIDE NEW FRACTIONAL HORSEPOWER MOTOR STARTERS FOR ALL NEW EXHAUST FANS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
4. WHERE SHOWN, FOR ALL EXHAUST FANS, PROVIDE A NEW DISCONNECT SWITCHES AT THE UNITS AND NEW COMBO STARTERS IN THE PENTHOUSES. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
5. CONNECT NEW MODs TO THE EXISTING SOURCE WITH NEW 2#12 + 1#12G - 3/4"C.

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ARCHITECT / ENGINEER SEAL

PROJECT

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HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

ROOF ELECTRICAL PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

E-103

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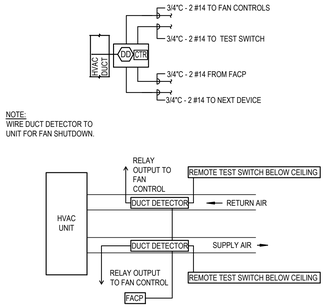
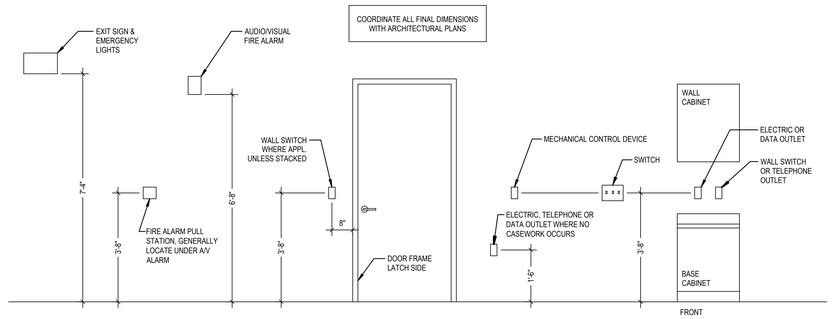


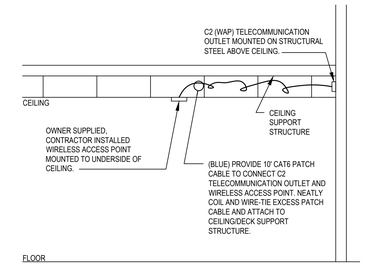
1 E-500 DUCT DETECTOR CONTROL WIRING DIAGRAMS

SCALE: NO SCALE



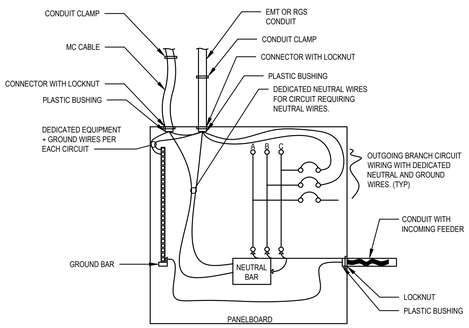
2 E-500 TYPICAL ELECTRICAL MOUNTING HEIGHTS

SCALE: NO SCALE



8 E-500 TYPICAL CEILING MOUNTED WIRELESS ACCESS POINT DETAIL

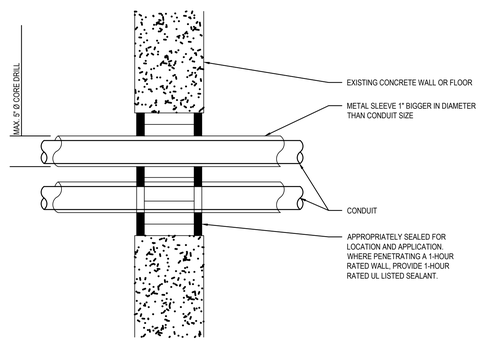
SCALE: NO SCALE



NOTES:
1. PROVIDE GROUND BAR WITH ADEQUATE TERMINALS FOR EQUIPMENT GROUND WIRES.
2. DOUBLE LUGGING OF NEUTRAL OR EQUIPMENT GROUND WIRES IS NOT PERMITTED.
3. NUMBER OF NEUTRAL AND EQUIPMENT GROUND WIRES VARY BY PANEL AND BRANCH CIRCUITS.

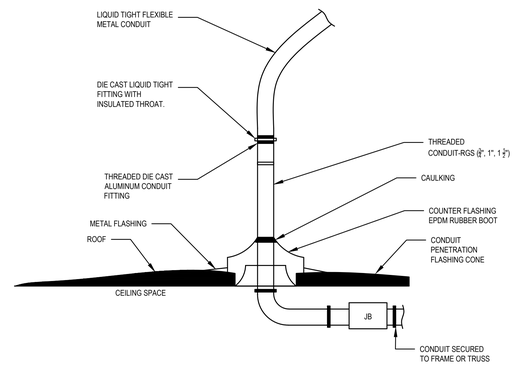
3 E-500 EQUIPMENT GROUND AND NEUTRAL WIRING IN PANELBOARD (TYP)

SCALE: NO SCALE



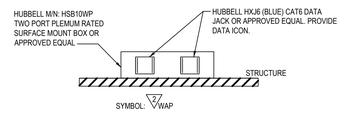
4 E-500 TYPICAL PENETRATION IN WALL OR FLOOR

SCALE: NO SCALE



5 E-500 CONDUIT ROOF PENETRATION DETAIL

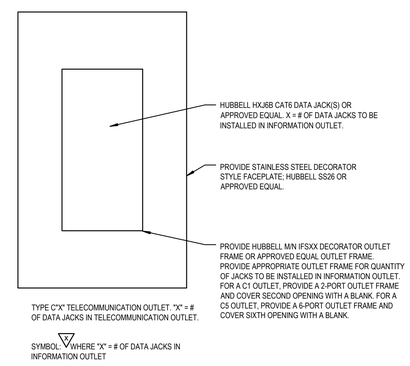
SCALE: NO SCALE



9 E-500 TYPE C2 TELECOMMUNICATION OUTLET FOR CEILING WIRELESS ACCESS POINT DETAIL

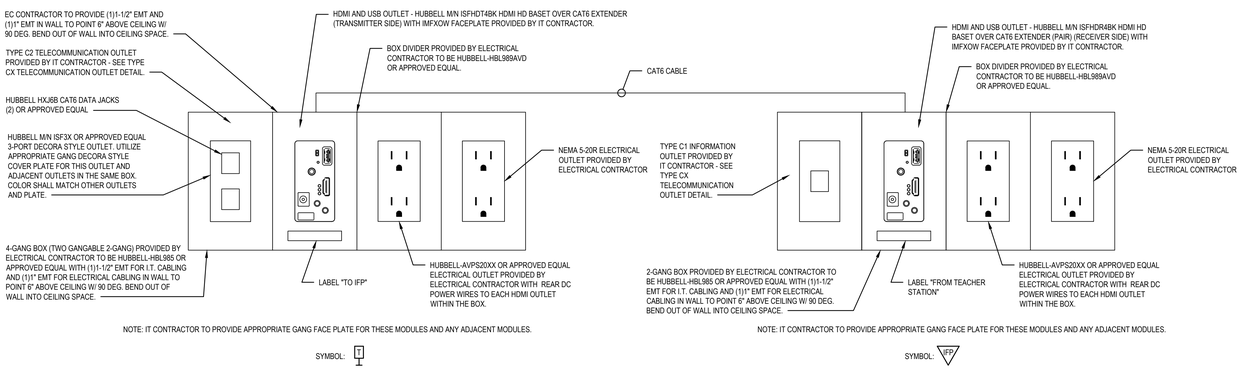
SCALE: NO SCALE

FOR C2 CEILING MOUNTED (WAP) OUTLETS



10 E-500 TYPE CX TELECOMMUNICATION OUTLET DETAIL

SCALE: NO SCALE

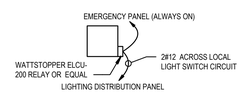


6 E-500 TEACHER STATION OUTLET DETAIL

SCALE: NO SCALE

7 E-500 IFP OUTLET DETAIL

SCALE: NO SCALE



EMERGENCY LIGHTING RELAY DETAIL

SCALE: NOT TO SCALE

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WATERBURY, CT 06705

PROJECT

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

ELECTRICAL DETAILS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

E-500

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8/11/2023 10:23 AM

EXISTING PANEL

PANEL: PPF
LOCATION: PENTHOUSE 1
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	0.94	-	-	EF-21	3	15	7	8	20	3	EXISTING LOAD - AHU-1R	-	-	-	
	-	0.94	-				9	10				-	-	-	
	-	-	0.94				11	12				-	-	-	
	-	-	-	EXISTING LOAD	3	20	13	14	60	3	AHU-1	9.47	-	-	**
	-	-	-				15	16				-	9.47	-	
	-	-	-				17	18				-	-	9.47	
	-	-	-	SPACE	-	-	19	20	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PPJ
LOCATION: PENTHOUSE 4
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - EF-26	3	15	7	8	20	3	EXISTING LOAD - AHU-4R	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
	-	-	-	EXISTING LOAD	3	20	13	14	60	3	AHU-4	10.6	-	-	**
	-	-	-				15	16				-	10.6	-	
	-	-	-				17	18				-	-	10.6	
*	0.44	-	-	EF-18	3	15	19	20	-	-	SPACE	-	-	-	
	-	0.44	-				21	22	-	-	SPACE	-	-	-	
	-	-	0.44				23	24	-	-	SPACE	-	-	-	
***	1.33	-	-	EF-31	3	20	25	26	-	-	SPACE	-	-	-	
	-	1.33	-				27	28	-	-	SPACE	-	-	-	
	-	-	1.33				29	30	-	-	SPACE	-	-	-	
***	1.33	-	-	EF-32	3	20	31	32	-	-	SPACE	-	-	-	
	-	1.33	-				33	34	-	-	SPACE	-	-	-	
	-	-	1.33				35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPL
LOCATION: PENTHOUSE 6
BUS: 100A
MAIN: MLO
VOLTAGE: 480Y/277V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-6R	3	15	7	8	20	3	EXISTING LOAD	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
*	10.6	-	-	AHU-6	3	60	13	14	15	3	SPARE	-	-	-	
	-	10.6	-				15	16				-	-	-	
	-	-	10.6				17	18				-	-	-	
	-	-	-	SPACE	-	-	19	20	20	1	EF-14	0.89	-	-	**
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PP32
LOCATION: PENTHOUSE 2
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-22	-	1.18	-	*
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#8 + 1#8G - 3/4"C.

EXISTING PANEL

PANEL: PP34
LOCATION: PENTHOUSE 4
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-20	-	0.70	-	*
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EF-19	-	-	0.70	**
	-	-	-	SPACE	-	-	7	8	20	1	SPARE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP36
LOCATION: PENTHOUSE 6
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EF-15	0.70	-	-	*
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-13	-	1.18	-	**
	-	-	-	EXISTING LOAD	1	20	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PPG
LOCATION: PENTHOUSE 2
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	1.33	-	-	EF-23	3	15	7	8	20	3	EXISTING LOAD - AHU-2R	-	-	-	
	-	1.33	-				9	10				-	-	-	
	-	-	1.33				11	12				-	-	-	
	-	-	-	EXISTING LOAD	3	20	13	14	60	3	AHU-2	10.6	-	-	**
	-	-	-				15	16				-	10.6	-	
	-	-	-				17	18				-	-	10.6	
	-	-	-	SPACE	-	-	19	20	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PPK
LOCATION: PENTHOUSE 5
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-5R	3	15	7	8	20	3	EXISTING LOAD	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
	-	-	-	SPARE	3	60	13	14	-	-	SPACE	-	-	-	
	-	-	-				15	16	-	-	SPACE	-	-	-	
	-	-	-				17	18	-	-	SPACE	-	-	-	
*	12.2	-	-	AHU-5	3	70	19	20	-	-	SPACE	-	-	-	
	-	12.2	-				21	22	-	-	SPACE	-	-	-	
	-	-	12.2				23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 3#4 + 1#8G - 1"C.

EXISTING PANEL

PANEL: PPM
LOCATION: PENTHOUSE 7
BUS: 100A
MAIN: MLO
VOLTAGE: 480Y/277V, 3PH, 4W
ENCLOSURE: ___
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-7R	3	15	7	8	20	3	EXISTING LOAD	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
*	10.6	-	-	AHU-7	3	60	13	14	-	-	SPACE	-	-	-	
	-	10.6	-				15	16	-	-	SPACE	-	-	-	
	-	-	10.6				17	18	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	19	20	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PPH
LOCATION: PENTHOUSE 3
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-3R	3	15	7	8	20	3	EXISTING LOAD	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
	-	-	-	SPARE	3	90	13	14	-	-	SPACE	-	-	-	
	-	-	-				15	16	-	-	SPACE	-	-	-	
	-	-	-				17	18	-	-	SPACE	-	-	-	
*	14.1	-	-	AHU-3	3	80	19	20	-	-	SPACE	-	-	-	
	-	14.1	-				21	22	-	-	SPACE	-	-	-	
	-	-	14.1				23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 3#4 + 1#8G - 1"C.

EXISTING PANEL

PANEL: PP35
LOCATION: PENTHOUSE 5
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EF-16	1.18	-	-	**
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-17	-	1.18	-	*
	-	-	-	EXISTING LOAD	1	20	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#10 + 1#10G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#8 + 1#8G - 3/4"C.

EXISTING PANEL

PANEL: PPN
LOCATION: PENTHOUSE 8
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-8R	3	15	7	8	15	3	EF-11	1.33	-	-	*
	-	-	-				9	10				-	1.33	-	
	-	-	-				11	12				-	-	1.33	
	-	-	-	EXISTING LOAD	3	20	13	14	60	3	AHU-8	-	-	-	
	-	-	-				15	16				-	-	-	
	-	-	-				17	18				-	-	-	
	-	-	-	SPACE	-	-	19	20	50	3	AHU-8	9.14	-	-	**
	-	-	-	SPACE	-	-	21	22				-	9.14	-	
	-	-	-	SPACE	-	-	23	24				-	-	9.14	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#8 + 1#10G - 3/4"C.

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ARCHITECT / ENGINEER SEAL

PROJECT
WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE
ELECTRICAL PANEL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.
E-600

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8/11/2023 10:23 AM

EXISTING PANEL

PANEL: PP38
LOCATION: PENTHOUSE 8
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-
-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-
-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-
-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-
-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

EXISTING PANEL

PANEL: PP39
LOCATION: PENTHOUSE 9
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
-	-	-	EXISTING LOAD	1	20	3	4	20	1	RECEPT. - ROOF	-	0.18	-	*
-	-	-	SPACE	-	-	5	6	20	2	CU-1	-	-	1.30	**
-	-	-	SPACE	-	-	7	8				1.30	-	-	
-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PPP
LOCATION: PENTHOUSE 9
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPARE	3	15	7	8	15	3	EF-12	2.11	-	-	*
	-	-	-				9	10				-	2.11	-	
	-	-	-				11	12				-	-	2.11	
	-	-	-	EXISTING LOAD - AHU-9R	3	20	13	14	20	3	EXISTING LOAD	-	-	-	
	-	-	-				15	16				-	-	-	
	-	-	-				17	18				-	-	-	
**	9.98	-	-	AHU-9	3	60	19	20	20	1	EF-10	1.39	-	-	***
	-	9.98	-				21	22	-	-	SPACE	-	-	-	
	-	-	9.98				23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PP4
LOCATION: PENTHOUSE 12
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-24	-	0.70	-	*
-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPR
LOCATION: PENTHOUSE 12
BUS: 225A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	0.83	-	-	EF-8	3	15	7	8	15	3	EF-29	0.30	-	-	*
	-	0.83	-				9	10				-	0.30	-	
	-	-	0.83				11	12				-	-	0.30	
*	0.83	-	-	EF-9	3	15	13	14	15	3	EXISTING LOAD - AHU-12R	-	-	-	
	-	0.83	-				15	16				-	-	-	
	-	-	0.83				17	18				-	-	-	
	-	-	-	EXISTING LOAD - AHU-10R	3	15	19	20	-	-	SPARE	-	-	-	
	-	-	-				21	22				-	-	-	
	-	-	-				23	24				-	-	-	
	-	-	-	EXISTING LOAD - AHU-25R	3	15	25	26	20	3	EXISTING LOAD	-	-	-	
	-	-	-				27	28				-	-	-	
	-	-	-				29	30				-	-	-	
**	4.90	-	-	AHU-11	3	30	31	32	40	3	SPARE	-	-	-	
	-	4.90	-				33	34				-	-	-	
	-	-	4.90				35	36				-	-	-	
**	4.71	-	-	AHU-25	3	30	37	38	-	-	SPACE	-	-	-	
	-	4.71	-				39	40	-	-	SPACE	-	-	-	
	-	-	4.71				41	42	-	-	SPACE	-	-	-	
***	3.46	-	-	AHU-10	3	20	43	44	20	3	AHU-12	3.60	-	-	***
	-	3.46	-				45	46				-	3.60	-	
	-	-	3.46				47	48				-	-	3.60	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#10 + 1#10G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#12 + 1#12G - 3/4"C.
**** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP43
LOCATION: FAN RM 10
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	5	6	-	-	SPACE	-	-	-
-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-
-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-
-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPU
LOCATION: FAN RM 10
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	2.11	-	-	EF-27	3	15	7	8	15	3	EXISTING LOAD	-	-	-	
	-	2.11	-				9	10				-	-	-	
	-	-	2.11				11	12				-	-	-	
*	0.94	-	-	F-14R	3	15	13	14	40	3	SPARE	-	-	-	
	-	0.94	-				15	16				-	-	-	
	-	-	0.94				17	18				-	-	-	
	-	-	-	SPARE	3	40	19	20	50	3	AHU-14	6.73	-	-	**
	-	-	-				21	22				-	6.73	-	
	-	-	-				23	24				-	-	6.73	
**	4.90	-	-	AHU-15	3	30	25	26	-	-	SPACE	-	-	-	
	-	4.90	-				27	28	-	-	SPACE	-	-	-	
	-	-	4.90				29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: FANRM11
LOCATION: FAN RM 11
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-
*	1.33	-	-	F-13R	3	15	7	8	15	3	EXISTING LOAD	-	-	-
	-	1.33	-				9	10				-	-	-
	-	-	1.33				11	12				-	-	-
	-	-	-	SPARE	3	40	13	14	-	-	SPACE	-	-	-
	-	-	-				15	16	-	-	SPACE	-	-	-
	-	-	-				17	18	-	-	SPACE	-	-	-
**	9.70	-	-	AHU-13	3	60	19	20	-	-	SPACE	-	-	-
	-	9.70	-				21	22	-	-	SPACE	-	-	-
	-	-	9.70				23	24	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#6 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP44
LOCATION: FAN RM 11
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
-	-	-	EXISTING LOAD	1	-	1	2	20	1	EF-25	0.23	-	-	*
-	-	-	EXISTING LOAD	1	-	3	4	20	1	EF-28	-	0.29	-	*
-	-	-	EXISTING LOAD	1	-	5	6	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPT
LOCATION: FAN RM 13
BUS: ___
MAIN: ___
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPARE	3	15	7	8	15	3	EF-3	0.83	-	-	*
	-	-	-				9	10				-	0.83	-	
	-	-	-				11	12				-	-	0.83	
	-	-	-	SPARE	3	15	13	14	15	3	EF-6	0.30	-	-	*
	-	-	-				15	16				-	0.30	-	
	-	-	-				17	18				-	-	0.30	
	-	-	-	EXISTING LOAD - AHU-22R	3	15	19	20	15	3	EF-4	0.83	-	-	*
	-	-	-				21	22				-	0.83	-	
	-	-	-				23	24				-	-	0.83	
	-	-	-	SPARE	3	20	25	26	20	3	EXISTING LOAD	-	-	-	
	-	-	-				27	28				-	-	-	
	-	-	-				29	30				-	-	-	
***	4.90	-	-	AHU-18	3	30	31	32	25	3	AHU-22	3.46	-	-	**
	-	4.90	-				33	34				-	3.46	-	
	-	-	4.90				35	36				-	-	3.46	
***	4.90	-	-	AHU-19	3	30	37	38	-	-	SPACE	-	-	-	
	-	4.90	-				39	40	-	-	SPACE	-	-	-	
	-	-	4.90				41	42	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	43	44	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	45	46	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	47	48	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#12 + 1#12G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP42
LOCATION: FAN RM 13
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	3	30	5	6	20	-	EXISTING LOAD	-	-	-
-	-	-				7	8	-	-	SPACE	-	-	-
-	-	-				9	10	-	-	SPACE	-	-	-
-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

EXISTING PANEL

PANEL: PP41
LOCATION: FAN RM 14
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-7 & EXISTING RECEPT	-	0.88	-	*
-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-	
-	-	-	SPACE	-	-	7	8	20	1	EF-99	1.18	-	-	**
-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C. RECONNECT CIRCUIT TO EXISTING RECEPTACLE WITH NEW 2#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#10 + 1#10G - 3/4"C.

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ARCHITECT / ENGINEER SEAL

PROJECT
WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE
ELECTRICAL PANEL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.
E-601

8/11/2023 10:23 AM

EXISTING PANEL

PANEL: PPS
LOCATION: FAN RM 14
BUS: 225A
MAIN: MLO

VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
**	3.46	-	-	AHU-23	3	25	1	2	25	3	AHU-21	3.46	-	-	**
	-	3.46	-				3	4				-	3.46	-	
	-	-	3.46				5	6				-	-	3.46	
*	0.83	-	-	EXISTING LOAD - EF-1	3	15	7	8	15	3	AHU-20	0.64	-	-	*
	-	0.83	-				9	10				-	0.64	-	
	-	-	0.83				11	12				-	-	0.64	
*	0.83	-	-	EXISTING LOAD - EF-2	3	15	13	14	15	3	EXISTING LOAD - AHU-21R	-	-	-	
	-	0.83	-				15	16				-	-	-	
	-	-	0.83				17	18				-	-	-	
*	1.33	-	-	EXISTING LOAD - EF-5	3	15	19	20	15	3	SPARE	-	-	-	
	-	1.33	-				21	22				-	-	-	
	-	-	1.33				23	24				-	-	-	
	-	-	-	EXISTING LOAD	3	15	25	26	20	3	SPARE	-	-	-	
	-	-	-				27	28				-	-	-	
	-	-	-				29	30				-	-	-	
	-	-	-	SPARE	3	20	31	32	20	3	SPARE	-	-	-	
	-	-	-				33	34				-	-	-	
	-	-	-				35	36				-	-	-	
	-	-	-	EXISTING LOAD	3	20	37	38	20	3	EXISTING LOAD	-	-	-	
	-	-	-				39	40				-	-	-	
	-	-	-				41	42				-	-	-	
**	4.90	-	-	AHU-16	3	30	43	44	30	3	AHU-17	4.90	-	-	**
	-	4.90	-				45	46				-	4.90	-	
	-	-	4.90				47	48				-	-	4.90	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: BAII
LOCATION: ELEC. RM. B115
BUS: ___
MAIN: MLO

VOLTAGE: 208/120V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - LOAD CENTER

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
*	-	0.90	-	RECEPTS - NEW CLASSROOM	1	20	3	4	20	1	RECEPTS - NEW CLASSROOM	-	0.90	-	*
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	7	8	60	3	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	9	10				-	-	-	
	-	-	-	EXISTING LOAD	1	20	11	12				-	-	-	
	-	-	-	SPACE	-	-	13	14	60	3	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	15	16				-	-	-	
	-	-	-	SPACE	-	-	17	18				-	-	-	
	-	-	-	SPACE	-	-	19	20	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	21	22	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	23	24	20	1	EXISTING LOAD	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: D1
LOCATION: MECH D104
BUS: 225A
MAIN: MLO

VOLTAGE: 480Y/277V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD	1	20	7	8	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	9	10	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	11	12	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	13	14	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	15	16	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	17	18	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	19	20	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
**	2.66	-	-	AHU-24	3	20	25	26	15	3	EF-30	2.11	-	-	*
	-	2.66	-				27	28				-	2.11	-	
	-	-	2.66				29	30				-	-	2.11	
*	0.89	-	-	CP-2	3	15	31	32	15	3	SPARE	-	-	-	
	-	0.89	-				33	34				-	-	-	
	-	-	0.89				35	36				-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PP28
LOCATION: RM A162
BUS: 100A
MAIN: MLO

VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	7	8	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	9	10	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	11	12	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	13	14	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	15	16	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	17	18	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	19	20	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	21	22	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	23	24	40	1	EXISTING LOAD	-	-	-
*	0.03	-	-	EF-33	1	20	25	26	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPA
LOCATION: RM E140
BUS: 225A
MAIN: MLO

VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	13	14	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	15	16	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	17	18	-	-	SPACE	-	-	-
*	0.89	-	-	CP-1	3	15	19	20	-	-	SPACE	-	-	-
	-	0.89	-				21	22	-	-	SPACE	-	-	-
	-	-	0.89				23	24	100	3	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	2	100	25	26				-	-	-
	-	-	-				27	28				-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.

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CONSULTANT

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ARCHITECT / ENGINEER SEAL

PROJECT
WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE
ELECTRICAL PANEL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.
E-602

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8/11/2023 10:23 AM

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING

THE CITY OF WATERBURY

CONNECTICUT

ADDENDUM #1

September 18, 2023

RFP 7815 HVAC Replacement Crosby High/Wallace Middle Schools

All proposals of the above captioned project are hereby notified that the Contract Documents for the above referenced project are amended as noted in this Addendum No. 1. This Addendum shall be part of the Contract Documents for the above referenced project as provided in the Request for Proposal.

Receipt of this Addendum shall be acknowledged in writing on the form included in Attachment C of the RFP. Failure to do so may subject Proposer to disqualification.

The Contract Documents are hereby amended as follows:

1) The Question period has been re-opened and will close on September 22, 2023 at 2:00PM. Answers will be posted by 2:00PM on September 27, 2023. The proposal due date has been extended to October 4, 2023 at 11:30AM.

2) Please see attached "Addendum #1 by Studio JAED containing Clarifications, Changes to Specifications and Changes to Drawings.

Please refer to the questions and answers below.

Question: Can you please add a second date for additional questions after the first round has been answered?
Answer: Additional questions must be posted on the City of Waterbury ProcureWare website no later than 2:00 pm on September 22nd, responses will be available via the City of Waterbury ProcureWare Website by 2:00 pm September 27th. Proposal due dates will be extended to October 4th at 11:30 AM.

Question: Will all replacement exhaust fans be provided by the mechanical contractor with back draft dampers as shown on the mechanical drawings?

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE: (203) 574-6749 • FAX: (203) 597-3437

Answer: All new exhaust fans shall be provided with new counterbalanced backdraft dampers. Awarded contractor is responsible for coordinating the sizes of new back draft dampers with existing roof curbs.

Question: Are the mechanical spaces always open for work during normal business hours?
Answer: Mechanical spaces will be open for work during normal business hours. Awarded contractor will be required to coordinate work schedule with Department of Education.

Question: Can you please provide the contractor sign in sheet from the walkthrough./ Can you please share attendants list?
Answer: Contractor Sign-In Sheet is attached.

Question: A note on mechanical control drawings M800s states that the modulating dampers will be provided by the unit manufacturer or presumably the mechanical contractor. Who is responsible for providing the motorized dampers?
Answer: The controls diagram shown on M-800 series drawings are existing. They are to be modified and reapplied to the new units by the controls contractor (SNE Building Systems). The mechanical contractor shall provide new motor operated dampers or reinstall the existing motor dampers as indicated on the plans.

Question: This project has the shutdown of an equipment room that serves a complete section of the building. Can you confirm these rooms can be shut down for weeks while school is in session?
Answer: Awarded contractor shall coordinate and phase all required shut down for minimum effect on the operation of the school and perform these shutdowns outside of cooling season. The specific phasing of these shutdowns will be more closely scheduled with the awarded contractor and the District.

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

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Bear, DE 19701

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studiojaed.com

ARCHITECTS ENGINEERS FACILITIES SOLUTIONS

Addendum #1

Addendum Date: September 18, 2023

Project: Crosby HS/Wallace MS Complex – HVAC Equipment Replacement

The work herein shall be considered part of the bid documents for the referenced project and carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Acknowledge receipt of addendum on the bid form as indicated.

Clarifications:

The mechanical contractor shall provide all necessary labor and materials to accomplish the sequence of operations shown on the drawings. This includes, but is not limited to, all control components, controllers, wiring, programming, etc., and coordination between trades. The contractor shall ensure that all components are coordinated between equipment suppliers and controls vendor for all equipment.

Changes to Specifications:

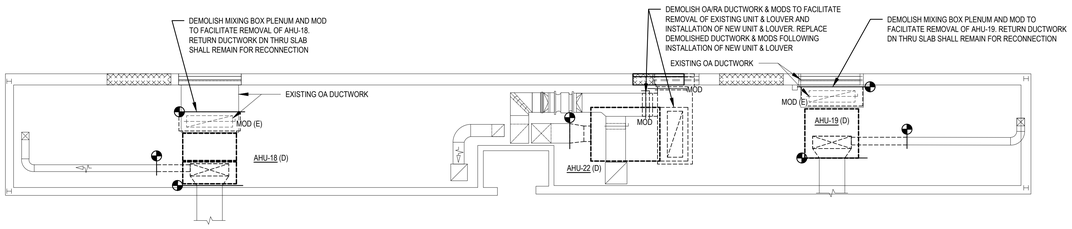
None.

Changes to Drawings:

Mechanical

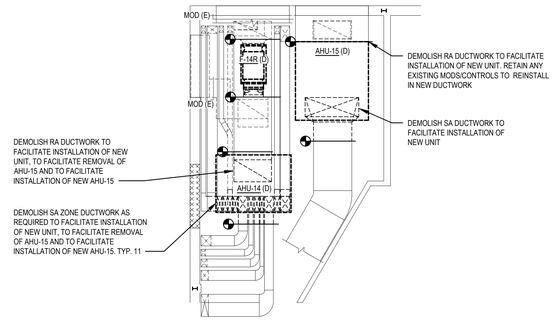
1. *Drawing MD101*
    a. Added "general mechanical notes"
2. Drawing MD102
    a. Added general mechanical note #2
3. *Drawing MD201*
    a. Revised AHU-23 CHW piping demolition
4. *Drawing M-201*
    a. Revised AHU-23 CHW piping new work
5. *Drawing M-500*
    a. Revised EF-99 performance and size
6. *Drawing M-600*
    a. Revised backdraft damper note on exhaust fan detail
7. *Drawings M-800 through M-806*
    a. Removed "FOR REFERENCE ONLY" from the drawing titles
    b. Revised scope note

END



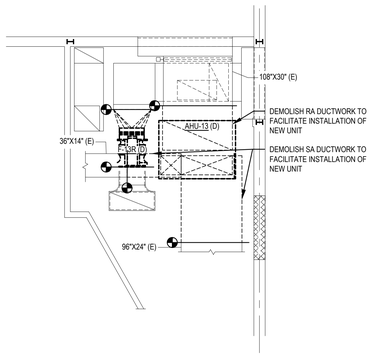
1 MD101 FAN ROOM #13 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



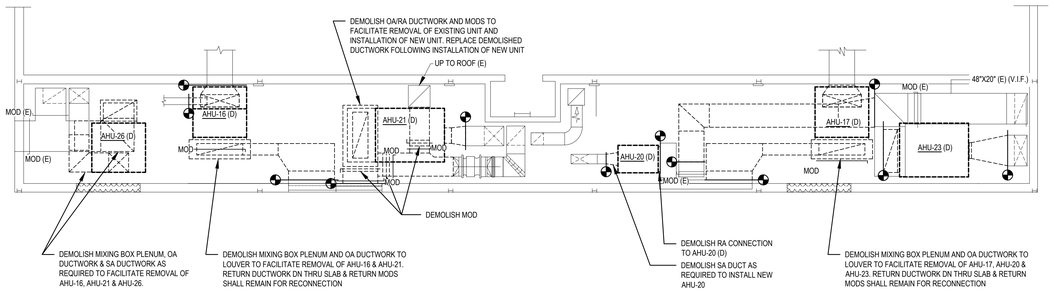
3 MD101 FAN ROOM #10 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



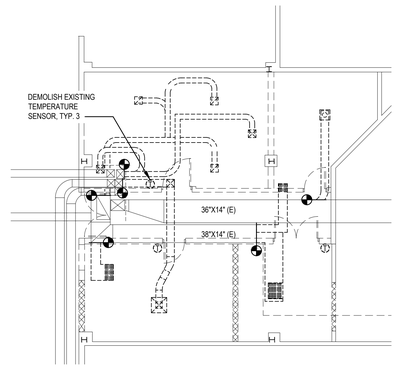
4 MD101 FAN ROOM #11 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



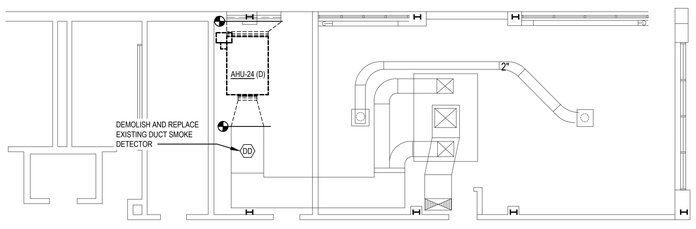
2 MD101 FAN ROOM #14 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



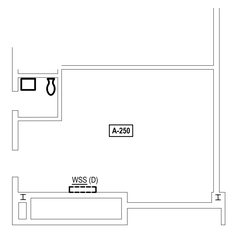
6 MD101 MUSIC SUITE MECH DEMO PLAN

SCALE: 1/8" = 1'-0"



5 MD101 ROOM D104 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



7 MD101 ROOM A250 MECH DEMO PLAN

SCALE: 1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

1. SEE M-001 FOR LOCATIONS
2. DEMOLISH ALL AHU SUPPORT STANDS SUPPORTING DEMOLISHED UNITS

1

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

INTERIOR MECHANICAL DEMOLITION PLANS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

MD101

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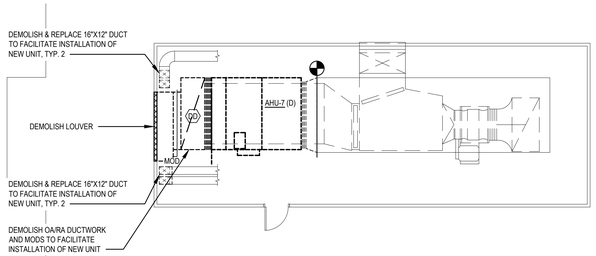
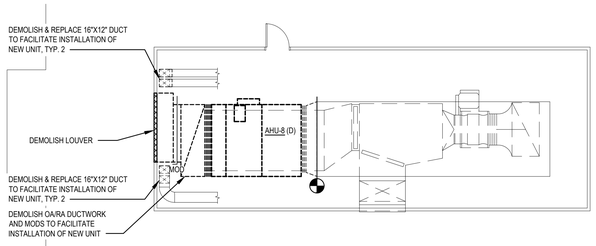
9/18/2023 8:56 AM



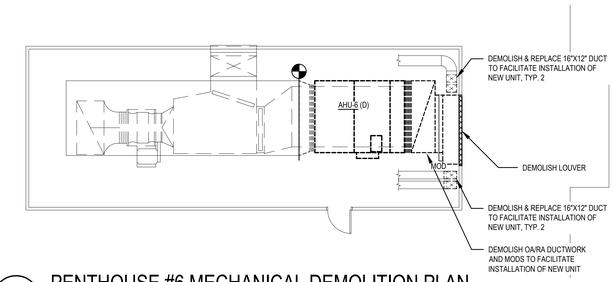
1 MD102 PENTHOUSE #7 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



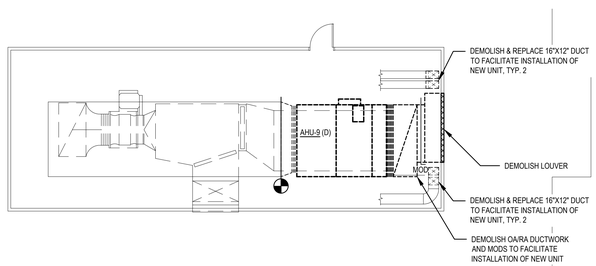
2 MD102 PENTHOUSE #8 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



3 MD102 PENTHOUSE #6 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



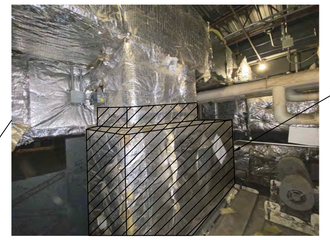
4 MD102 PENTHOUSE #9 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

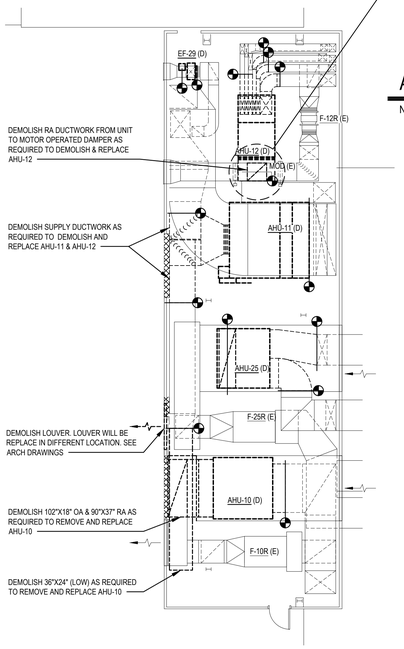
1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH ALL AHU SUPPORT STANDS SUPPORTING DEMOLISHED UNITS

1



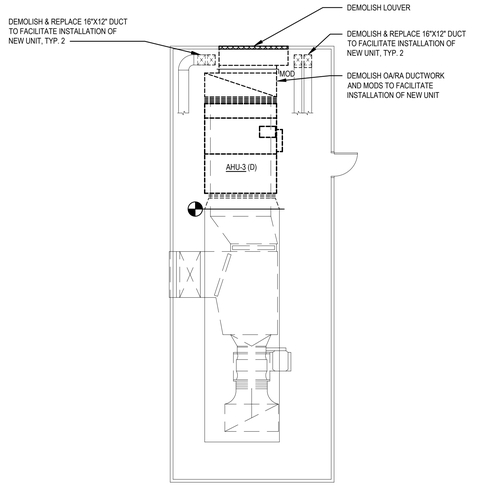
AHU-12 RETURN DEMOLITION PHOTO

NTS



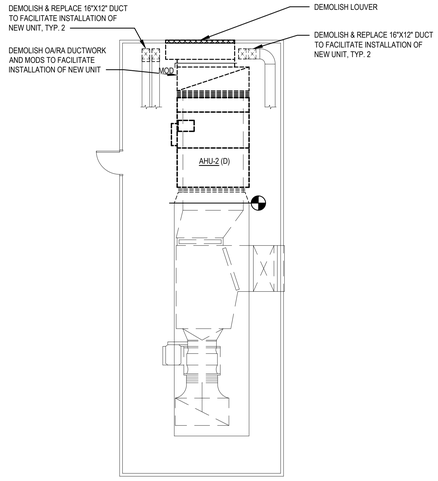
10 MD102 PENTHOUSE #12 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



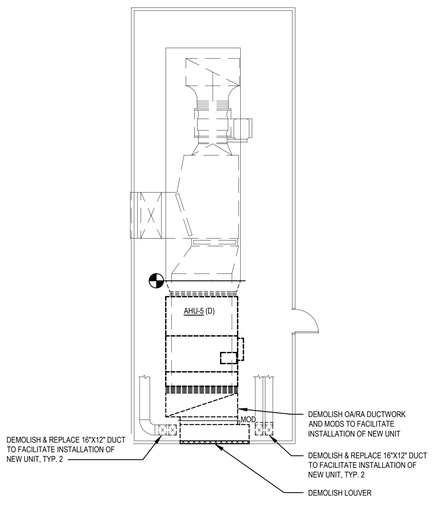
5 MD102 PENTHOUSE #3 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



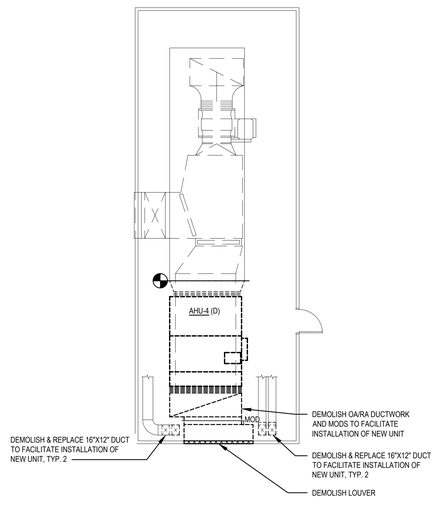
6 MD102 PENTHOUSE #2 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



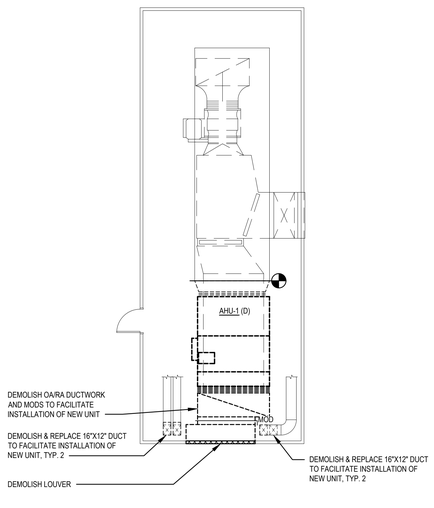
7 MD102 PENTHOUSE #5 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



8 MD102 PENTHOUSE #4 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



9 MD102 PENTHOUSE #1 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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PROJECT

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HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

PENTHOUSE MECHANICAL DEMOLITION PLAN

100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

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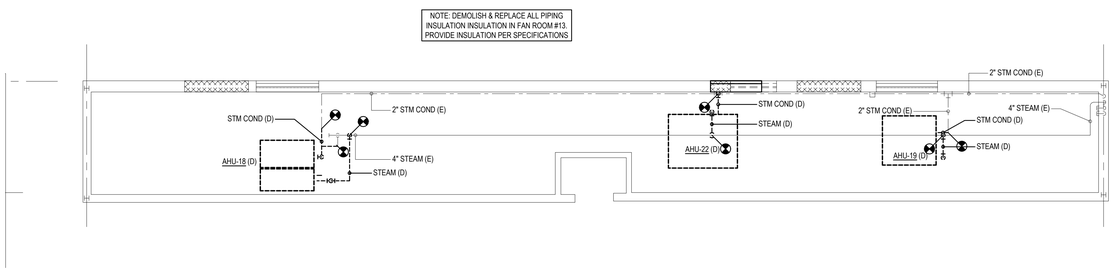
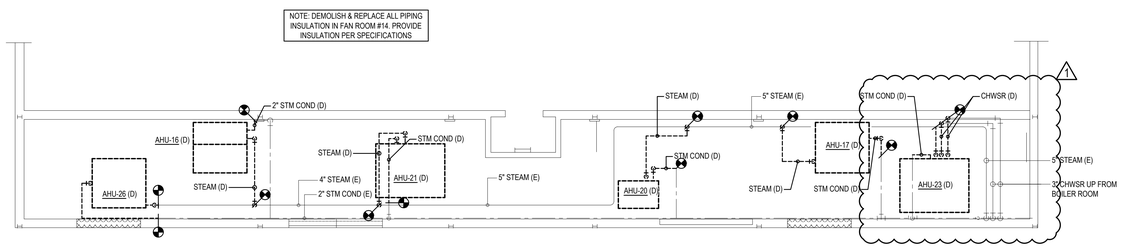


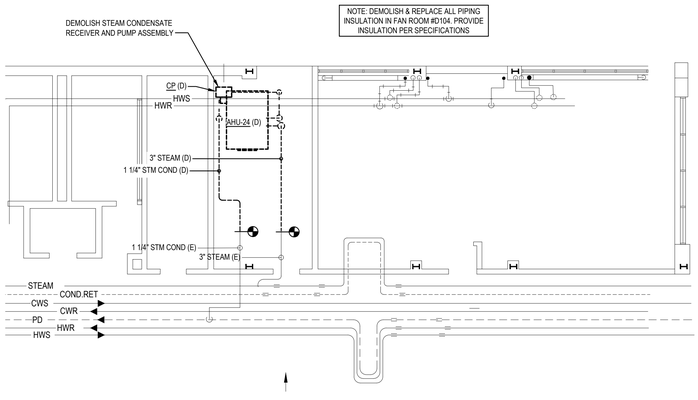
1 MD201 FAN ROOM #13 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



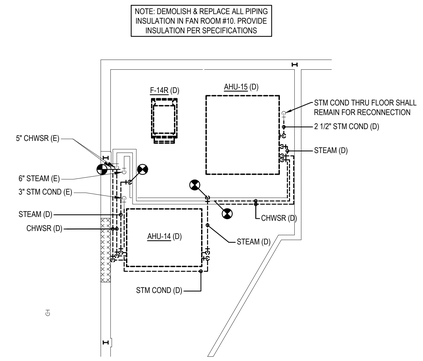
2 MD201 FAN ROOM #14 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



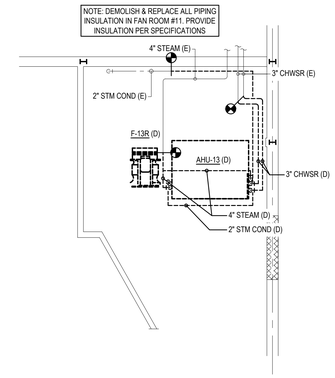
5 MD201 ROOM D104 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



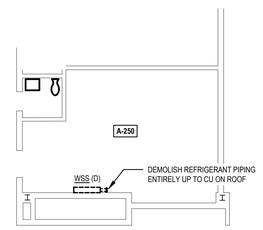
3 MD201 FAN ROOM #10 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



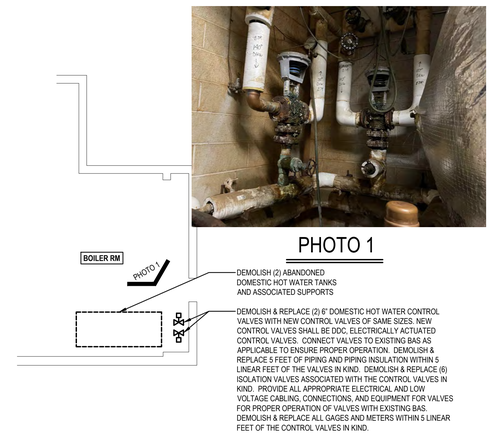
4 MD201 FAN ROOM #11 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



7 MD201 ROOM A250 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

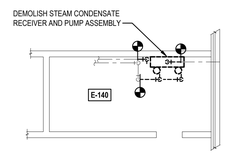


8 MD201 BOILER ROOM DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

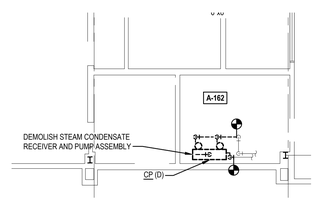
MECHANICAL PIPING DEMOLITION NOTES:

1. SEE M-001 FOR ROOM LOCATIONS
2. REMOVE AND STORE ON SITE ALL STEAM AND CHILLED WATER CONTROL VALVES EXCEPT WHERE NOTED TO PROVIDE NEW STEAM CONTROL VALVES. EXISTING CONTROL VALVES WILL BE REINSTALLED IN NEW STEAM PIPING EXCEPT WHERE NOTED TO PROVIDE NEW STEAM CONTROL VALVES
3. DEMOLISH AHU-13 & AHU-14 STEAM CONTROL VALVES AND PROVIDE NEW



9 MD201 ROOM E140 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"



10 MD201 ROOM A162 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

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REVISIONS

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INTERIOR PIPING DEMOLITION PLAN

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08/11/2023

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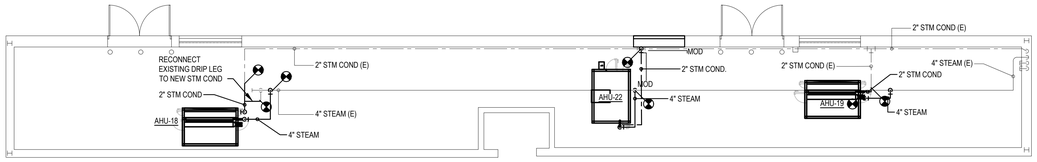
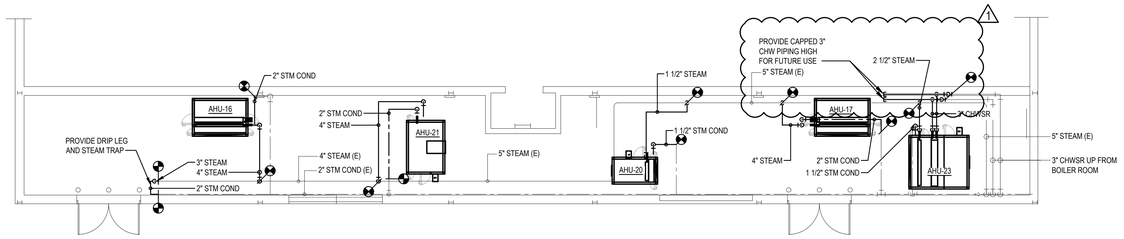


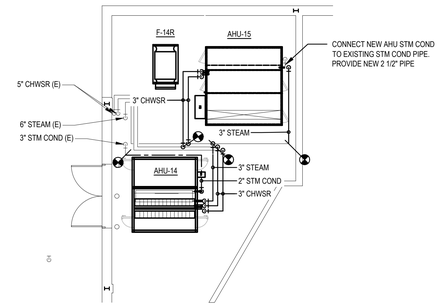
1 M-201 FAN ROOM #13 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



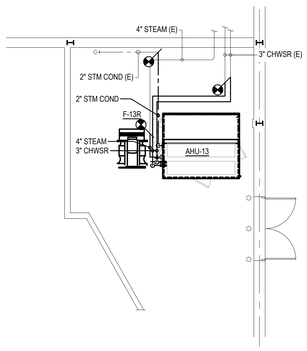
2 M-201 FAN ROOM #14 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



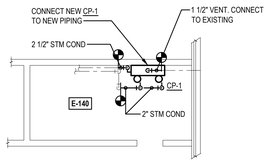
3 M-201 FAN ROOM #10 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



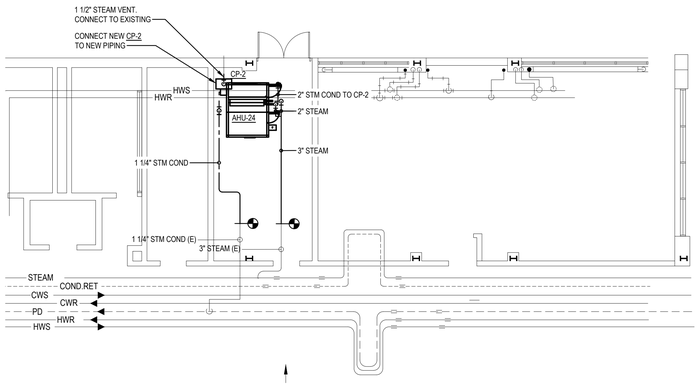
4 M-201 FAN ROOM #11 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



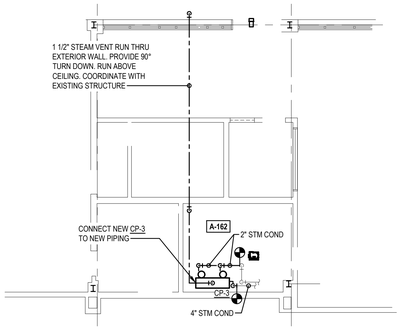
6 M-201 ROOM E140 MECH NEW PLAN

SCALE: 1/8" = 1'-0"



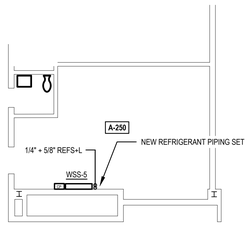
5 M-201 ROOM D104 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



7 M-201 ROOM A162 MECH PLAN

SCALE: 1/8" = 1'-0"



8 M-201 ROOM A250 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

PIPING NEW WORK NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE ALL PIPING INSULATION IN FAN ROOMS 10, 11, 13 & 14. DEMOLISH AND REPLACE ALL PIPING INSULATION IN ROOM D104. PROVIDE NEW INSULATION PER SPECIFICATIONS.
3. DEMOLISH AND REPLACE ALL ISOLATION VALVES AND COOLING CONDENSATE PIPING IN FAN ROOMS 10, 11, 13 & 14. ALL NEW COOLING CONDENSATE PIPING SHALL BE 1 1/4" PVC. PIPE TO NEAREST FLOOR DRAIN
4. PROVIDE NEW CONTROL VALVE DETAILS FOR ALL NEW COILS AS SHOWN ON M-500
5. PROVIDE NEW CONTROL VALVES FOR ALL NEW COILS

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INTERIOR PIPING NEW WORK PLAN

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AHU - #

AIR HANDLING UNIT SCHEDULE (CHILLED WATER COOLING, STEAM HEATING)

UNIT NUMBER	TYPE	AIRFLOW (CFM)	OA (CFM)	E.S.P (IN H20)	COOLING COIL								HEATING COIL					SUPPLY FAN HP	SUPPLY FAN QTY	ELEC	MFR	MODEL #	AREA SERVED	REMARKS
					EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	SENS MBH	TOTAL MBH	GPM	EWT/LWT	EAT (°F)	LAT (°F)	MBH	STEAM PRESSURE (PSI)	FLOW (LB/HR)							
AHU-1	DOUBLE-DECK MULTI ZONE	30,600	6600	1.5	80	67	54.6	54.3	855	1188	173	42/56	60	101	1352	5	1408	27	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-2	DOUBLE-DECK MULTI ZONE	31,350	6700	2.0	80	67	54.9	54.5	869	1200	173	42/56	60	100	1364	5	1505	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-3	DOUBLE-DECK MULTI ZONE	35,165	6500	1.75	80	67	54.6	54.4	985	1354	173	42/58	60	100	1510	5	1572	39	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-4	DOUBLE-DECK MULTI ZONE	31,950	6600	2.0	80	67	55.0	54.7	879	1210	173	42/56	60	100	1373	5	1429	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-5	DOUBLE-DECK MULTI ZONE	32,210	6500	2.25	80	67	55.1	54.7	884	1213	173	42/56	60	99	1377	5	1433	33	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA D	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-6	DOUBLE-DECK MULTI ZONE	32,020	8000	1.75	80	67	55.0	54.7	881	1210	173	42/56	60	100	1374	5	1430	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-7	DOUBLE-DECK MULTI ZONE	28,945	8300	2.5	80	67	54.1	53.8	825	1161	173	42/55	60	102	1327	5	1380	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-8	DOUBLE-DECK MULTI ZONE	27,350	8000	2.0	80	67	53.6	53.3	796	1133	173	42/55	60	104	1300	5	1353	24	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-9	DOUBLE-DECK MULTI ZONE	30,700	7600	2.0	80	67	54.7	54.3	857	1190	173	42/56	60	101	1354	5	1409	27	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-10	SINGLE ZONE	12,000	TBD	0.75	80	67	55.4	53.8	319	476	72	42/55	60	117	745	5	753	10	1	460/3/60	JCI	XTI-51X93	MULTI-PURPOSE ROOM	
AHU-11	SINGLE ZONE	22,000	TBD	1.5	-	-	-	-	-	-	-	-	0	104	2466	5	2511	15	1	460/3/60	JCI	XTI-75X111	POOL	PROVIDE DUAL INLINE STEAM COILS. COIL PERFORMANCE LISTED IS TOTAL PERFORMANCE
AHU-12	DOUBLE-DECK MULTIZONE	6700	1575	2.0	80	67	55.0	54.6	185	255	39	42/55	60	103	309	5	321	9	1	460/3/60	NORTEK	VENTROL CUSTOM	MIDDLE SCHOOL MUSIC SUITE	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-13	DOUBLE-DECK MULTIZONE	18,000	TBD	2.0	80	67	54.4	53.8	507	724	108	42/55	60	100	789	5	821	27	1	460/3/60	NORTEK	VENTROL CUSTOM	AUDITORIUM	PROVIDE FILTER ACCESS AT REAR OF UNIT. PROVIDE REMOTE MOUNT ELECTRICAL PANEL
AHU-14	DOUBLE-DECK MULTIZONE	14,000	1950	2.0	80	67	55.2	54.1	376	543	84	42/55	60	92.5	491	5	498	20	1	460/3/60	JCI	XTI-54X102	HIGH SCHOOL MUSIC SUITE	
AHU-15	SINGLE ZONE	12,000	TBD	2.0	80	67	51.6	51.4	374	557	115	42/52	60	109	635	5	661	12	1	460/3/60	NORTEK	VENTROL CUSTOM	CAFETERIA	
AHU-16	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	NOTE: PROVIDE AHU-16 THRU 19 WITH BLANK SECTION FOR FUTURE COOLING COIL. FANS ARE SIZED TO ACCOUNT FOR P.D. THROUGH FUTURE COOLING COIL
AHU-17	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-18	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-19	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-20	SINGLE ZONE	3000	TBD	0.75	-	-	-	-	-	-	-	-	50	103	171	5	176	1.5	1	460/3/60	JCI	XTI-39X42	GYM LOBBY	
AHU-21	SINGLE ZONE	8000	TBD	1.5	-	-	-	-	-	-	-	-	0	91	787	5	787	10	1	460/3/60	JCI	XTI-42X84	LOCKER ROOMS	
AHU-22	SINGLE ZONE	8000	TBD	1.5	-	-	-	-	-	-	-	-	0	91	787	5	787	10	1	460/3/60	JCI	XTI-42X84	LOCKER ROOMS	
AHU-23	SINGLE ZONE	8000	550	0.75	80	67	55.4	53.7	212	319	48	42/55	50	103	459	5	469	10	1	460/3/60	JCI	XTI-42X84	AUDITORIUM LOBBY	
AHU-24	SINGLE ZONE	7000	TBD	0.5	-	-	-	-	-	-	-	-	0	95	711	5	726	7.5	1	460/3/60	JCI	XTI-36X66	STUDENT KITCHEN	PROVIDE DUAL INLINE STEAM COILS. COIL PERFORMANCE LISTED IS TOTAL PERFORMANCE
AHU-25	DOUBLE-DECK MULTIZONE	10,000	2200	2.0	80	67	54.0	53.6	286	407	81	42/52	60	110	549	5	571	12	1	460/3/60	NORTEK	VENTROL CUSTOM	THEATRE	PROVIDE TOP RETURN CONNECTION AND FILTER BOX

NOTE: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL UNITS WITH G90 GALVANIZED STEEL DOUBLE WALL CONSTRUCTION, MIN. 2" FOAM INSULATION. PROVIDE ALL CUSTOM (NORTEK) UNITS WITH FANWALL FANS. PROVIDE ALL JCI UNITS WITH AIRFOIL FANS. PROVIDE AHU-1 THRU AHU-9 WITH STAINLESS STEEL COOLING SECTION. PROVIDE ALL FANS WITH VARIABLE FREQUENCY DRIVES (EXCEPT WHERE VFDS ARE TO BE REUSED; SEE ELECTRICAL DRAWINGS). VFDS TO CONFORM TO SPECIFICATION SECTION 26 29 23. VFDS TO BE INSTALLED BY ELECTRICAL CONTRACTOR. ALL UNITS SHALL BE SHIPPED KNOCKDOWN AT SHIPPING SPLITS TO FACILITATE PASSAGE THROUGH NEW DOORS OR LOUVER OPENINGS. CONTRACTOR IS RESPONSIBLE FOR FIELD-ASSEMBLING UNITS. CONTRACTOR TO CONFIRM PRIOR TO RELEASE OF EQUIPMENT IF CUSTOM (NORTEK) UNITS REQUIRE ADDITIONAL KNOCKDOWN AND FIELD ASSEMBLY. PROVIDE JCI UNITS WITH INTERNAL SPRING ISOLATORS WITH 2" DEFLECTION. INSTALL DUCT DETECTORS IN SUPPLY SECTION OF ALL MULTI-ZONE AIR HANDLING UNITS. MAXIMUM 1% AIR LEAKAGE AT +/- 1" OF INTERNAL STATIC PRESSURE. MAXIMUM L/240 PANEL DEFLECTION AT +/- 8" OF INTERNAL STATIC PRESSURE. PROVIDE DOUBLE WALL HINGED ACCESS DOORS WITH DOUBLE PANE VIEWING PORTS AND TEST PORTS. PROVIDE LED LIGHTING IN ALL ACCESS SECTIONS. PROVIDE GFCI CONVENIENCE OUTLET ON THE EXTERIOR OF THE SUPPLY FAN SECTION. PROVIDE MAGNEHELIC FILTER GAUGE. CHILLED WATER COIL SHALL HAVE 5/8" TUBES WITH 0.035" WALL THICKNESS. CHILLED WATER COIL CASING, COIL SUPPORTS, BULKHEAD AND DRAIN PAN SHALL BE STAINLESS STEEL CONSTRUCTION. PROVIDE FACTORY MOUNTED AEGIS SHAFT GROUNDING RING AND INVERTER DRIVE FOR SUPPLY FAN. REMOTE VFD TO BE PROVIDED BY ELECTRICAL CONTRACTOR AS SPECIFIED. CONTROLS SHALL BE FIELD FURNISHED AND INSTALLED BY THE CONTROLS CONTRACTOR.

NOTE: THE CONTRACTOR SHALL PERFORM PRE-DEMOLITION TESTING OF AIR FLOW, STEAM FLOW AND WATER FLOW AND STATIC PRESSURES FOR ALL AIR HANDLING UNITS. THE SYSTEM SHALL BE IN OCCUPIED MODE WITH THE AIR HANDLING UNITS COMMANDED TO 100% SETPOINT. TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS. PROVIDE REPORT TO ENGINEER FOR REVIEW PRIOR TO AIR HANDLING UNIT SUBMITTAL.

F - #

FAN SCHEDULE

UNIT NUMBER	LOCATION	CFM	ESP	DRIVE	ELECTRIC	POWER (HP)	MOUNT	MANUFACTURER	MODEL	REMARKS
F-13R	FAN RM #11	15,000	0.5	BELT	460/3/60	2	FLOOR	COOK	270TMX	
F-14R	FAN RM #10	11,000	0.5	BELT	460/3/60	2	FLOOR	COOK	270TMX	

NOTE: PROVIDE FANS AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL FANS WITH VARIABLE FREQUENCY DRIVES. VFDS TO CONFORM TO SPECIFICATION SECTION 26 29 23. VFDS TO BE INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECTRICAL PLANS. PROVIDE ALL FANS WITH FLEXIBLE CONNECTIONS AT INLET AND OUTLET AND HOUSED SPRING FLOOR ISOLATORS WITH MIN. 1" DEFLECTION.

EF - #

EXHAUST FAN SCHEDULE

UNIT NUMBER	LOCATION	TYPE	CFM	ESP	DRIVE	ELECTRIC	POWER (HP)	MOUNT	MANUFACTURER	MODEL	REMARKS
EF-1	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-2	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-3	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-4	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-5	ROOF	CENTRIFUGAL DNBLAST	2650	0.375	DIRECT	460/3/60	3/4	CURB	COOK	150C17D VF2	
EF-6	ROOF	CENTRIFUGAL DNBLAST	2200	0.375	DIRECT	460/3/60	1/2	CURB	COOK	150C17D VF	
EF-7	ROOF	CENTRIFUGAL DNBLAST	1640	0.25	DIRECT	115/1/60	1/4	CURB	COOK	150C17D VF	
EF-8	ROOF	CENTRIFUGAL DNBLST	11,000	0.125	BELT	460/3/60	1 1/2	CURB	COOK	365C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-9	ROOF	CENTRIFUGAL DNBLST	11,000	0.125	BELT	460/3/60	1 1/2	CURB	COOK	365C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-10	ROOF	CENTRIFUGAL DNBLAST	3400	0.25	DIRECT	277/1/60	3/4	CURB	COOK	165C17D VF	
EF-11	ROOF	CENTRIFUGAL DNBLAST	6100	0.25	DIRECT	460/3/60	3	CURB	COOK	195C17D VF2	
EF-12	ROOF	CENTRIFUGAL DNBLAST	7750	0.25	DIRECT	460/3/60	5	CURB	COOK	195C17D VF2	
EF-13	ROOF	CENTRIFUGAL DNBLAST	2450	0.25	DIRECT	115/1/60	1/2	CURB	COOK	150C17D VF	
EF-14	ROOF	CENTRIFUGAL DNBLAST	2500	0.25	DIRECT	277/1/60	1/2	CURB	COOK	150C17D VF	
EF-15	ROOF	CENTRIFUGAL DNBLAST	800	0.125	DIRECT	115/1/60	1/4	CURB	COOK	100C17DEC	
EF-16	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	
EF-17	ROOF	CENTRIFUGAL DNBLAST	1650	0.125	DIRECT	115/1/60	1/2	CURB	COOK	120C17DEC	
EF-18	ROOF	CENTRIFUGAL DNBLAST	3000	0.25	DIRECT	460/3/60	3/4	CURB	COOK	165C17D VF2	
EF-19	ROOF	CENTRIFUGAL DNBLAST	1350	0.25	DIRECT	115/1/60	1/4	CURB	COOK	120C17D VF	
EF-20	ROOF	CENTRIFUGAL DNBLAST	800	0.125	DIRECT	115/1/60	1/4	CURB	COOK	100C17DEC	
EF-21	ROOF	CENTRIFUGAL DNBLAST	5200	0.25	DIRECT	460/3/60	2	CURB	COOK	195C17D VF2	
EF-22	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	
EF-23	ROOF	CENTRIFUGAL DNBLAST	6200	0.25	DIRECT	460/3/60	3	CURB	COOK	195C17D VF2	
EF-24	ROOF	CENTRIFUGAL DNBLAST	1900	0.125	DIRECT	115/1/60	1/4	CURB	COOK	150C17D VF	
EF-25	ROOF	CENTRIFUGAL DNBLAST	850	0.125	DIRECT	115/1/60	1/8	CURB	COOK	135C17D VF	
EF-26	-	-	-	-	-	-	-	-	-	-	NOT USED
EF-27	ROOF	CENTRIFUGAL UPBLAST	8000	0.5	DIRECT	460/3/60	5	CURB	COOK	195R17D VF2	PROVIDE WITH NEW 16" ROOF CURB & HINGED BASE
EF-28	ROOF	CENTRIFUGAL DNBLAST	1200	0.25	DIRECT	115/1/60	1/6	CURB	COOK	120C17D VF	
EF-29	PENTHOUSE #12	CENTRIFUGAL BLOWER	2500	0.25	DIRECT	460/3/60	1/2	FLOOR	COOK	180CPS VF2	CONTRACTOR TO VERIFY FLOW ARRANGEMENT AND DIRECTION
EF-30	ROOF	CENTRIFUGAL UPBLAST	7500	0.5	DIRECT	460/3/60	5	ROOF	COOK	195R17D VF2	PROVIDE WITH NEW ROOF CURB & HINGED BASE
EF-31	ROOF	LABORATORY TUBULAR CENTRIFUGAL INLINE	1600	1.75	DIRECT	460/3/60	3	ROOF	COOK	150TCNHBLE08	PROVIDE WITH NEW ROOF CURB, PHENOLIC EPOXY COATING AND DISCHARGE NOZZLE. OVERALL HEIGHT 10'
EF-32	ROOF	LABORATORY TUBULAR CENTRIFUGAL INLINE	1600	1.75	DIRECT	460/3/60	3	ROOF	COOK	150TCNHBLE08	PROVIDE WITH NEW ROOF CURB, PHENOLIC EPOXY COATING AND DISCHARGE NOZZLE. OVERALL HEIGHT 10'
EF-33	A162	CEILING	100	0.25	DIRECT	115/1/60	0.25A	CEILING		GCVE-100	PROVIDE W/ WALL CAP & INTEGRATED BACKDRAFT DAMPER
EF-99	ROOF	CENTRIFUGAL DNBLAST	2700	0.5	DIRECT	115/1/60	3/4	CURB	COOK	150C17D VF	FIRING RANGE RELIEF. PROVIDE WITH EXTERNAL SPEED CONTROL FOR CONTROLS BY OTHERS

1

NOTES: PROVIDE FANS AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL FANS EXCEPT EF-1,2,3,4,8 & 9 WITH EC MOTORS. PROVIDE FANS EF-1,2,3,4,8 & 9 WITH STANDARD MOTORS. PROVIDE EC MOTOR UNITS WITH UNIT MOUNTED SPEED ADJUSTMENT FOR BALANCING. PROVIDE ALL UNITS WITH CURB CAP ADAPTER, ALUMINUM BIRD SCREEN, AND NEW BACKDRAFT DAMPER IN EXISTING CURB. PROVIDE TIE-IN TO EXISTING BAS FOR OCCUPANCY SCHEDULING AND STATUS MONITORING. CONTRACTOR TO VERIFY EXISTING CURB DIMENSIONS IN FIELD.

WSS - #
CU - #

WALL MOUNTED DUCTLESS FAN COIL SCHEDULE

UNIT NUMBER (INDOOR/OUTDOOR)	SYSTEM MCA / MOCP	OUTDOOR UNIT	ELEC	EER	SAMSUNG MODEL #	INDOOR UNIT	REMARKS
		COOLING CAP. (MBh)				SAMSUNG MODEL #	
WSS-1/CU-1	12.5 / 20	14.5	208-230/1/60	12.05	AR12TSFYBWKXCV	AR12TSFYBWKNCV	

NOTES: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. PROVIDE THERMOSTAT AND LITTLE GIANT VCMA-15 CONDENSATE PUMP (120V) PER UNIT. PROVIDE DIVERITECH CONDENSING UNIT SUPPORTS TO SUPPORT EACH CONDENSING UNIT. PROVIDE MIRO PIPE SUPPORTS TO SUPPORT REFRIGERANT PIPING AS REQUIRED. PROVIDE WITH LOW AMBIENT KIT FOR COOLING DOWN TO 0F.

CP - #

STEAM CONDENSATE PUMP SCHEDULE

UNIT NUMBER	MANUFACTURER	MODEL #	RPM	GPM	TDH (PSI)	MOTOR HP	RECEIVER SIZE (GAL)	ELEC	REMARKS
CP-1	B&G	153CC	3500	15	30	3/4	14	460/3/60	
CP-2	B&G	93CC	3500	9	30	3/4	14	460/3/60	
CP-3	B&G	303CC	3500	30	30	1	36	460/3/60	

NOTE: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. ALL UNITS SHALL BE DUPLEX TYPE. PROVIDE ALL UNITS WITH CONTROL PANELS INCLUDING MAGNETIC STARTERS, FUSED DISCONNECT SWITCH, 'AUTO-OFF-HAND' SELECTOR SWITCHES, ELECTRIC ALTERNATOR, TRANSFORMER, PILOT LIGHTS & AUDIBLE ALARM. PROVIDE ALL UNITS WITH BASKET TYPE INLET STRAINERS. PROVIDE WITH SINGLE-POINT POWER CONNECTION

D - #

DIFFUSER SCHEDULE

UNIT NUMBER	SIZE (FACE / NECK)	DESCRIPTION	MANUFACTURER	MODEL NUMBER	REMARKS
D-1	24"x24"/10"Ø	ALUMINUM SQUARE CONE DIFFUSER	KRUEGER	51450	
D-2	24"x24"/12"Ø	ALUMINUM SQUARE CONE DIFFUSER	KRUEGER	51450	

NOTE: PROVIDE EQUIPMENT BY KRUEGER OR APPROVED EQUAL. ALL DIFFUSERS SHALL HAVE FACE OPERABLE DAMPERS. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE.

R - #

RETURN GRILLE SCHEDULE

UNIT NUMBER	SIZE (FACE / NECK)	DESCRIPTION	MANUFACTURER	MODEL NUMBER	REMARKS
R-1	24"X24" / 12"X12"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	
R-2	24"X24" / 16"X16"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	
R-3	24"X24" / 22"X22"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	

NOTE: PROVIDE EQUIPMENT BY KRUEGER OR APPROVED EQUAL. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE.

GV - #

GRAVITY VENT SCHEDULE

UNIT NUMBER	THROAT SIZE	MANUFACTURER	MODEL #	REMARKS
GV-1	44"X44"	COOK	GR	
GV-2	44"X44"	COOK	GR	
GV-3	45"X92"	COOK	GR	

NOTES: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. ALL GRAVITY VENTS SHALL BE ALUMINUM. PROVIDE ALL UNITS WITH COUNTERBALANCED BACKDRAFT DAMPERS AND BIRD SCREENS.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

MECHANICAL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-500

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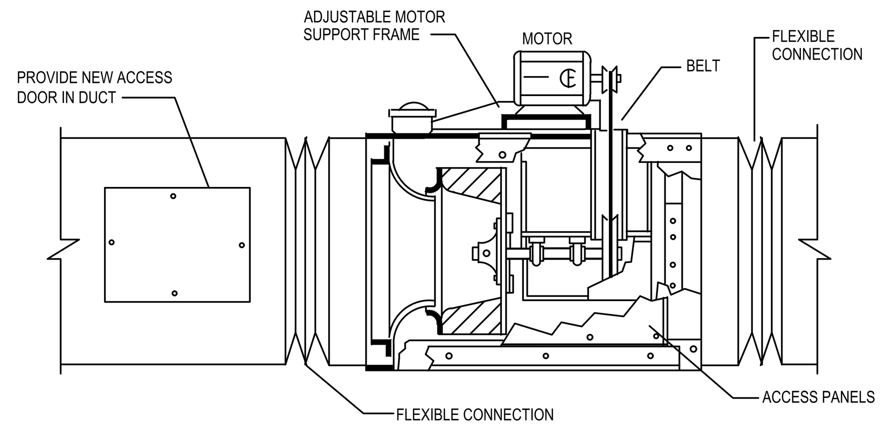
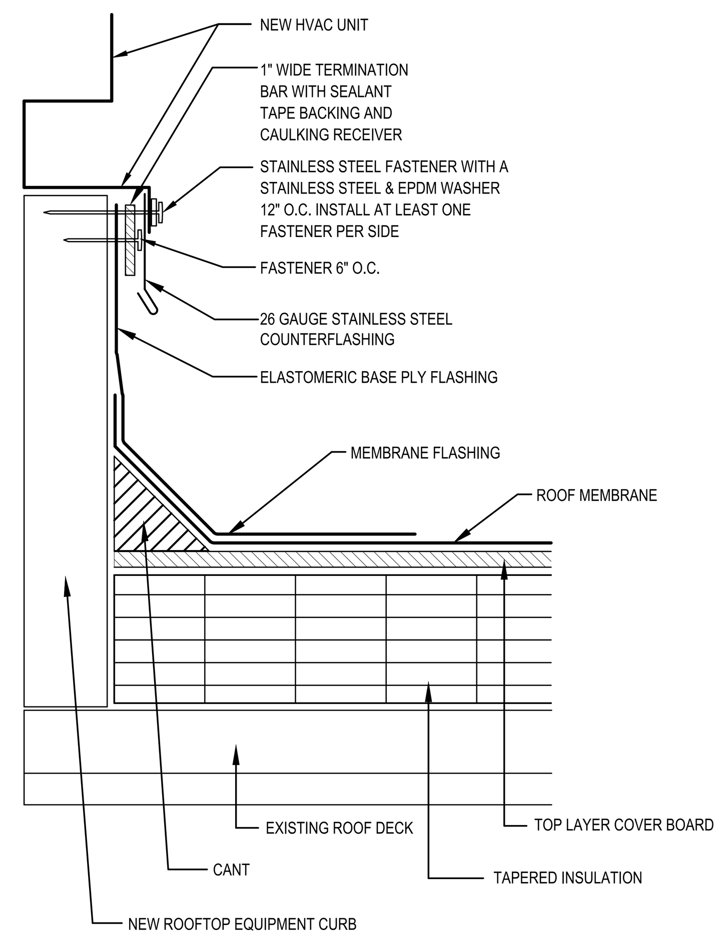
9/18/2023 8:56 AM



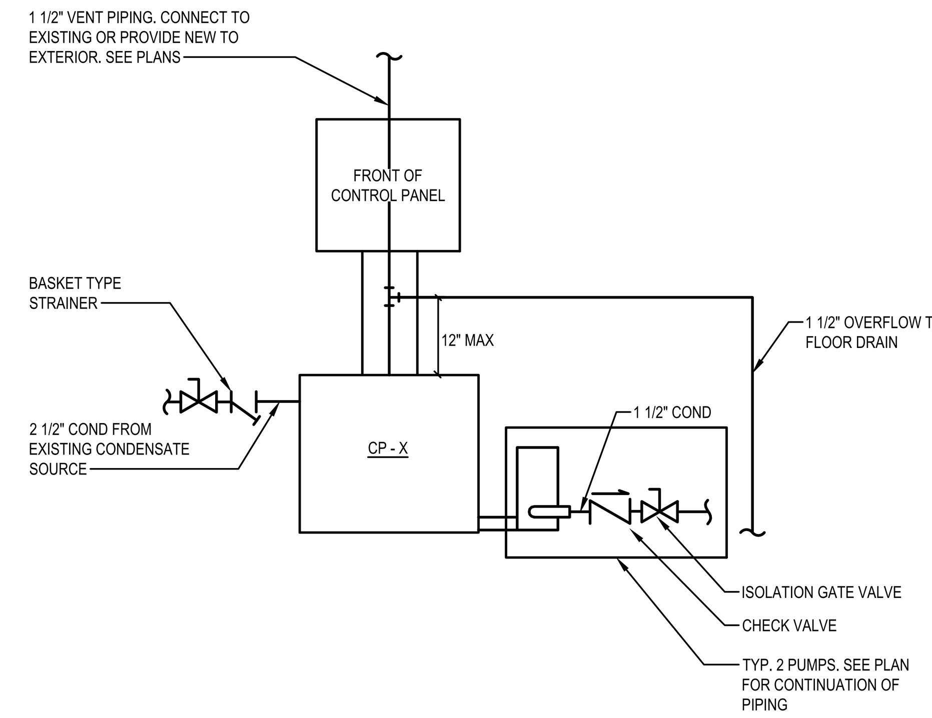
NOTES:

1. ACCESS DOOR SHALL BE HINGED-TYPE.

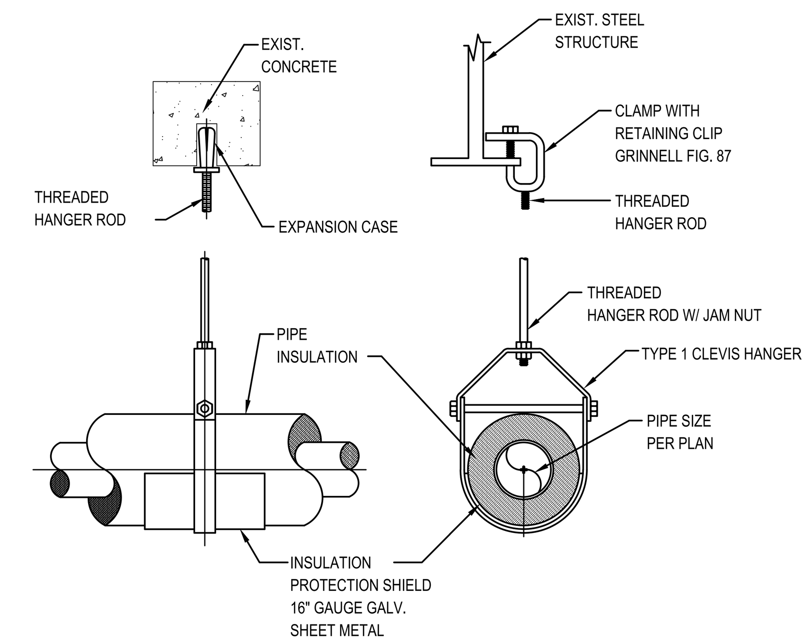
1 M-600 TYPICAL IN-LINE FAN DETAIL
SCALE: NTS



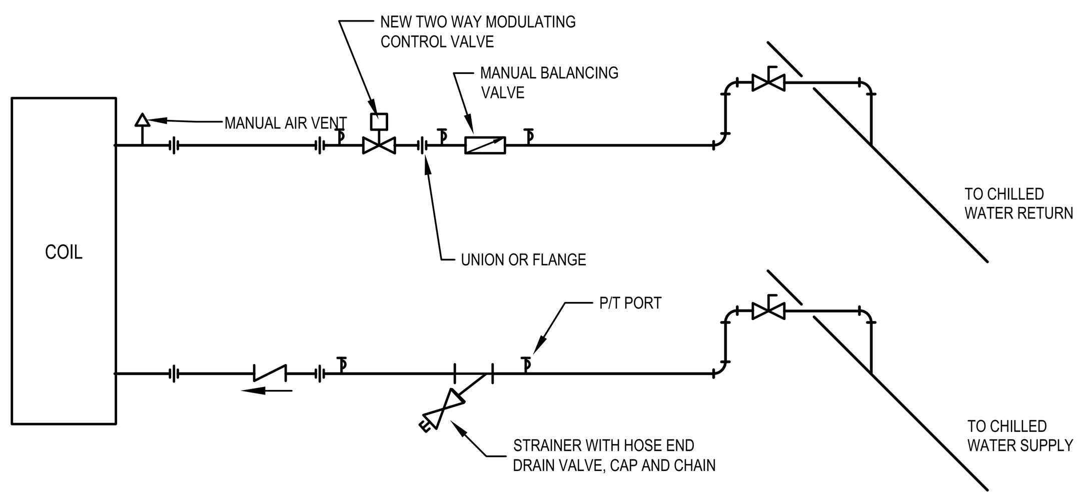
2 M-600 ROOF CURB FLASHING DETAIL
SCALE: NTS



3 M-600 STEAM CONDENSATE PUMP DETAIL
SCALE: NTS



4 M-600 TYPICAL PIPE HANGER DETAIL
SCALE: NTS



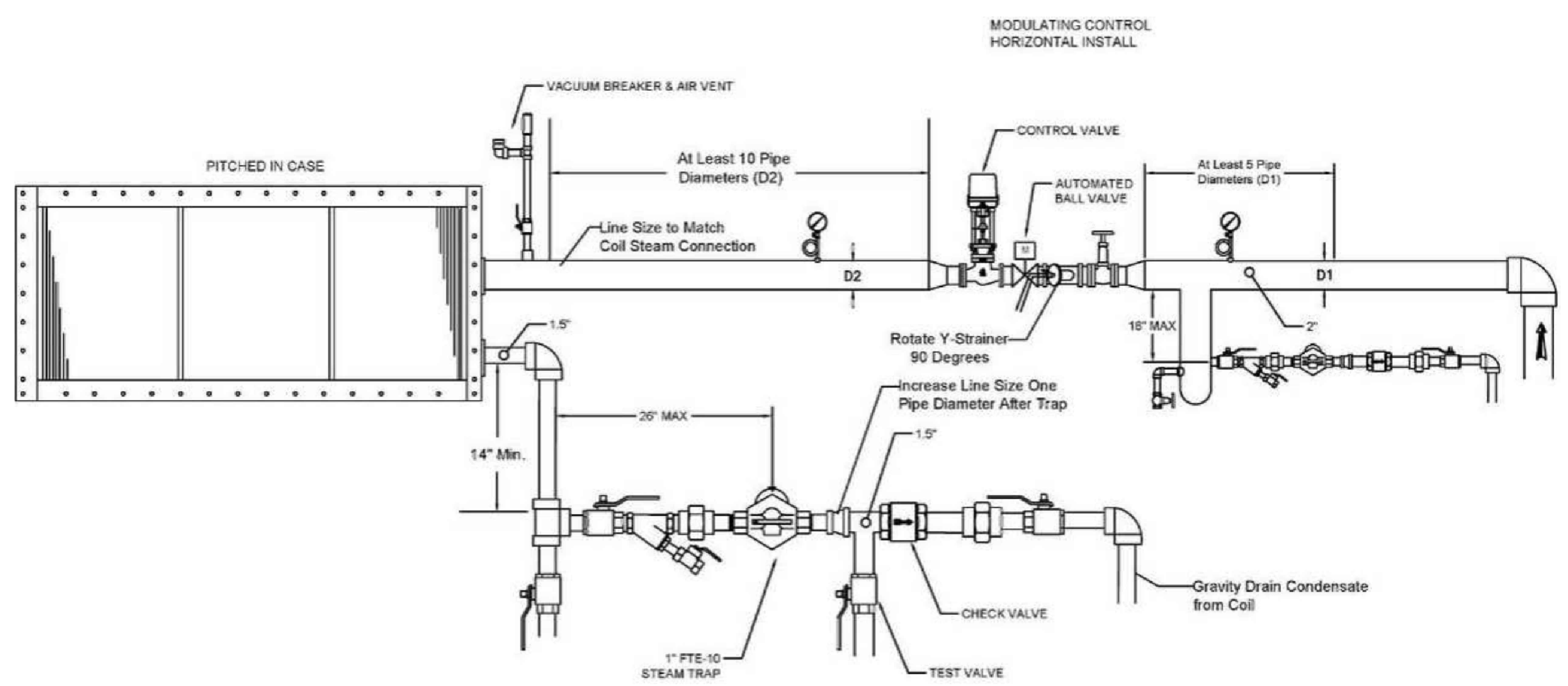
NOTE:

1. PROVIDE FLOW LIMITING DEVICE PER UNIT FLOW REQUIREMENTS AS SHOWN IN EQUIPMENT SCHEDULES.

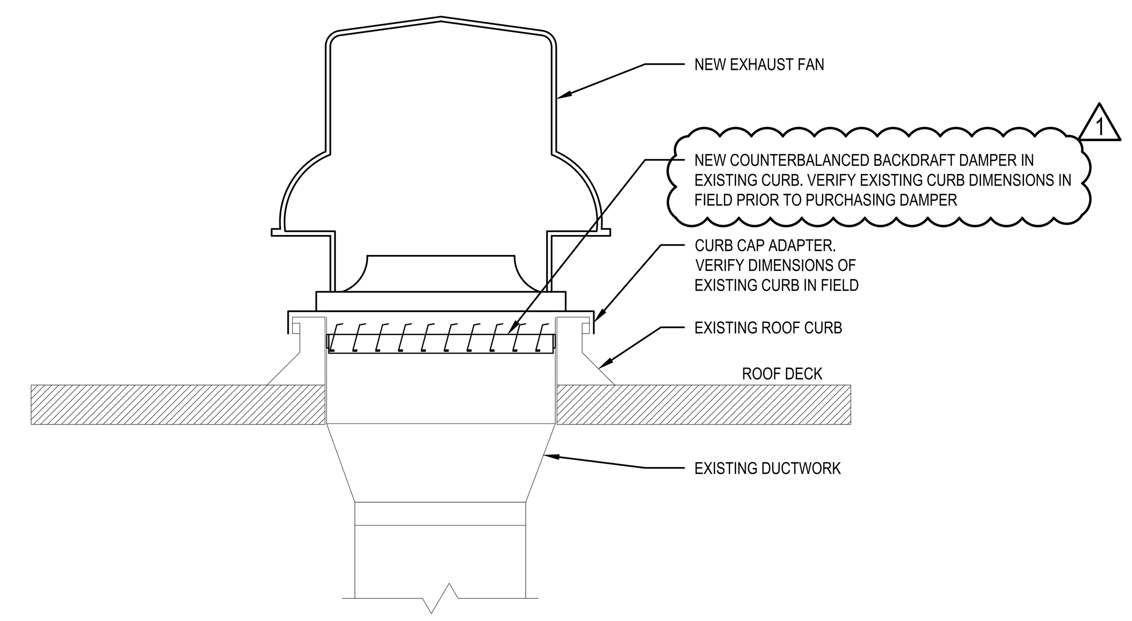
2. THIS ARRANGEMENT IS TYPICAL FOR ALL CHILLED WATER COILS

3. PROVIDE COIL CONNECTIONS DESCRIBED ABOVE FOR AIR HANDLING UNITS AND ROOF TOP AIR HANDLING UNITS.

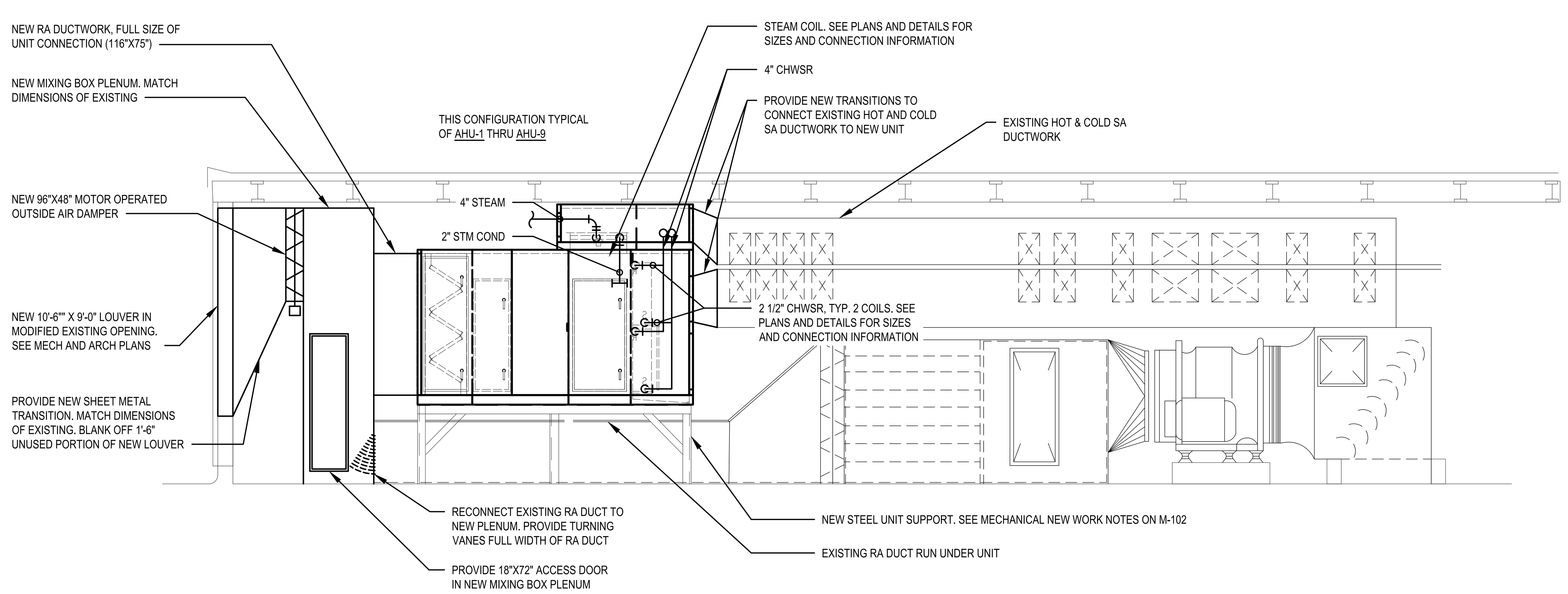
5 M-600 TYPICAL 2-WAY VALVE DETAIL FOR AHUS
SCALE: NTS



6 M-600 TYPICAL STEAM COIL CONNECTION DETAIL
SCALE: NTS



7 M-600 ROOF MOUNTED EXHAUST FAN DETAIL
SCALE: NTS



8 M-600 PENTHOUSE 1 THRU 9 TYPICAL SECTION
SCALE: NTS

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CRUMPTON, MARYLAND 216285

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

MECHANICAL DETAILS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-600

Company Information

Date:	**Tuesday, September 12, 2023**
RFP #:	**7815: HVAC Replacements at Crosby/Wallace**

Representative:	Lee Scheinfeld
Company Name:	Action Air Systems
City, State, Zip Code	Manchester Ct 06042
Tel:	860 645-8838
Fax:	860 645-0226
Email:	lee@actionairsystems.com

Representative:	Don Jillson
Company Name:	Saccacco Mechanical
City, State, Zip Code	Wtby Ct 06706
Tel:	203-410-6168
Fax:	
Email:	DJillson@Saccacco.com

Representative:	Daniela Londono
Company Name:	All State Construction
City, State, Zip Code	Farmington CT 06032
Tel:	860 357 03 05
Fax:	
Email:	dlondono@allstateconstructioninc.com

Representative:	Jeremy Doubleday
Company Name:	Saccacco mechanical
City, State, Zip Code	Waterbury CT 06705
Tel:	203 720-3823
Fax:	
Email:	Jdoubleday@Saccacco.com

Company Information

Date:	**Tuesday, September 12, 2023**
RFP #:	**7815: HVAC Replacements at Crosby/Wallace**

Representative:	Mike Girard
Company Name:	SNE Building Systems
City, State, Zip Code	East Granby CT
Tel:	860 882 3178
Fax:	
Email:	Michael.girard@snebuildingsystems.com

Representative:	Kevin George
Company Name:	Synergy Electric
City, State, Zip Code	Plainville, CT 06062
Tel:	860-966-8469
Fax:	
Email:	kgeorge@synergyelectric.net

Representative:	Brian Karwowski
Company Name:	Sav-Mor Cooling + Heating
City, State, Zip Code	Southington, CT 06489
Tel:	860-621-9959
Fax:	—
Email:	Brian@savmorct.com

Representative:	JAY Hicken
Company Name:	PRO-MECH
City, State, Zip Code	BLOOMFIELD
Tel:	860 243 3952
Fax:	
Email:	PROMECHINC@COMCAST.NET

Company Information

Date:	**Tuesday, September 12, 2023**
RFP #:	**7815: HVAC Replacements at Crosby/Wallace**

Representative:	David Spangler
Company Name:	Studio JAED
City, State, Zip Code	Bear, DE, 19701
Tel:	302-832-1652
Fax:	302-832-1433
Email:	spanglerd@studiojaed.com

Representative:	
Company Name:	
City, State, Zip Code	
Tel:	
Fax:	
Email:	

Representative:	
Company Name:	
City, State, Zip Code	
Tel:	
Fax:	
Email:	

Representative:	
Company Name:	
City, State, Zip Code	
Tel:	
Fax:	
Email:	

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #2

September 19, 2023

RFP 7815 HVAC Replacement Crosby High School/Wallace Middle Schools

All proposals of the above captioned project are hereby notified that the Contract Documents for the above referenced project are amended as noted in this Addendum No. 1. This Addendum shall be part of the Contract Documents for the above referenced project as provided in the Request for Proposal.

Receipt of this Addendum shall be acknowledged in writing on the form included in Attachment C of the RFP. Failure to do so may subject Proposer to disqualification.

The Contract Documents are hereby amended as follows:

Clarifications:

The mechanical contractor shall provide all necessary labor and materials to accomplish the sequence of operations shown on the drawings. This includes, but is not limited to, all control components, controllers, wiring, programming, etc., and coordination between trades. The contractor shall ensure that all components are coordinated between equipment suppliers and controls vendor for all equipment.

Changes to Specifications:

None.

Changes to Drawings:

Mechanical

1. Drawing MD101
   a. Added “general mechanical notes”

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2. Drawing MD102
   a. Added general mechanical note #2

3. Drawing MD201
   a. Revised AHU-23 CHW piping demolition

4. Drawing M-201
   a. Revised AHU-23 CHW piping new work

5. Drawing M-500
   a. Revised EF-99 performance and size

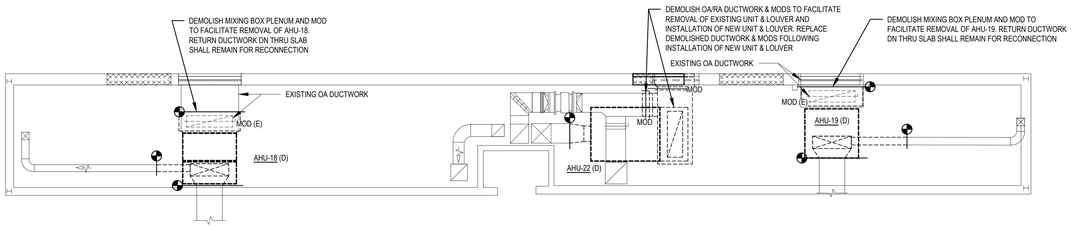
6. Drawing M-600
   a. Revised backdraft damper note on exhaust fan detail

7. Drawings M-800 through M-806
   a. Removed "FOR REFERENCE ONLY" from the drawing titles
   b. Revised scope note

Thank you.

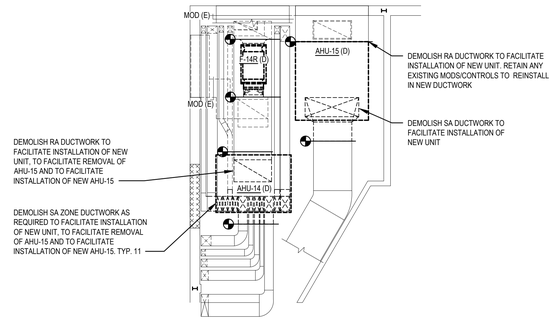
Maureen McCauley

Assistant Director of Purchasing – City of Waterbury



1 MD101 FAN ROOM #13 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



3 MD101 FAN ROOM #10 MECHANICAL DEMOLITION PLAN

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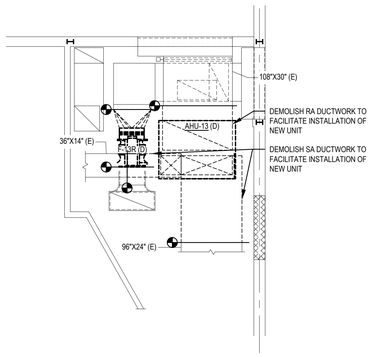
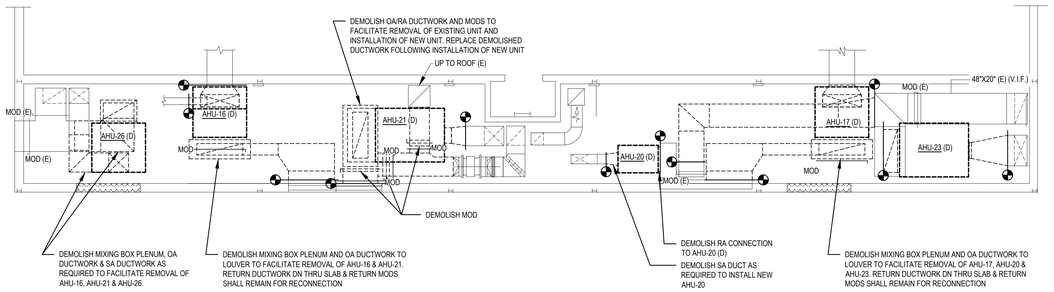


4 MD101 FAN ROOM #11 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



2 MD101 FAN ROOM #14 MECHANICAL DEMOLITION PLAN

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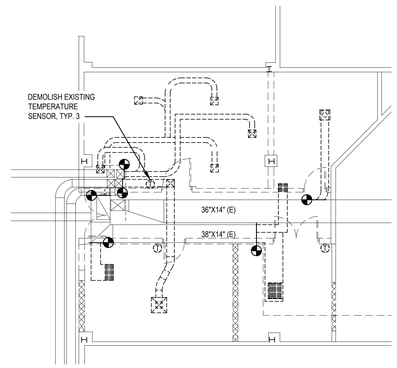
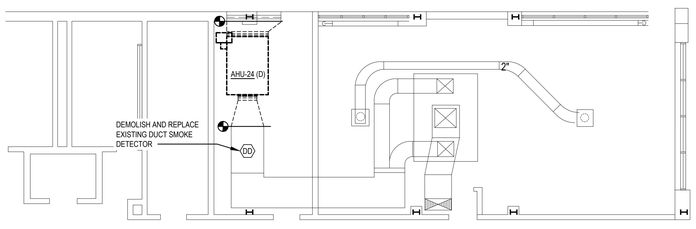


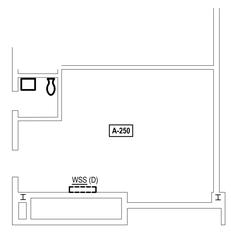
6 MD101 MUSIC SUITE MECH DEMO PLAN

SCALE: 1/8" = 1'-0"



5 MD101 ROOM D104 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



7 MD101 ROOM A250 MECH DEMO PLAN

SCALE: 1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

1. SEE M-001 FOR LOCATIONS
2. DEMOLISH ALL AHU SUPPORT STANDS SUPPORTING DEMOLISHED UNITS

1

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

INTERIOR MECHANICAL DEMOLITION PLANS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

MD101

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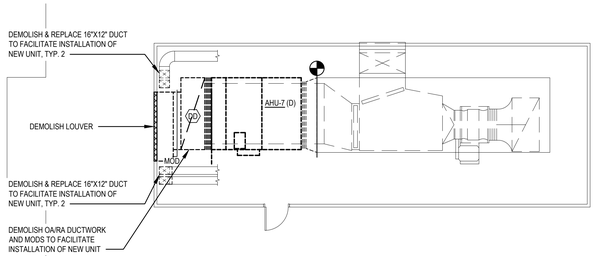
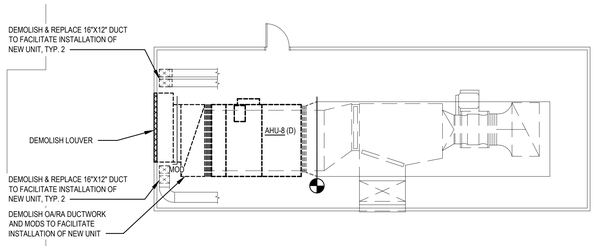


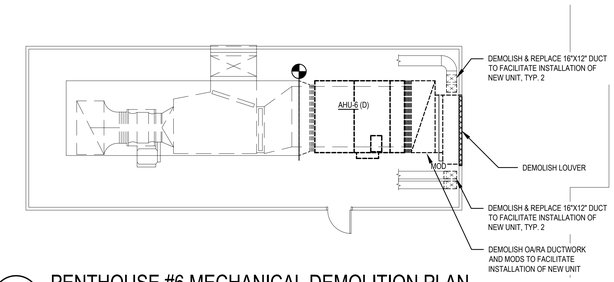
1 MD102 PENTHOUSE #7 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



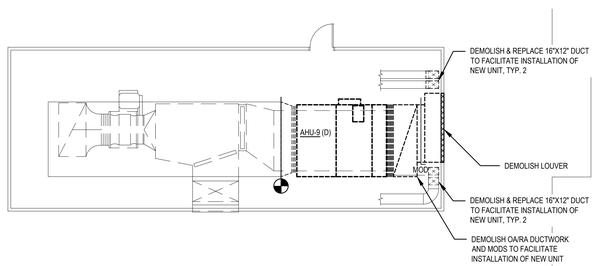
2 MD102 PENTHOUSE #8 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



3 MD102 PENTHOUSE #6 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



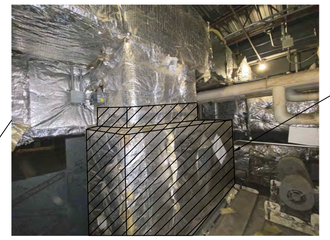
4 MD102 PENTHOUSE #9 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

GENERAL MECHANICAL NOTES:

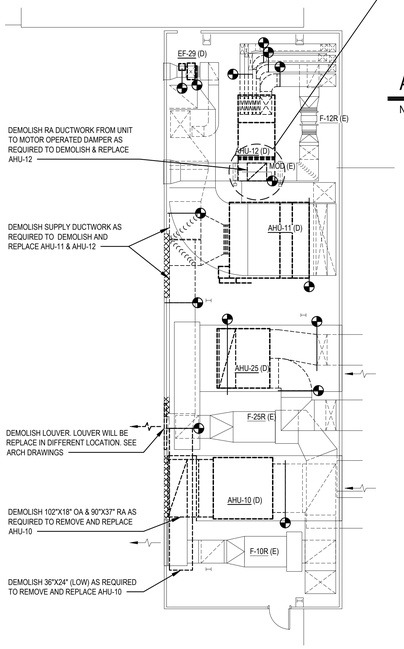
1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH ALL AHU SUPPORT STANDS SUPPORTING DEMOLISHED UNITS

1



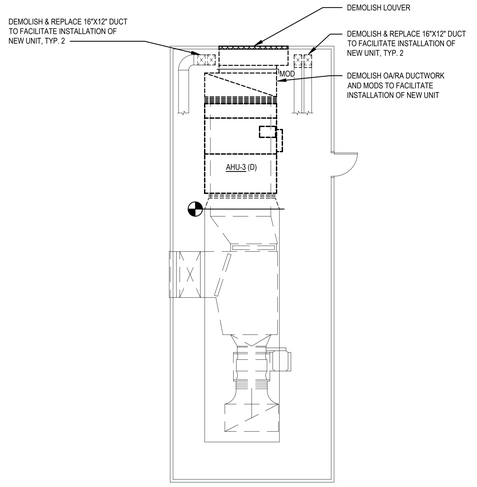
AHU-12 RETURN DEMOLITION PHOTO

NTS



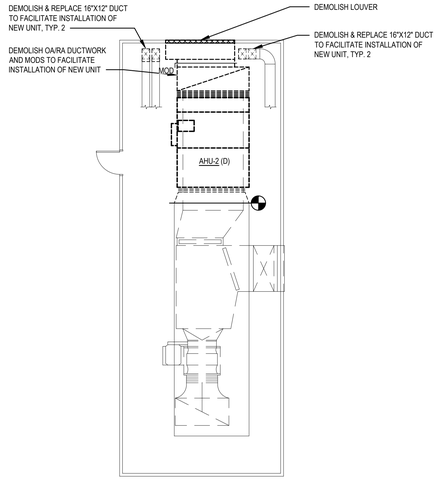
10 MD102 PENTHOUSE #12 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



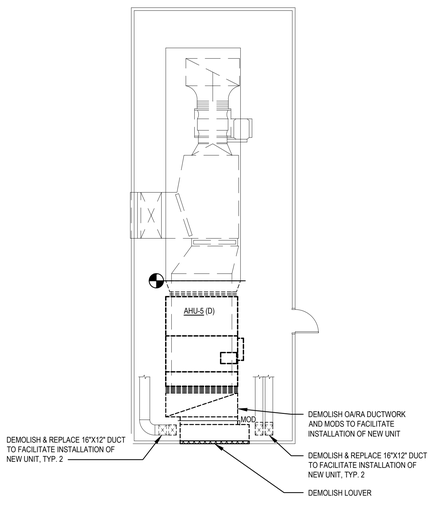
5 MD102 PENTHOUSE #3 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



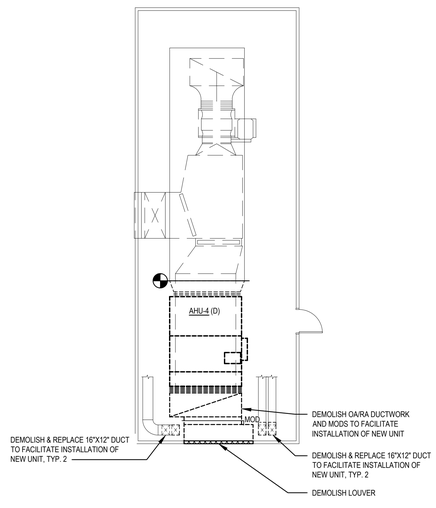
6 MD102 PENTHOUSE #2 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



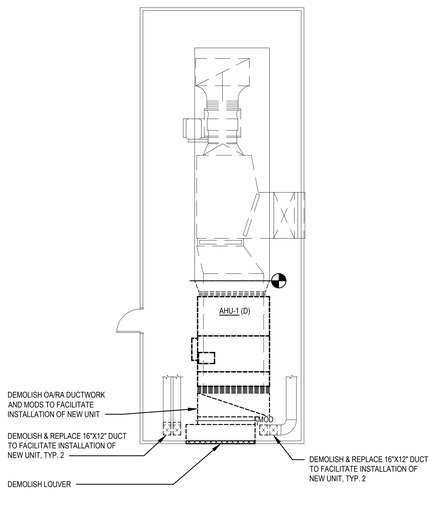
7 MD102 PENTHOUSE #5 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



8 MD102 PENTHOUSE #4 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



9 MD102 PENTHOUSE #1 MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
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REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

PENTHOUSE MECHANICAL DEMOLITION PLAN

100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

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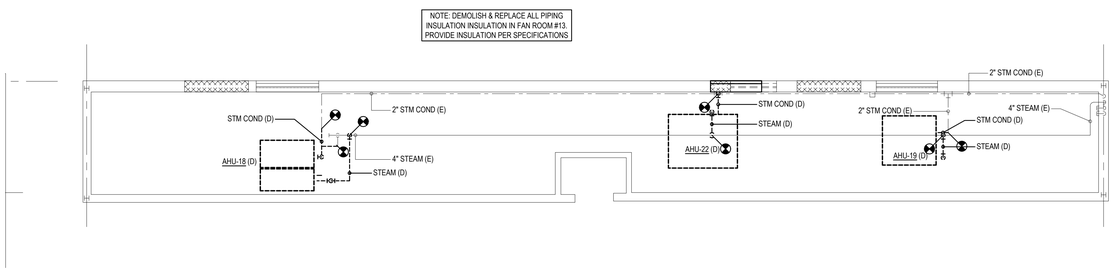
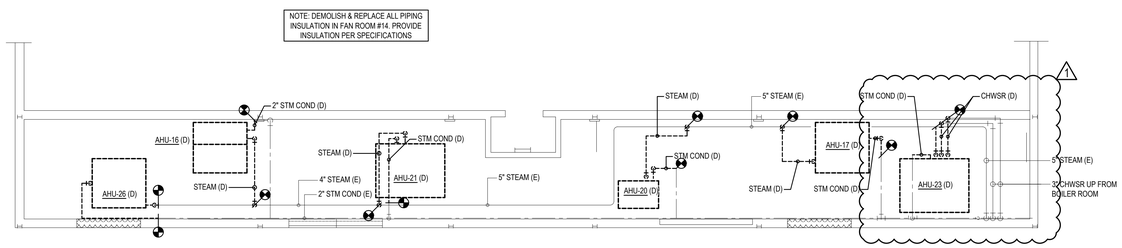


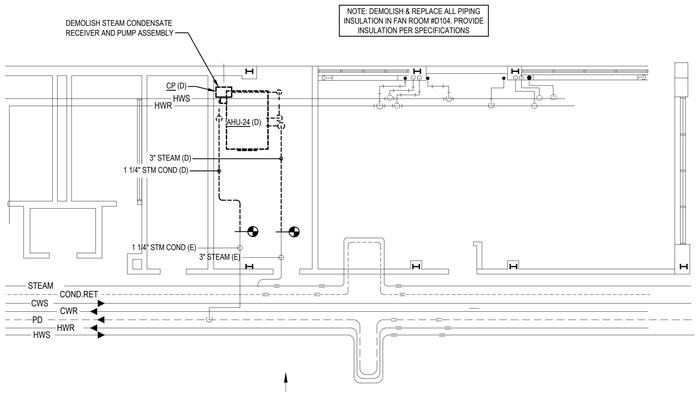
1 MD201 FAN ROOM #13 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



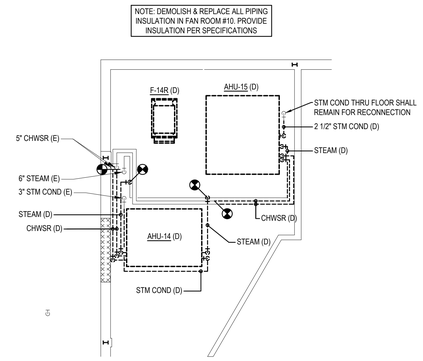
2 MD201 FAN ROOM #14 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



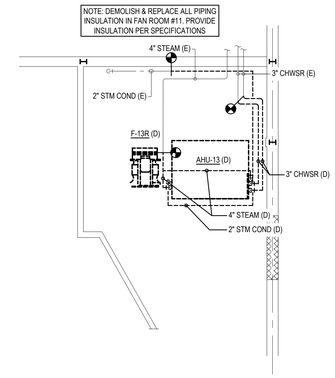
5 MD201 ROOM D104 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



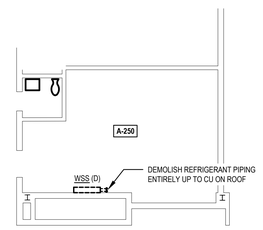
3 MD201 FAN ROOM #10 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



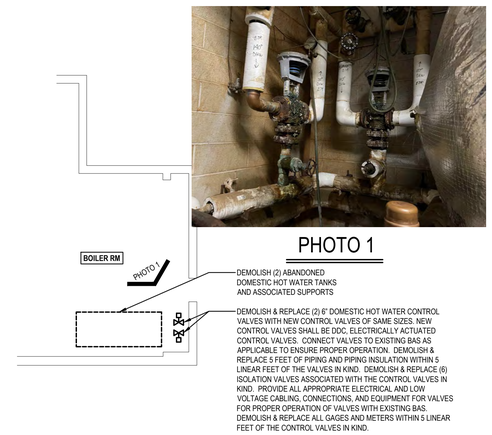
4 MD201 FAN ROOM #11 PIPING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



7 MD201 ROOM A250 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

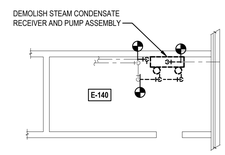


8 MD201 BOILER ROOM DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

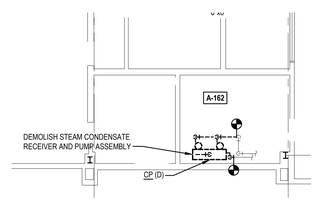
MECHANICAL PIPING DEMOLITION NOTES:

1. SEE M-001 FOR ROOM LOCATIONS
2. REMOVE AND STORE ON SITE ALL STEAM AND CHILLED WATER CONTROL VALVES EXCEPT WHERE NOTED TO PROVIDE NEW STEAM CONTROL VALVES. EXISTING CONTROL VALVES WILL BE REINSTALLED IN NEW STEAM PIPING EXCEPT WHERE NOTED TO PROVIDE NEW STEAM CONTROL VALVES
3. DEMOLISH AHU-13 & AHU-14 STEAM CONTROL VALVES AND PROVIDE NEW



9 MD201 ROOM E140 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"



10 MD201 ROOM A162 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

INTERIOR PIPING DEMOLITION PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

MD201

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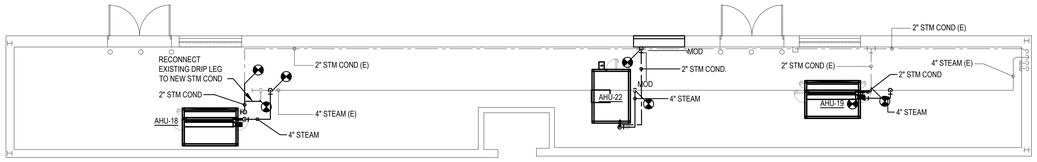
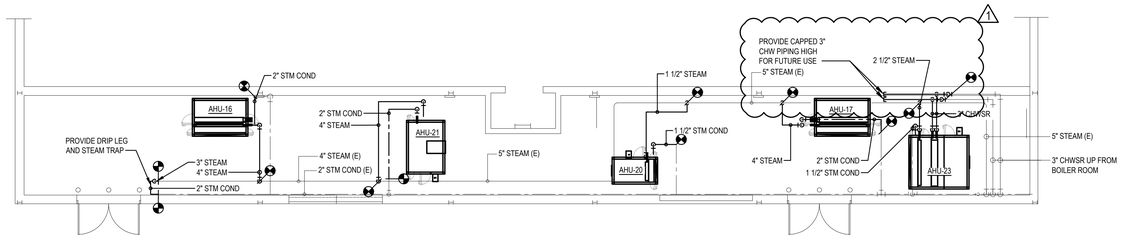
9/18/2023 8:56 AM



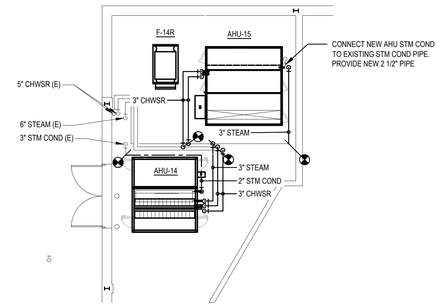
1 M-201 FAN ROOM #13 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



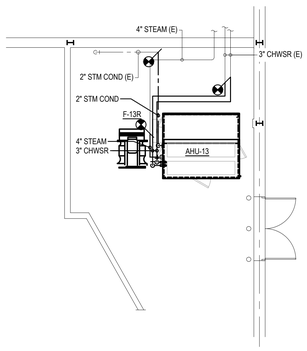
2 M-201 FAN ROOM #14 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



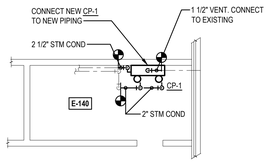
3 M-201 FAN ROOM #10 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



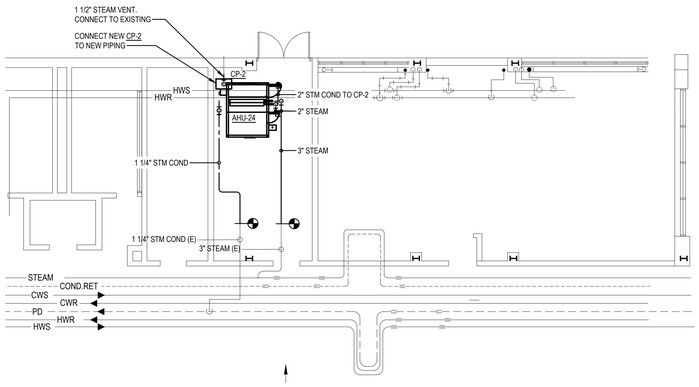
4 M-201 FAN ROOM #11 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



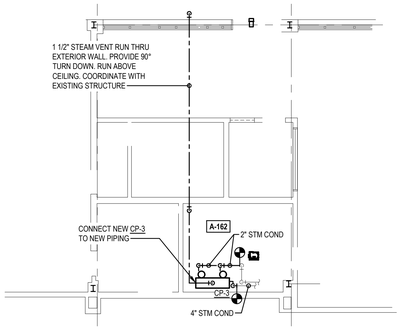
6 M-201 ROOM E140 MECH NEW PLAN

SCALE: 1/8" = 1'-0"



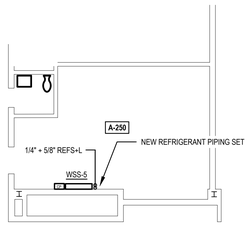
5 M-201 ROOM D104 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



7 M-201 ROOM A162 MECH PLAN

SCALE: 1/8" = 1'-0"



8 M-201 ROOM A250 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

PIPING NEW WORK NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE ALL PIPING INSULATION IN FAN ROOMS 10, 11, 13 & 14. DEMOLISH AND REPLACE ALL PIPING INSULATION IN ROOM D104. PROVIDE NEW INSULATION PER SPECIFICATIONS.
3. DEMOLISH AND REPLACE ALL ISOLATION VALVES AND COOLING CONDENSATE PIPING IN FAN ROOMS 10, 11, 13 & 14. ALL NEW COOLING CONDENSATE PIPING SHALL BE 1 1/4" PVC. PIPE TO NEAREST FLOOR DRAIN
4. PROVIDE NEW CONTROL VALVE DETAILS FOR ALL NEW COILS AS SHOWN ON M-500
5. PROVIDE NEW CONTROL VALVES FOR ALL NEW COILS

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ARCHITECT / ENGINEER SEAL

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

PROJECT

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

INTERIOR PIPING NEW WORK PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-201

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9/18/2023 8:56 AM

AHU - #

AIR HANDLING UNIT SCHEDULE (CHILLED WATER COOLING, STEAM HEATING)

UNIT NUMBER	TYPE	AIRFLOW (CFM)	OA (CFM)	E.S.P (IN H20)	COOLING COIL								HEATING COIL					SUPPLY FAN HP	SUPPLY FAN QTY	ELEC	MFR	MODEL #	AREA SERVED	REMARKS
					EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	SENS MBH	TOTAL MBH	GPM	EWT/LWT	EAT (°F)	LAT (°F)	MBH	STEAM PRESSURE (PSI)	FLOW (LB/HR)							
AHU-1	DOUBLE-DECK MULTI ZONE	30,600	6600	1.5	80	67	54.6	54.3	855	1188	173	42/56	60	101	1352	5	1408	27	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-2	DOUBLE-DECK MULTI ZONE	31,350	6700	2.0	80	67	54.9	54.5	869	1200	173	42/56	60	100	1364	5	1505	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-3	DOUBLE-DECK MULTI ZONE	35,165	6500	1.75	80	67	54.6	54.4	985	1354	173	42/58	60	100	1510	5	1572	39	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-4	DOUBLE-DECK MULTI ZONE	31,950	6600	2.0	80	67	55.0	54.7	879	1210	173	42/56	60	100	1373	5	1429	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-5	DOUBLE-DECK MULTI ZONE	32,210	6500	2.25	80	67	55.1	54.7	884	1213	173	42/56	60	99	1377	5	1433	33	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA D	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-6	DOUBLE-DECK MULTI ZONE	32,020	8000	1.75	80	67	55.0	54.7	881	1210	173	42/56	60	100	1374	5	1430	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-7	DOUBLE-DECK MULTI ZONE	28,945	8300	2.5	80	67	54.1	53.8	825	1161	173	42/55	60	102	1327	5	1380	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-8	DOUBLE-DECK MULTI ZONE	27,350	8000	2.0	80	67	53.6	53.3	796	1133	173	42/55	60	104	1300	5	1353	24	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-9	DOUBLE-DECK MULTI ZONE	30,700	7600	2.0	80	67	54.7	54.3	857	1190	173	42/56	60	101	1354	5	1409	27	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-10	SINGLE ZONE	12,000	TBD	0.75	80	67	55.4	53.8	319	476	72	42/55	60	117	745	5	753	10	1	460/3/60	JCI	XTI-51X93	MULTI-PURPOSE ROOM	
AHU-11	SINGLE ZONE	22,000	TBD	1.5	-	-	-	-	-	-	-	-	0	104	2466	5	2511	15	1	460/3/60	JCI	XTI-75X111	POOL	PROVIDE DUAL INLINE STEAM COILS. COIL PERFORMANCE LISTED IS TOTAL PERFORMANCE
AHU-12	DOUBLE-DECK MULTIZONE	6700	1575	2.0	80	67	55.0	54.6	185	255	39	42/55	60	103	309	5	321	9	1	460/3/60	NORTEK	VENTROL CUSTOM	MIDDLE SCHOOL MUSIC SUITE	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-13	DOUBLE-DECK MULTIZONE	18,000	TBD	2.0	80	67	54.4	53.8	507	724	108	42/55	60	100	789	5	821	27	1	460/3/60	NORTEK	VENTROL CUSTOM	AUDITORIUM	PROVIDE FILTER ACCESS AT REAR OF UNIT. PROVIDE REMOTE MOUNT ELECTRICAL PANEL
AHU-14	DOUBLE-DECK MULTIZONE	14,000	1950	2.0	80	67	55.2	54.1	376	543	84	42/55	60	92.5	491	5	498	20	1	460/3/60	JCI	XTI-54X102	HIGH SCHOOL MUSIC SUITE	
AHU-15	SINGLE ZONE	12,000	TBD	2.0	80	67	51.6	51.4	374	557	115	42/52	60	109	635	5	661	12	1	460/3/60	NORTEK	VENTROL CUSTOM	CAFETERIA	
AHU-16	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	NOTE: PROVIDE AHU-16 THRU 19 WITH BLANK SECTION FOR FUTURE COOLING COIL. FANS ARE SIZED TO ACCOUNT FOR P.D. THROUGH FUTURE COOLING COIL
AHU-17	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-18	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-19	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-20	SINGLE ZONE	3000	TBD	0.75	-	-	-	-	-	-	-	-	50	103	171	5	176	1.5	1	460/3/60	JCI	XTI-39X42	GYM LOBBY	
AHU-21	SINGLE ZONE	8000	TBD	1.5	-	-	-	-	-	-	-	-	0	91	787	5	787	10	1	460/3/60	JCI	XTI-42X84	LOCKER ROOMS	
AHU-22	SINGLE ZONE	8000	TBD	1.5	-	-	-	-	-	-	-	-	0	91	787	5	787	10	1	460/3/60	JCI	XTI-42X84	LOCKER ROOMS	
AHU-23	SINGLE ZONE	8000	550	0.75	80	67	55.4	53.7	212	319	48	42/55	50	103	459	5	469	10	1	460/3/60	JCI	XTI-42X84	AUDITORIUM LOBBY	
AHU-24	SINGLE ZONE	7000	TBD	0.5	-	-	-	-	-	-	-	-	0	95	711	5	726	7.5	1	460/3/60	JCI	XTI-36X66	STUDENT KITCHEN	PROVIDE DUAL INLINE STEAM COILS. COIL PERFORMANCE LISTED IS TOTAL PERFORMANCE
AHU-25	DOUBLE-DECK MULTIZONE	10,000	2200	2.0	80	67	54.0	53.6	286	407	81	42/52	60	110	549	5	571	12	1	460/3/60	NORTEK	VENTROL CUSTOM	THEATRE	PROVIDE TOP RETURN CONNECTION AND FILTER BOX

NOTE: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL UNITS WITH G90 GALVANIZED STEEL DOUBLE WALL CONSTRUCTION, MIN. 2" FOAM INSULATION. PROVIDE ALL CUSTOM (NORTEK) UNITS WITH FANWALL FANS. PROVIDE ALL JCI UNITS WITH AIRFOIL FANS. PROVIDE AHU-1 THRU AHU-9 WITH STAINLESS STEEL COOLING SECTION. PROVIDE ALL FANS WITH VARIABLE FREQUENCY DRIVES (EXCEPT WHERE VFDS ARE TO BE REUSED; SEE ELECTRICAL DRAWINGS). VFDS TO CONFORM TO SPECIFICATION SECTION 26 29 23. VFDS TO BE INSTALLED BY ELECTRICAL CONTRACTOR. ALL UNITS SHALL BE SHIPPED KNOCKDOWN AT SHIPPING SPLITS TO FACILITATE PASSAGE THROUGH NEW DOORS OR LOUVER OPENINGS. CONTRACTOR IS RESPONSIBLE FOR FIELD-ASSEMBLING UNITS. CONTRACTOR TO CONFIRM PRIOR TO RELEASE OF EQUIPMENT IF CUSTOM (NORTEK) UNITS REQUIRE ADDITIONAL KNOCKDOWN AND FIELD ASSEMBLY. PROVIDE JCI UNITS WITH INTERNAL SPRING ISOLATORS WITH 2" DEFLECTION. INSTALL DUCT DETECTORS IN SUPPLY SECTION OF ALL MULTI-ZONE AIR HANDLING UNITS. MAXIMUM 1% AIR LEAKAGE AT +/- 1" OF INTERNAL STATIC PRESSURE. MAXIMUM L/240 PANEL DEFLECTION AT +/- 8" OF INTERNAL STATIC PRESSURE. PROVIDE DOUBLE WALL HINGED ACCESS DOORS WITH DOUBLE PANE VIEWING PORTS AND TEST PORTS. PROVIDE LED LIGHTING IN ALL ACCESS SECTIONS. PROVIDE GFCI CONVENIENCE OUTLET ON THE EXTERIOR OF THE SUPPLY FAN SECTION. PROVIDE MAGNEHELIC FILTER GAUGE. CHILLED WATER COIL SHALL HAVE 5/8" TUBES WITH 0.035" WALL THICKNESS. CHILLED WATER COIL CASING, COIL SUPPORTS, BULKHEAD AND DRAIN PAN SHALL BE STAINLESS STEEL CONSTRUCTION. PROVIDE FACTORY MOUNTED AEGIS SHAFT GROUNDING RING AND INVERTER DRIVE FOR SUPPLY FAN. REMOTE VFD TO BE PROVIDED BY ELECTRICAL CONTRACTOR AS SPECIFIED. CONTROLS SHALL BE FIELD FURNISHED AND INSTALLED BY THE CONTROLS CONTRACTOR.

NOTE: THE CONTRACTOR SHALL PERFORM PRE-DEMOLITION TESTING OF AIR FLOW, STEAM FLOW AND WATER FLOW AND STATIC PRESSURES FOR ALL AIR HANDLING UNITS. THE SYSTEM SHALL BE IN OCCUPIED MODE WITH THE AIR HANDLING UNITS COMMANDED TO 100% SETPOINT. TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS. PROVIDE REPORT TO ENGINEER FOR REVIEW PRIOR TO AIR HANDLING UNIT SUBMITTAL.

F - #

FAN SCHEDULE

UNIT NUMBER	LOCATION	CFM	ESP	DRIVE	ELECTRIC	POWER (HP)	MOUNT	MANUFACTURER	MODEL	REMARKS
F-13R	FAN RM #11	15,000	0.5	BELT	460/3/60	2	FLOOR	COOK	270TMX	
F-14R	FAN RM #10	11,000	0.5	BELT	460/3/60	2	FLOOR	COOK	270TMX	

NOTE: PROVIDE FANS AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL FANS WITH VARIABLE FREQUENCY DRIVES. VFDS TO CONFORM TO SPECIFICATION SECTION 26 29 23. VFDS TO BE INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECTRICAL PLANS. PROVIDE ALL FANS WITH FLEXIBLE CONNECTIONS AT INLET AND OUTLET AND HOUSED SPRING FLOOR ISOLATORS WITH MIN. 1" DEFLECTION.

EF - #

EXHAUST FAN SCHEDULE

UNIT NUMBER	LOCATION	TYPE	CFM	ESP	DRIVE	ELECTRIC	POWER (HP)	MOUNT	MANUFACTURER	MODEL	REMARKS
EF-1	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-2	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-3	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-4	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-5	ROOF	CENTRIFUGAL DNBLAST	2650	0.375	DIRECT	460/3/60	3/4	CURB	COOK	150C17D VF2	
EF-6	ROOF	CENTRIFUGAL DNBLAST	2200	0.375	DIRECT	460/3/60	1/2	CURB	COOK	150C17D VF	
EF-7	ROOF	CENTRIFUGAL DNBLAST	1640	0.25	DIRECT	115/1/60	1/4	CURB	COOK	150C17D VF	
EF-8	ROOF	CENTRIFUGAL DNBLST	11,000	0.125	BELT	460/3/60	1 1/2	CURB	COOK	365C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-9	ROOF	CENTRIFUGAL DNBLST	11,000	0.125	BELT	460/3/60	1 1/2	CURB	COOK	365C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-10	ROOF	CENTRIFUGAL DNBLAST	3400	0.25	DIRECT	277/1/60	3/4	CURB	COOK	165C17D VF	
EF-11	ROOF	CENTRIFUGAL DNBLAST	6100	0.25	DIRECT	460/3/60	3	CURB	COOK	195C17D VF2	
EF-12	ROOF	CENTRIFUGAL DNBLAST	7750	0.25	DIRECT	460/3/60	5	CURB	COOK	195C17D VF2	
EF-13	ROOF	CENTRIFUGAL DNBLAST	2450	0.25	DIRECT	115/1/60	1/2	CURB	COOK	150C17D VF	
EF-14	ROOF	CENTRIFUGAL DNBLAST	2500	0.25	DIRECT	277/1/60	1/2	CURB	COOK	150C17D VF	
EF-15	ROOF	CENTRIFUGAL DNBLAST	800	0.125	DIRECT	115/1/60	1/4	CURB	COOK	100C17DEC	
EF-16	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	
EF-17	ROOF	CENTRIFUGAL DNBLAST	1650	0.125	DIRECT	115/1/60	1/2	CURB	COOK	120C17DEC	
EF-18	ROOF	CENTRIFUGAL DNBLAST	3000	0.25	DIRECT	460/3/60	3/4	CURB	COOK	165C17D VF2	
EF-19	ROOF	CENTRIFUGAL DNBLAST	1350	0.25	DIRECT	115/1/60	1/4	CURB	COOK	120C17D VF	
EF-20	ROOF	CENTRIFUGAL DNBLAST	800	0.125	DIRECT	115/1/60	1/4	CURB	COOK	100C17DEC	
EF-21	ROOF	CENTRIFUGAL DNBLAST	5200	0.25	DIRECT	460/3/60	2	CURB	COOK	195C17D VF2	
EF-22	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	
EF-23	ROOF	CENTRIFUGAL DNBLAST	6200	0.25	DIRECT	460/3/60	3	CURB	COOK	195C17D VF2	
EF-24	ROOF	CENTRIFUGAL DNBLAST	1900	0.125	DIRECT	115/1/60	1/4	CURB	COOK	150C17D VF	
EF-25	ROOF	CENTRIFUGAL DNBLAST	850	0.125	DIRECT	115/1/60	1/8	CURB	COOK	135C17D VF	
EF-26	-	-	-	-	-	-	-	-	-	-	NOT USED
EF-27	ROOF	CENTRIFUGAL UPBLAST	8000	0.5	DIRECT	460/3/60	5	CURB	COOK	195R17D VF2	PROVIDE WITH NEW 16" ROOF CURB & HINGED BASE
EF-28	ROOF	CENTRIFUGAL DNBLAST	1200	0.25	DIRECT	115/1/60	1/6	CURB	COOK	120C17D VF	
EF-29	PENTHOUSE #12	CENTRIFUGAL BLOWER	2500	0.25	DIRECT	460/3/60	1/2	FLOOR	COOK	180CPS VF2	CONTRACTOR TO VERIFY FLOW ARRANGEMENT AND DIRECTION
EF-30	ROOF	CENTRIFUGAL UPBLAST	7500	0.5	DIRECT	460/3/60	5	ROOF	COOK	195R17D VF2	PROVIDE WITH NEW ROOF CURB & HINGED BASE
EF-31	ROOF	LABORATORY TUBULAR CENTRIFUGAL INLINE	1600	1.75	DIRECT	460/3/60	3	ROOF	COOK	150TCNHBLE08	PROVIDE WITH NEW ROOF CURB, PHENOLIC EPOXY COATING AND DISCHARGE NOZZLE. OVERALL HEIGHT 10'
EF-32	ROOF	LABORATORY TUBULAR CENTRIFUGAL INLINE	1600	1.75	DIRECT	460/3/60	3	ROOF	COOK	150TCNHBLE08	PROVIDE WITH NEW ROOF CURB, PHENOLIC EPOXY COATING AND DISCHARGE NOZZLE. OVERALL HEIGHT 10'
EF-33	A162	CEILING	100	0.25	DIRECT	115/1/60	0.25A	CEILING		GCVE-100	PROVIDE W/ WALL CAP & INTEGRATED BACKDRAFT DAMPER
EF-99	ROOF	CENTRIFUGAL DNBLAST	2700	0.5	DIRECT	115/1/60	3/4	CURB	COOK	150C17D VF	FIRING RANGE RELIEF. PROVIDE WITH EXTERNAL SPEED CONTROL FOR CONTROLS BY OTHERS

1

NOTES: PROVIDE FANS AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL FANS EXCEPT EF-1,2,3,4,8 & 9 WITH EC MOTORS. PROVIDE FANS EF-1,2,3,4,8 & 9 WITH STANDARD MOTORS. PROVIDE EC MOTOR UNITS WITH UNIT MOUNTED SPEED ADJUSTMENT FOR BALANCING. PROVIDE ALL UNITS WITH CURB CAP ADAPTER, ALUMINUM BIRD SCREEN, AND NEW BACKDRAFT DAMPER IN EXISTING CURB. PROVIDE TIE-IN TO EXISTING BAS FOR OCCUPANCY SCHEDULING AND STATUS MONITORING. CONTRACTOR TO VERIFY EXISTING CURB DIMENSIONS IN FIELD.

WSS - #
CU - #

WALL MOUNTED DUCTLESS FAN COIL SCHEDULE

UNIT NUMBER (INDOOR/OUTDOOR)	SYSTEM MCA / MOCP	OUTDOOR UNIT	ELEC	EER	SAMSUNG MODEL #	INDOOR UNIT	REMARKS
		COOLING CAP. (MBh)				SAMSUNG MODEL #	
WSS-1/CU-1	12.5 / 20	14.5	208-230/1/60	12.05	AR12TSFYBWKXCV	AR12TSFYBWKNCV	

NOTES: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. PROVIDE THERMOSTAT AND LITTLE GIANT VCMA-15 CONDENSATE PUMP (120V) PER UNIT. PROVIDE DIVERITECH CONDENSING UNIT SUPPORTS TO SUPPORT EACH CONDENSING UNIT. PROVIDE MIRO PIPE SUPPORTS TO SUPPORT REFRIGERANT PIPING AS REQUIRED. PROVIDE WITH LOW AMBIENT KIT FOR COOLING DOWN TO 0F.

CP - #

STEAM CONDENSATE PUMP SCHEDULE

UNIT NUMBER	MANUFACTURER	MODEL #	RPM	GPM	TDH (PSI)	MOTOR HP	RECEIVER SIZE (GAL)	ELEC	REMARKS
CP-1	B&G	153CC	3500	15	30	3/4	14	460/3/60	
CP-2	B&G	93CC	3500	9	30	3/4	14	460/3/60	
CP-3	B&G	303CC	3500	30	30	1	36	460/3/60	

NOTE: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. ALL UNITS SHALL BE DUPLEX TYPE. PROVIDE ALL UNITS WITH CONTROL PANELS INCLUDING MAGNETIC STARTERS, FUSED DISCONNECT SWITCH, 'AUTO-OFF-HAND' SELECTOR SWITCHES, ELECTRIC ALTERNATOR, TRANSFORMER, PILOT LIGHTS & AUDIBLE ALARM. PROVIDE ALL UNITS WITH BASKET TYPE INLET STRAINERS. PROVIDE WITH SINGLE-POINT POWER CONNECTION

D - #

DIFFUSER SCHEDULE

UNIT NUMBER	SIZE (FACE / NECK)	DESCRIPTION	MANUFACTURER	MODEL NUMBER	REMARKS
D-1	24"x24"/10"Ø	ALUMINUM SQUARE CONE DIFFUSER	KRUEGER	51450	
D-2	24"x24"/12"Ø	ALUMINUM SQUARE CONE DIFFUSER	KRUEGER	51450	

NOTE: PROVIDE EQUIPMENT BY KRUEGER OR APPROVED EQUAL. ALL DIFFUSERS SHALL HAVE FACE OPERABLE DAMPERS. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE.

R - #

RETURN GRILLE SCHEDULE

UNIT NUMBER	SIZE (FACE / NECK)	DESCRIPTION	MANUFACTURER	MODEL NUMBER	REMARKS
R-1	24"X24" / 12"X12"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	
R-2	24"X24" / 16"X16"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	
R-3	24"X24" / 22"X22"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	

NOTE: PROVIDE EQUIPMENT BY KRUEGER OR APPROVED EQUAL. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE.

GV - #

GRAVITY VENT SCHEDULE

UNIT NUMBER	THROAT SIZE	MANUFACTURER	MODEL #	REMARKS
GV-1	44"X44"	COOK	GR	
GV-2	44"X44"	COOK	GR	
GV-3	45"X92"	COOK	GR	

NOTES: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. ALL GRAVITY VENTS SHALL BE ALUMINUM. PROVIDE ALL UNITS WITH COUNTERBALANCED BACKDRAFT DAMPERS AND BIRD SCREENS.

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
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300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

MECHANICAL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-500

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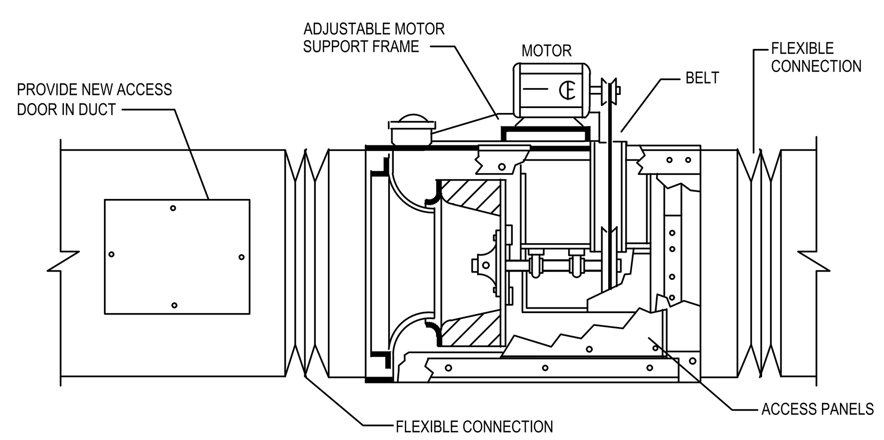
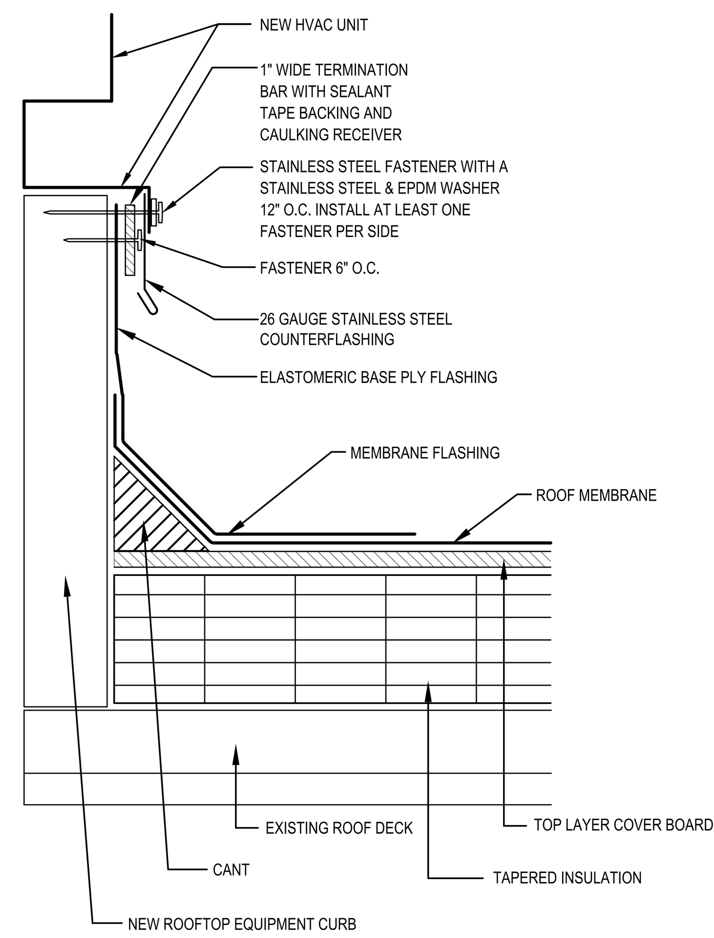


NOTES:

1. ACCESS DOOR SHALL BE HINGED-TYPE.

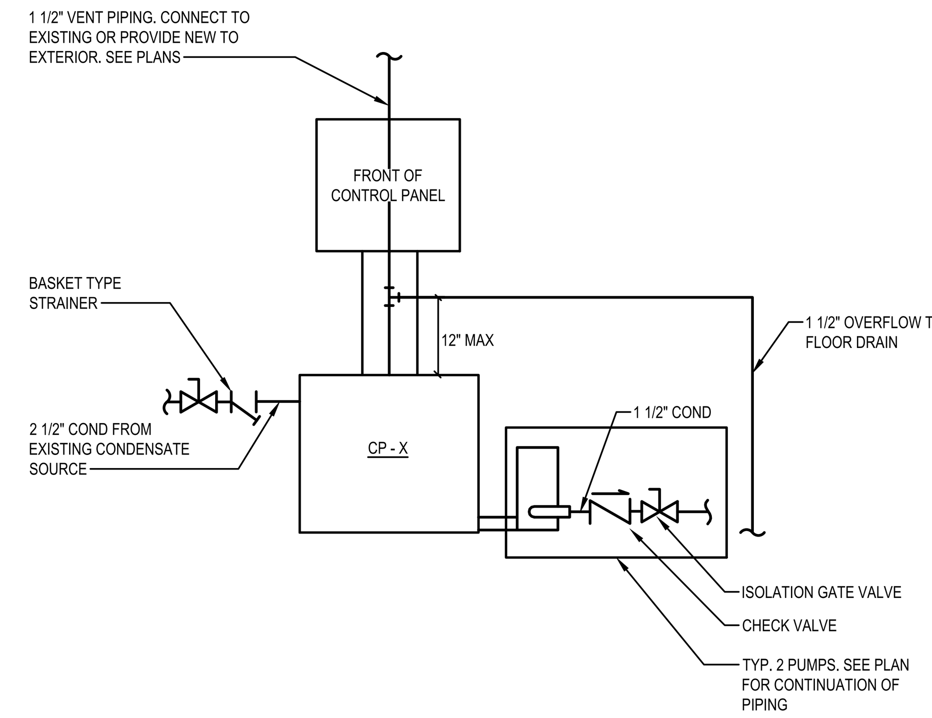
1 / M-600 TYPICAL IN-LINE FAN DETAIL

SCALE: NTS



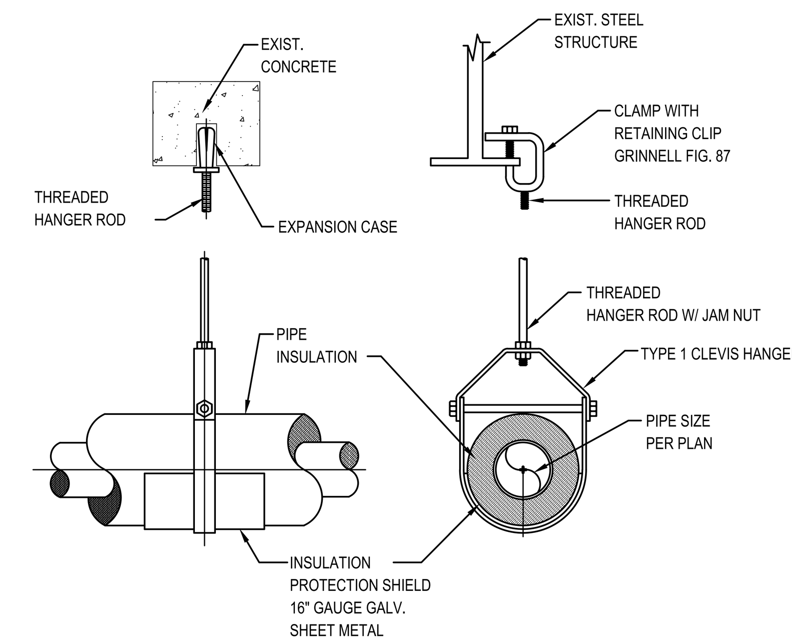
2 / M-600 ROOF CURB FLASHING DETAIL

SCALE: NTS



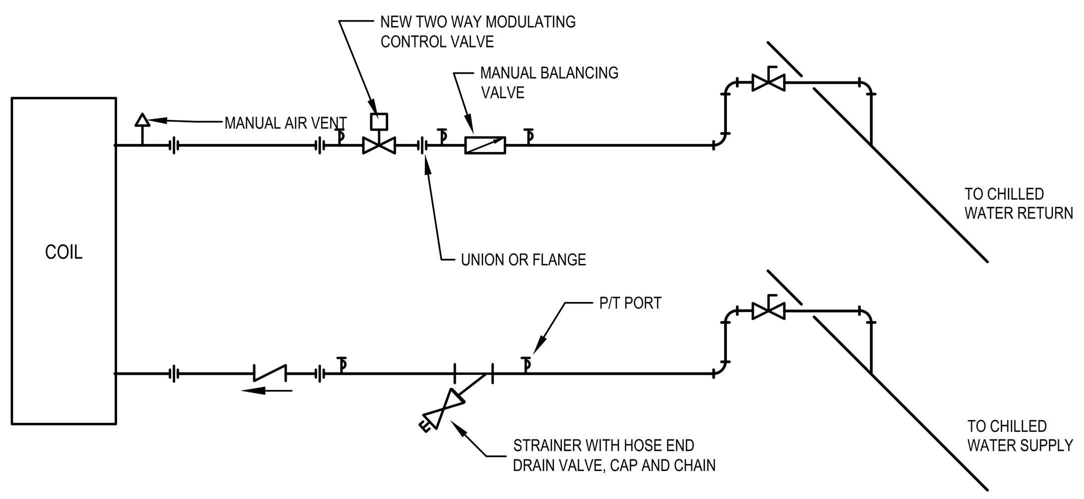
3 / M-600 STEAM CONDENSATE PUMP DETAIL

SCALE: NTS



4 / M-600 TYPICAL PIPE HANGER DETAIL

SCALE: NTS



NOTE:

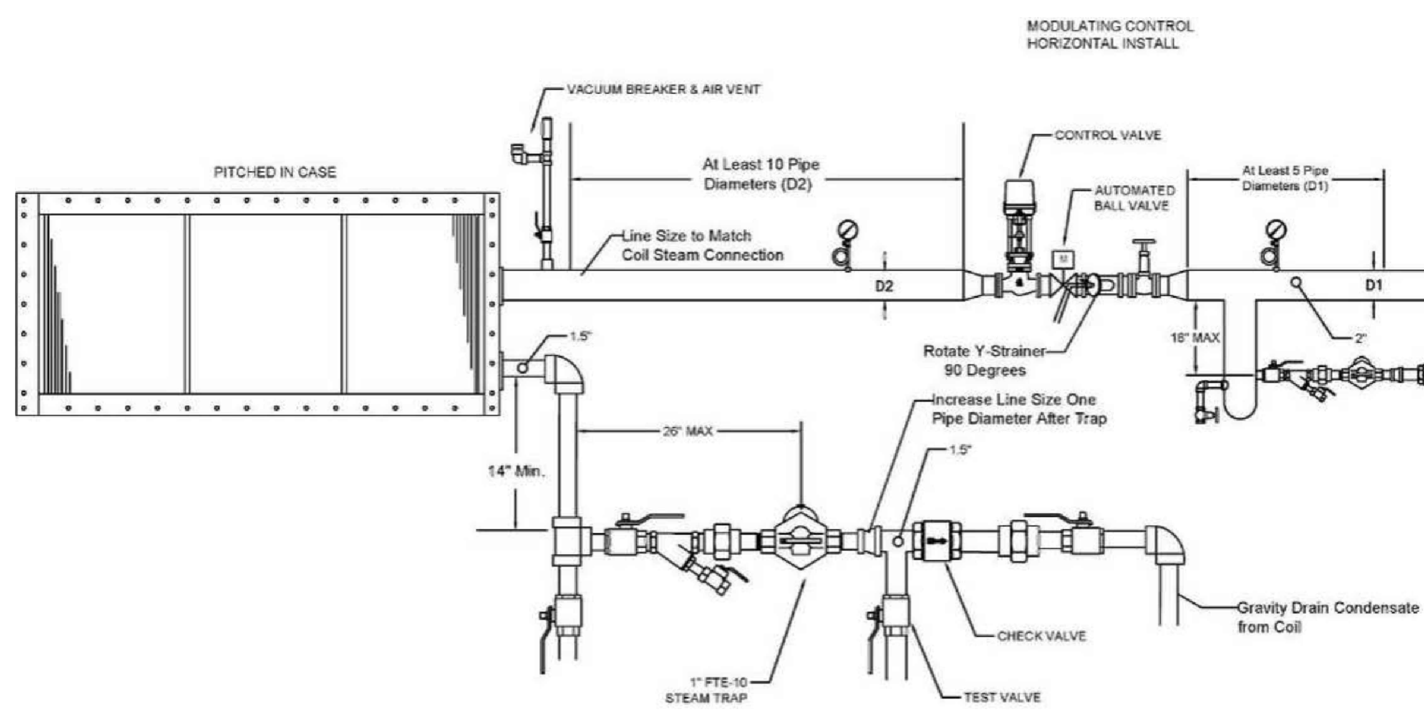
1. PROVIDE FLOW LIMITING DEVICE PER UNIT FLOW REQUIREMENTS AS SHOWN IN EQUIPMENT SCHEDULES.

2. THIS ARRANGEMENT IS TYPICAL FOR ALL CHILLED WATER COILS

3. PROVIDE COIL CONNECTIONS DESCRIBED ABOVE FOR AIR HANDLING UNITS AND ROOF TOP AIR HANDLING UNITS.

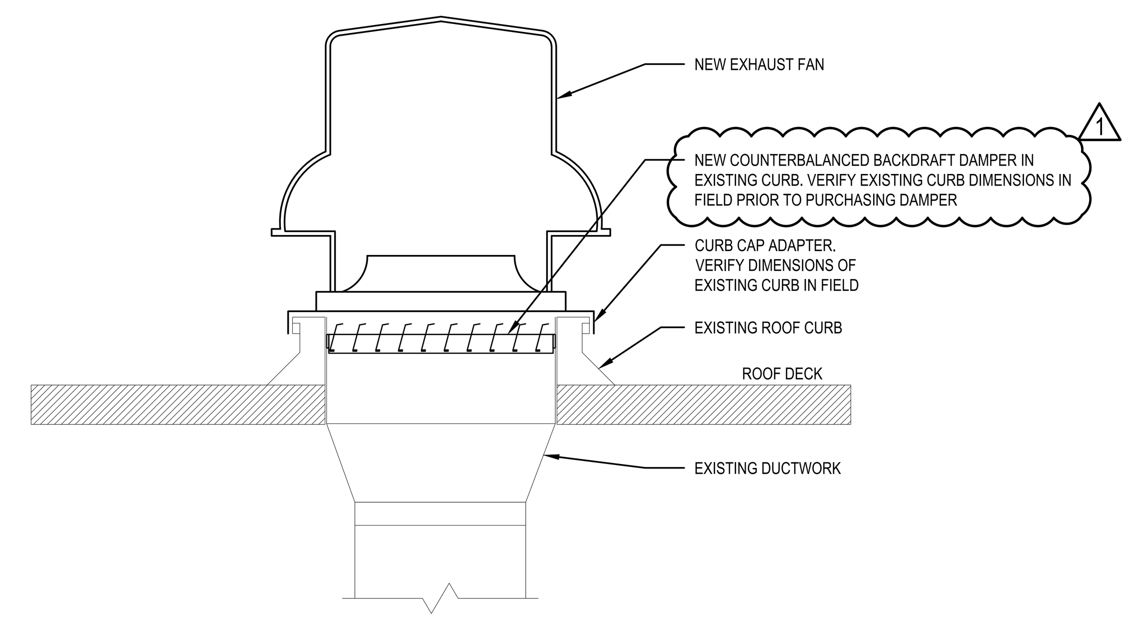
5 / M-600 TYPICAL 2-WAY VALVE DETAIL FOR AHUS

SCALE: NTS



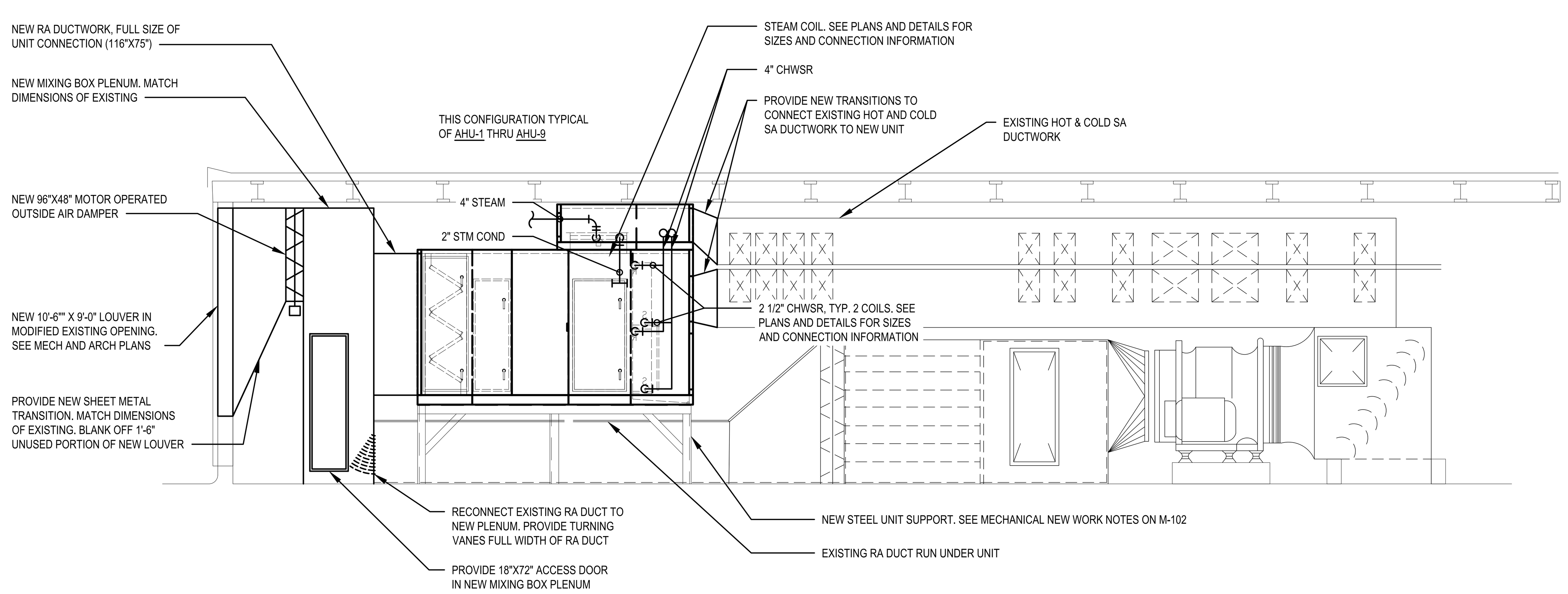
6 / M-600 TYPICAL STEAM COIL CONNECTION DETAIL

SCALE: NTS



7 / M-600 ROOF MOUNTED EXHAUST FAN DETAIL

SCALE: NTS



8 / M-600 PENTHOUSE 1 THRU 9 TYPICAL SECTION

SCALE: NTS

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PROJECT

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WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

MECHANICAL DETAILS

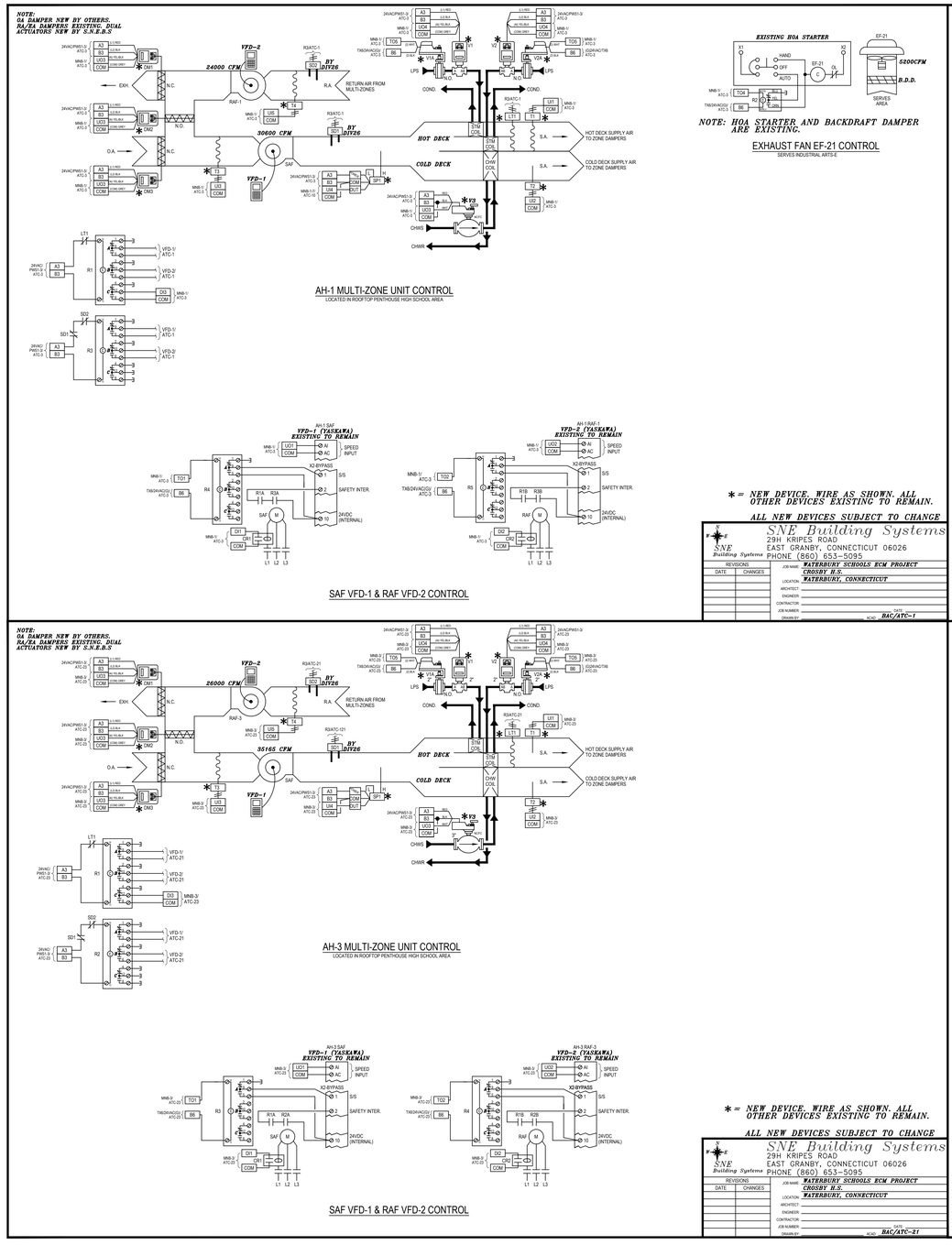
100% CONSTRUCTION DOCUMENTS

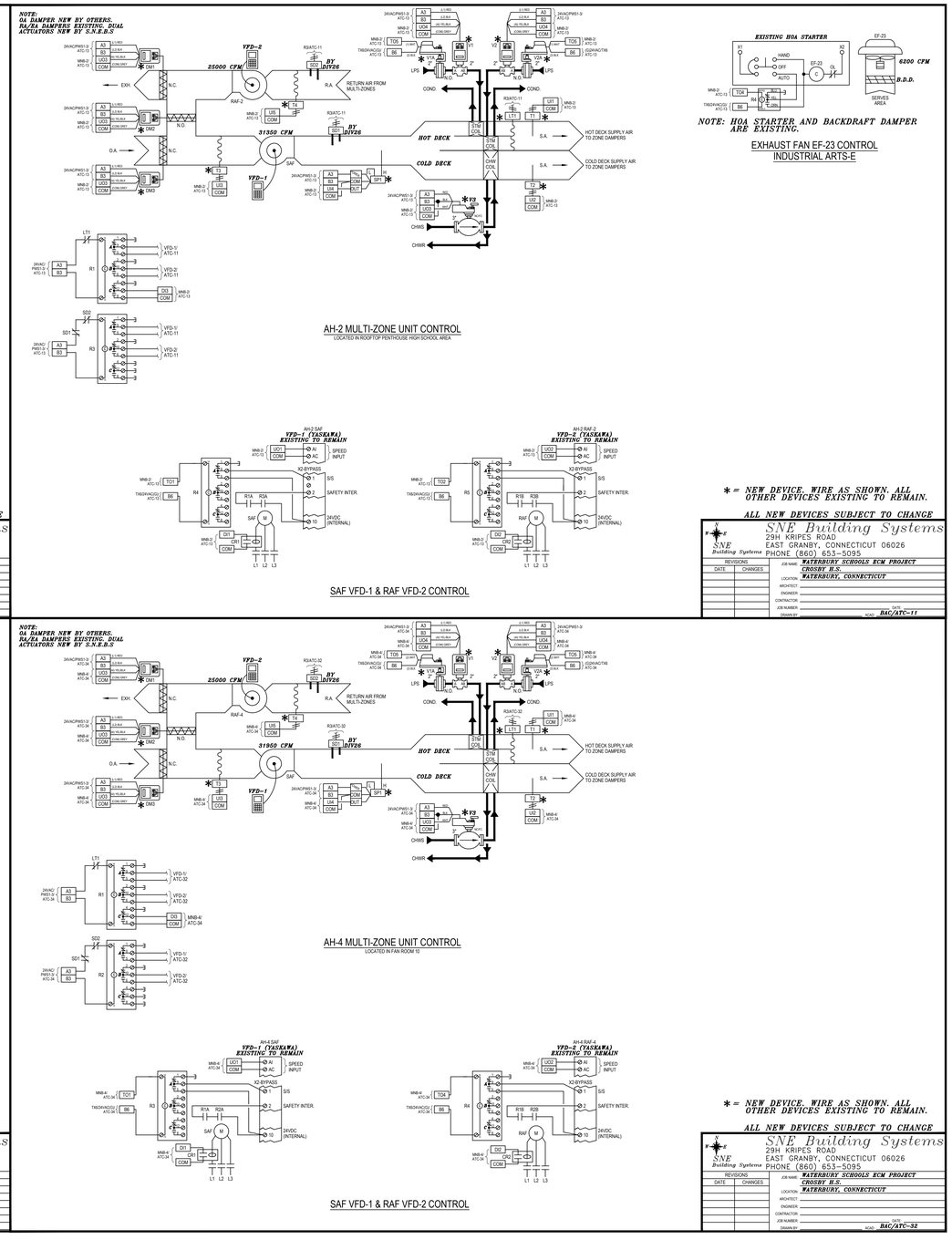
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-600





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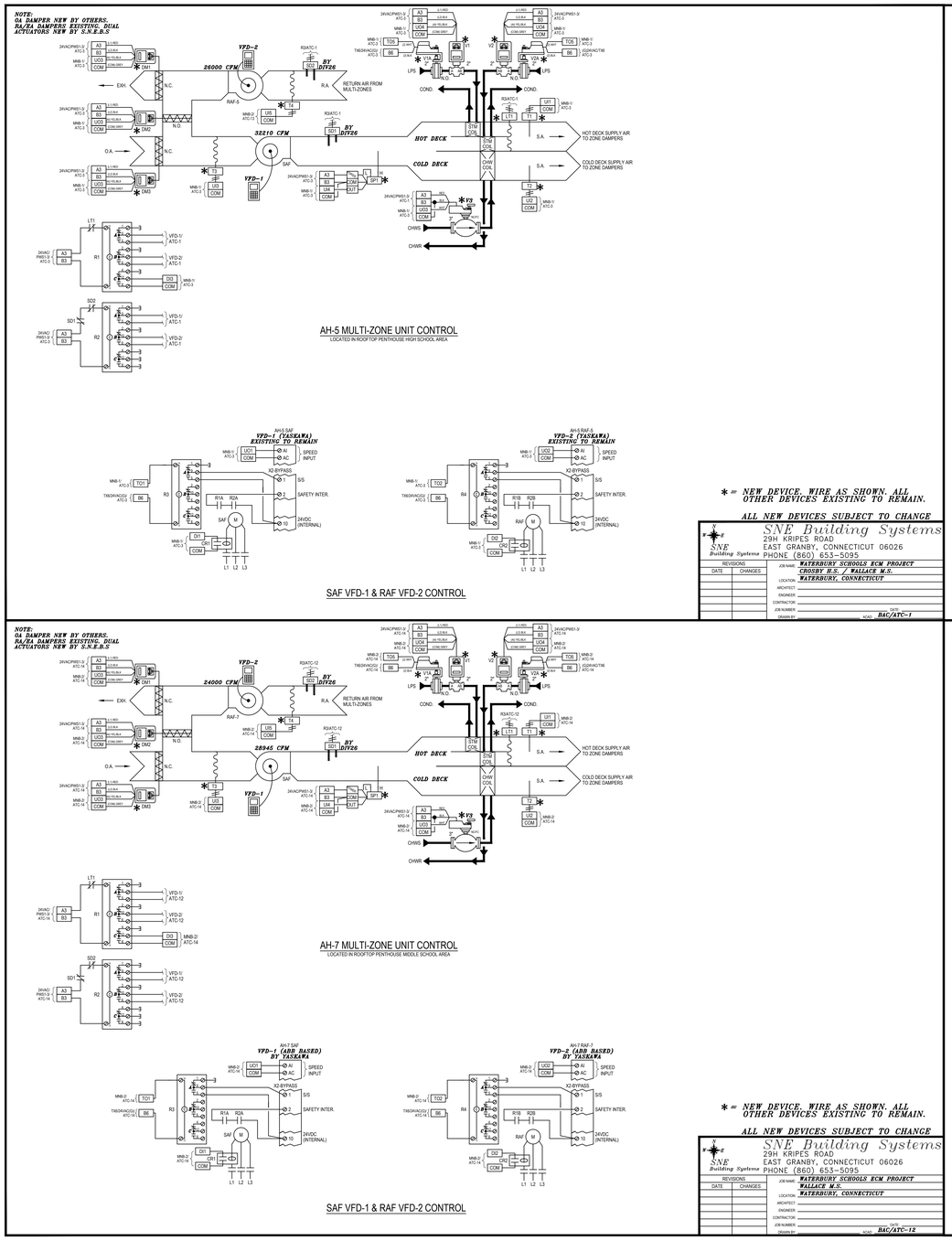

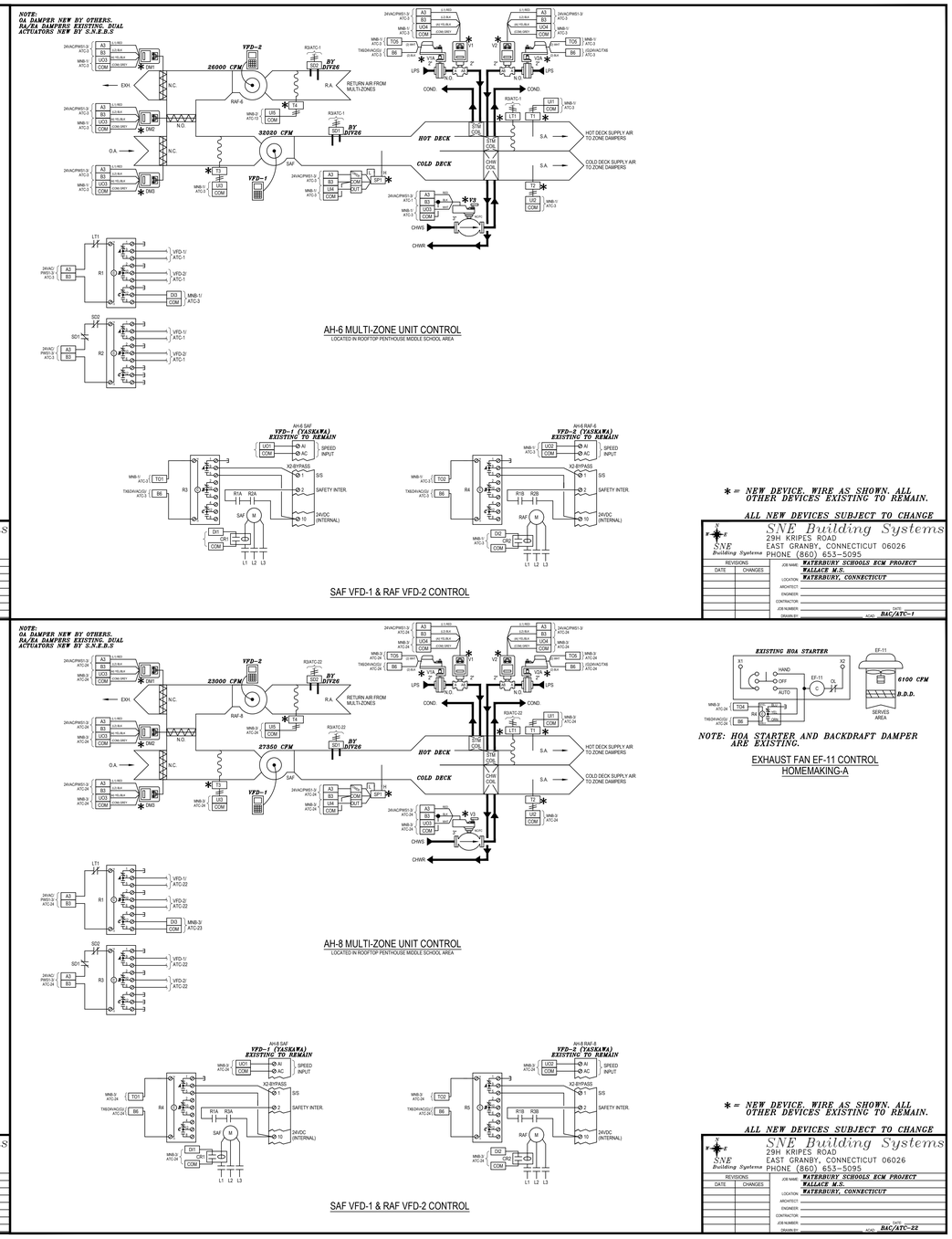

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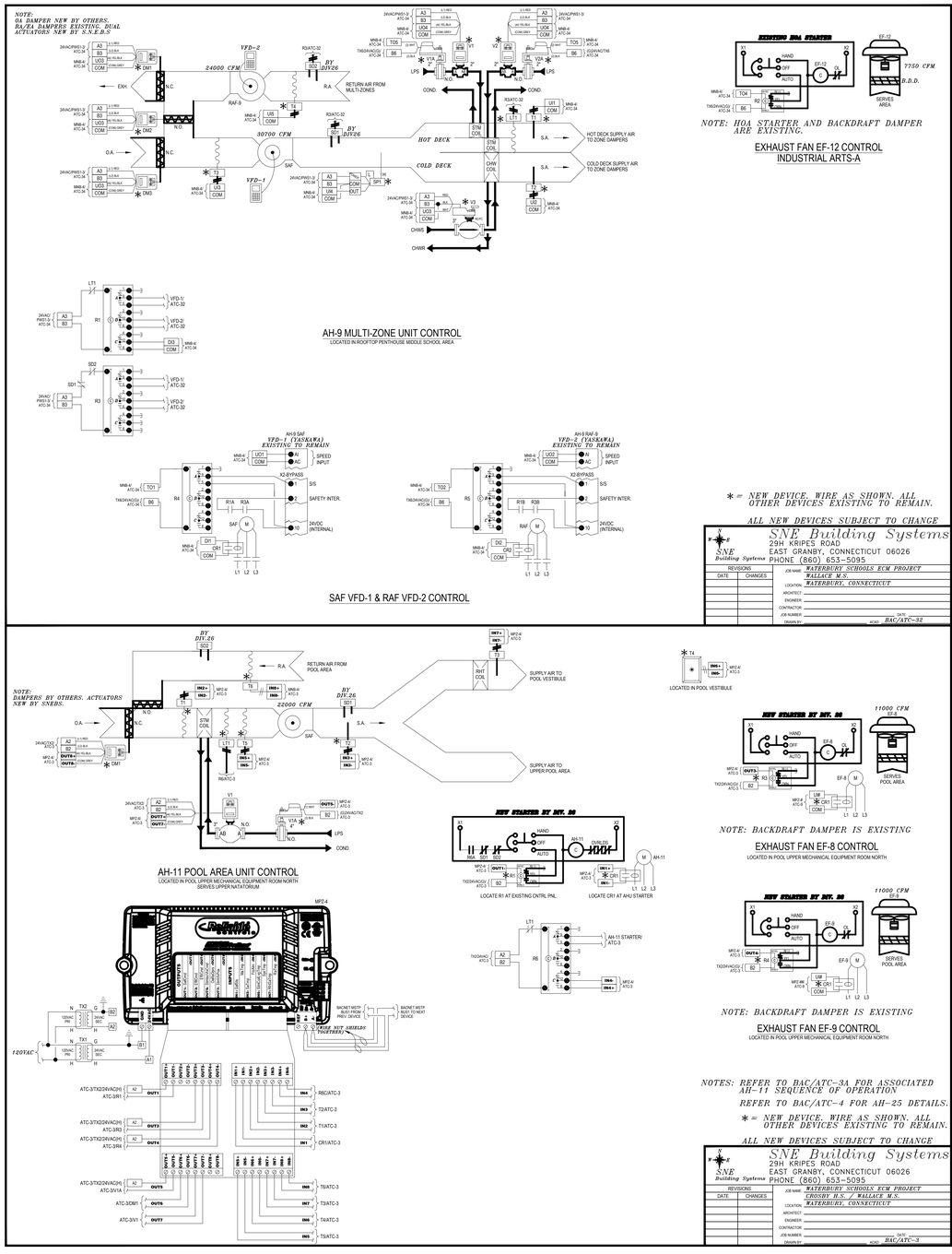

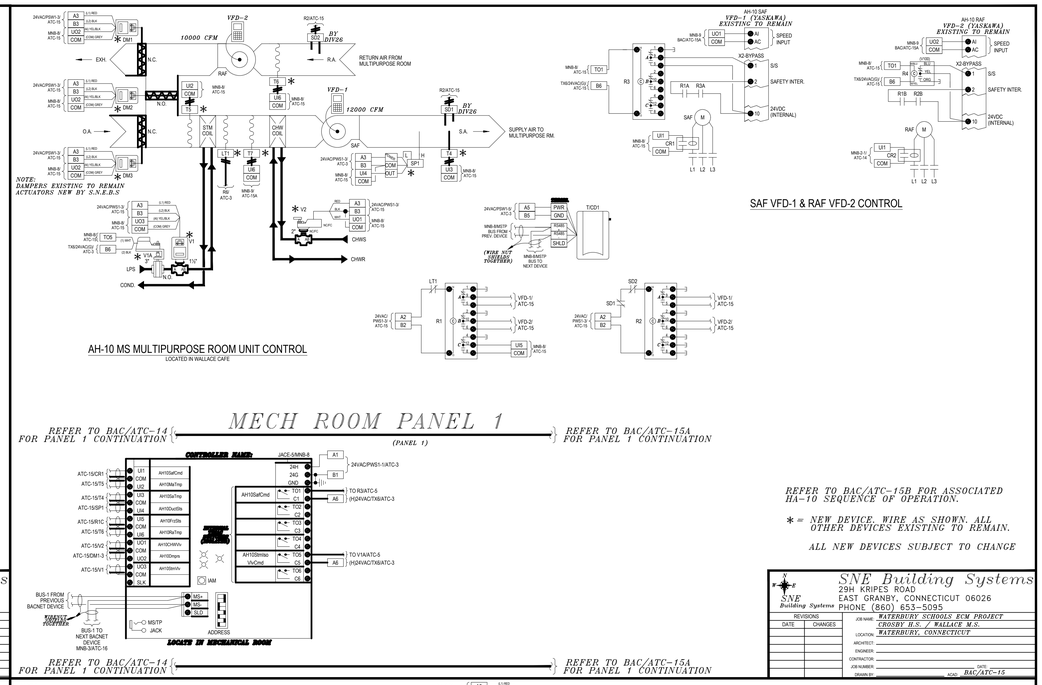

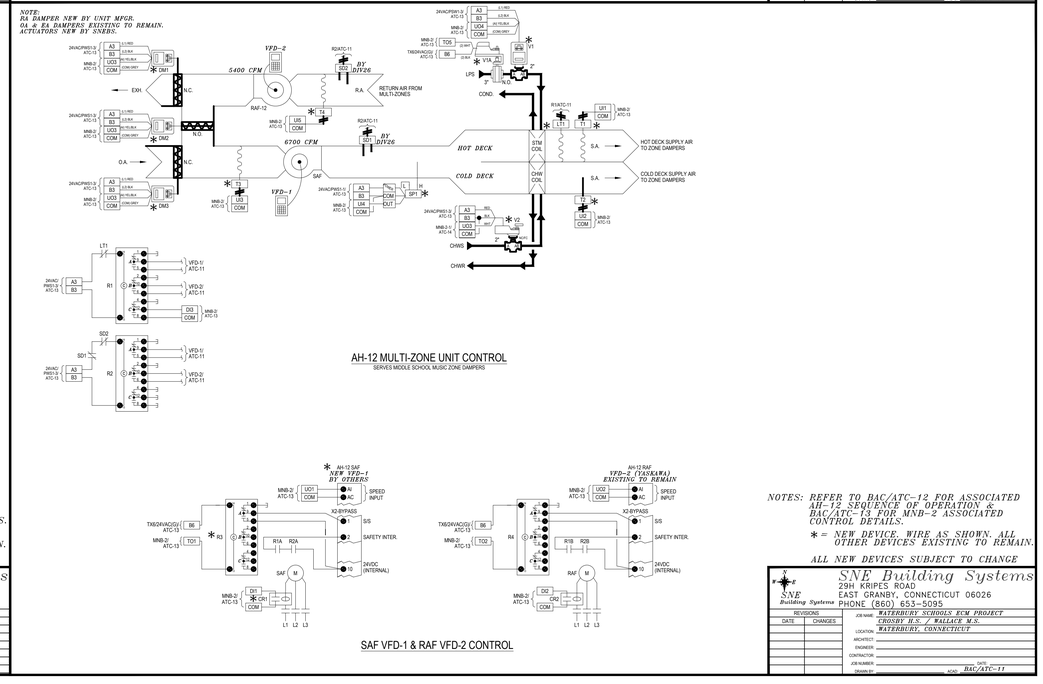

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

EXISTING CONTROL DIAGRAMS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHKD	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-802

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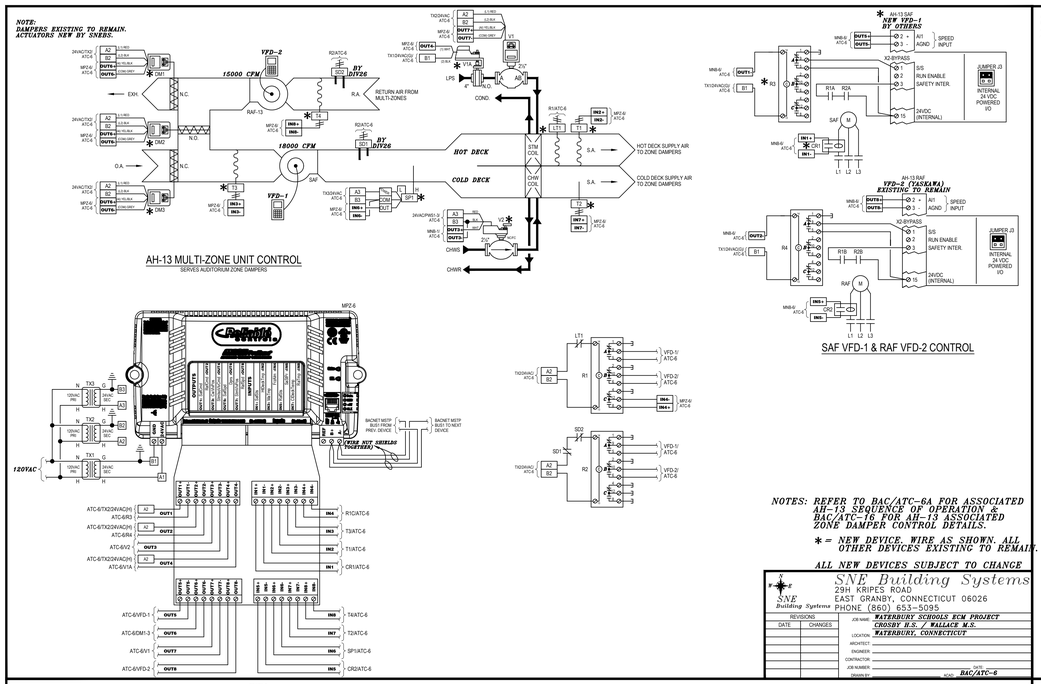


AH-13 MULTI-ZONE UNIT CONTROL
SERVES AUDITORIUM ZONE DAMPERS

SAF VFD-1 & RAF VFD-2 CONTROL

NOTES: REFER TO BAC/ATC-6A FOR ASSOCIATED AH-13 SEQUENCE OF OPERATION & BAC/ATC-16 FOR AH-13 ASSOCIATED ZONE DAMPER CONTROL DETAILS.

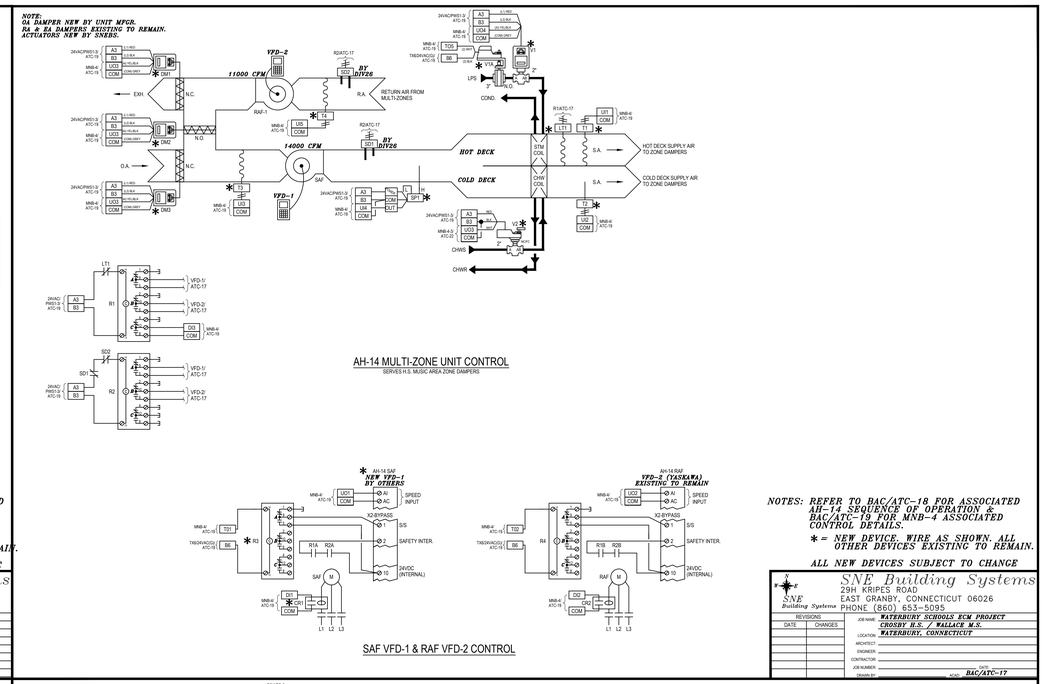
* = NEW DEVICE. WIRE AS SHOWN. ALL OTHER DEVICES EXISTING TO REMAIN.

ALL NEW DEVICES SUBJECT TO CHANGE

SNE Building Systems
29H KRIPES ROAD
EAST GRANBY, CONNECTICUT 06026
PHONE (860) 653-5095

REVISIONS	
DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
CROSBY H.S. / WALLACE M.S.
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT
ENGINEER
CONTRACTOR
JOB NUMBER
DRAWN BY
SCALE: NONE
BAC/ATC-6



AH-14 MULTI-ZONE UNIT CONTROL
SERVES H.S. MUSIC AREA ZONE DAMPERS

SAF VFD-1 & RAF VFD-2 CONTROL

NOTES: REFER TO BAC/ATC-18 FOR ASSOCIATED AH-14 SEQUENCE OF OPERATION & BAC/ATC-19 FOR MNB-4 ASSOCIATED CONTROL DETAILS.

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REVISIONS	
DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
CROSBY H.S. / WALLACE M.S.
LOCATION: WATERBURY, CONNECTICUT
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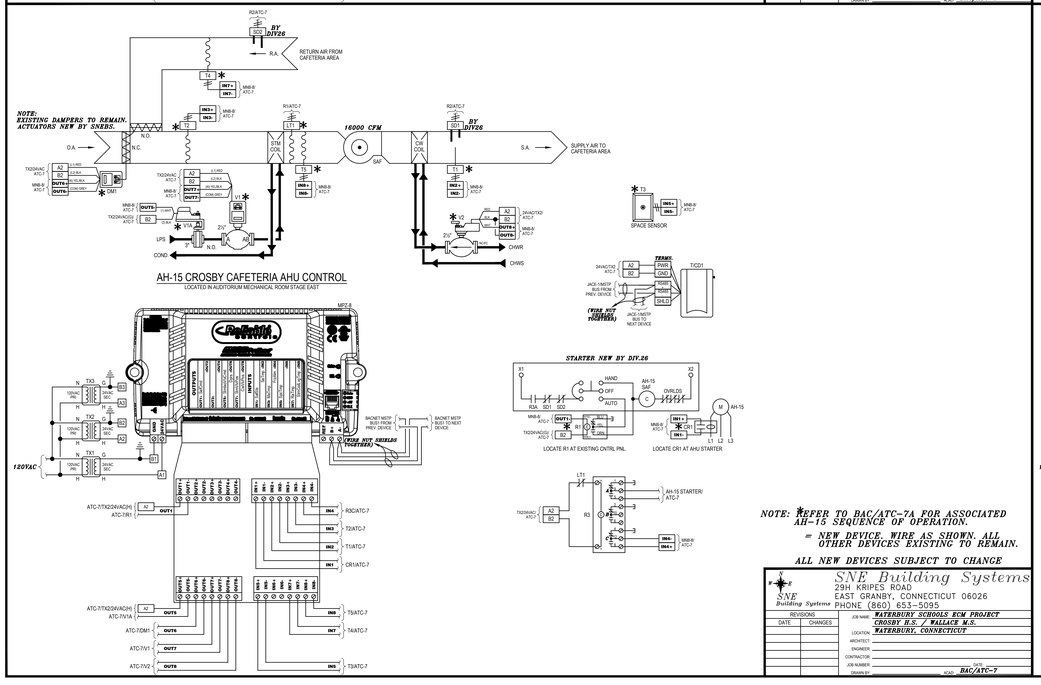
ENGINEER
CONTRACTOR
JOB NUMBER
DRAWN BY
SCALE: NONE
BAC/ATC-17



AH-15 CROSBY CAFETERIA AHU CONTROL
LOCATED IN AUDITORIUM MECHANICAL ROOM STAGE EAST

NOTE: REFER TO BAC/ATC-7A FOR ASSOCIATED AH-15 SEQUENCE OF OPERATION.

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LOCATION: WATERBURY, CONNECTICUT
ARCHITECT
ENGINEER
CONTRACTOR
JOB NUMBER
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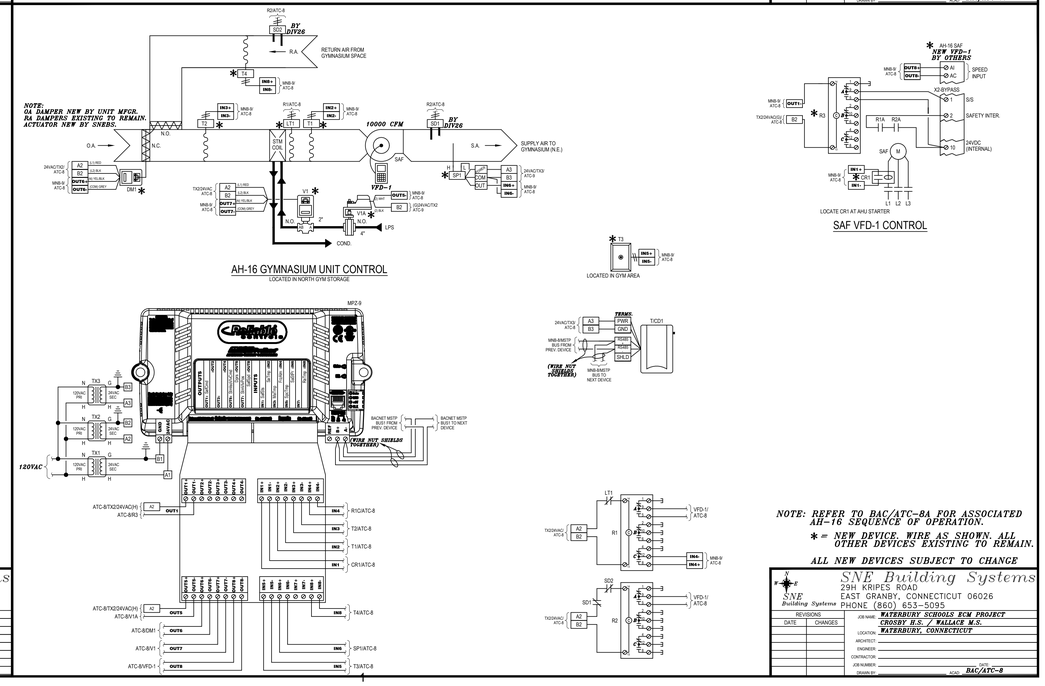
SCALE: NONE
BAC/ATC-7



AH-16 GYMNASIUM UNIT CONTROL
LOCATED IN NORTH GYM STORAGE

SAF VFD-1 CONTROL

NOTE: REFER TO BAC/ATC-8A FOR ASSOCIATED AH-16 SEQUENCE OF OPERATION.

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ALL NEW DEVICES SUBJECT TO CHANGE

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REVISIONS	
DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
CROSBY H.S. / WALLACE M.S.
LOCATION: WATERBURY, CONNECTICUT
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SCALE: NONE
BAC/ATC-8

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PROJECT

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HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

1

EXISTING CONTROL DIAGRAMS

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08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-803

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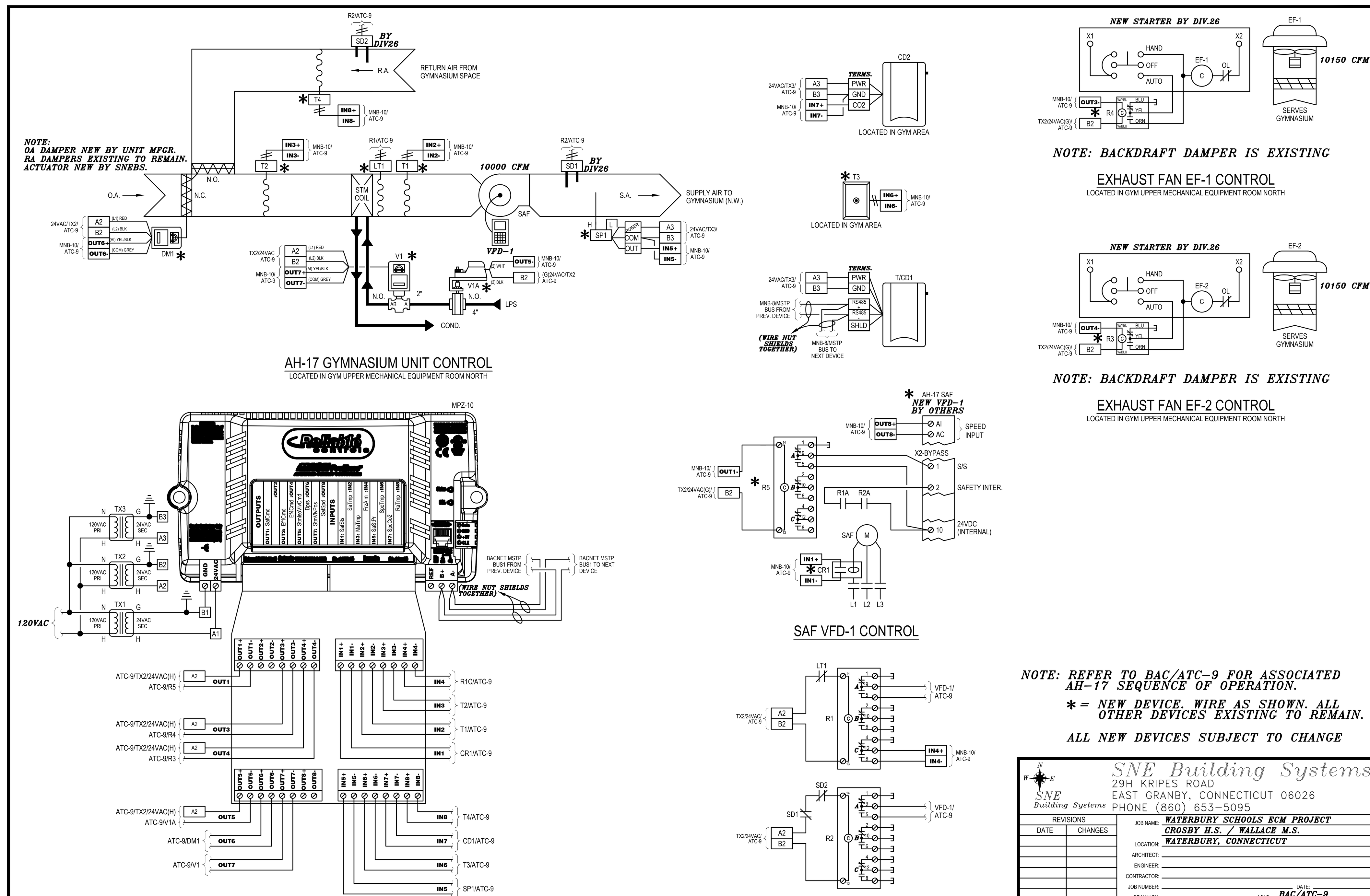

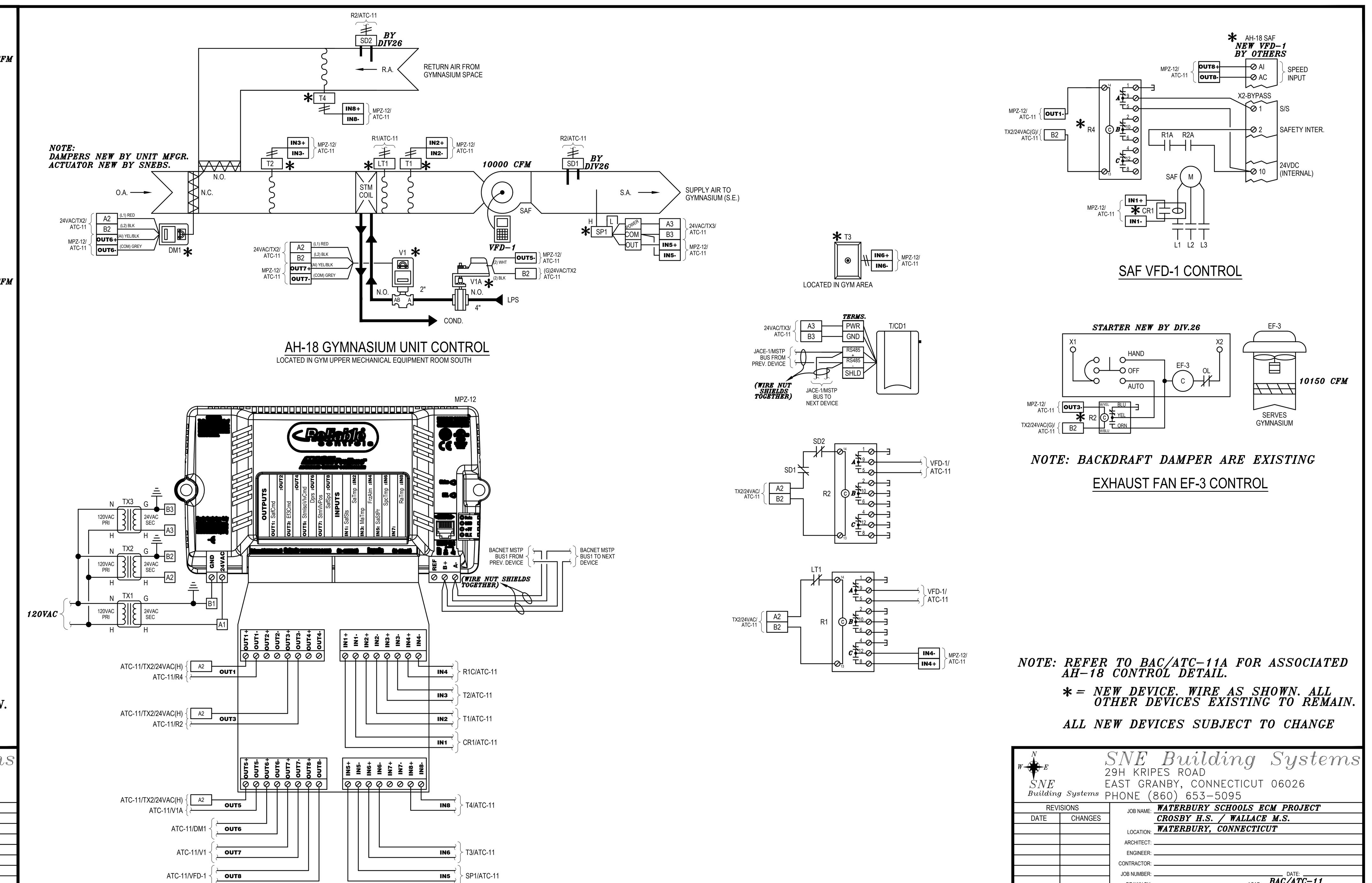

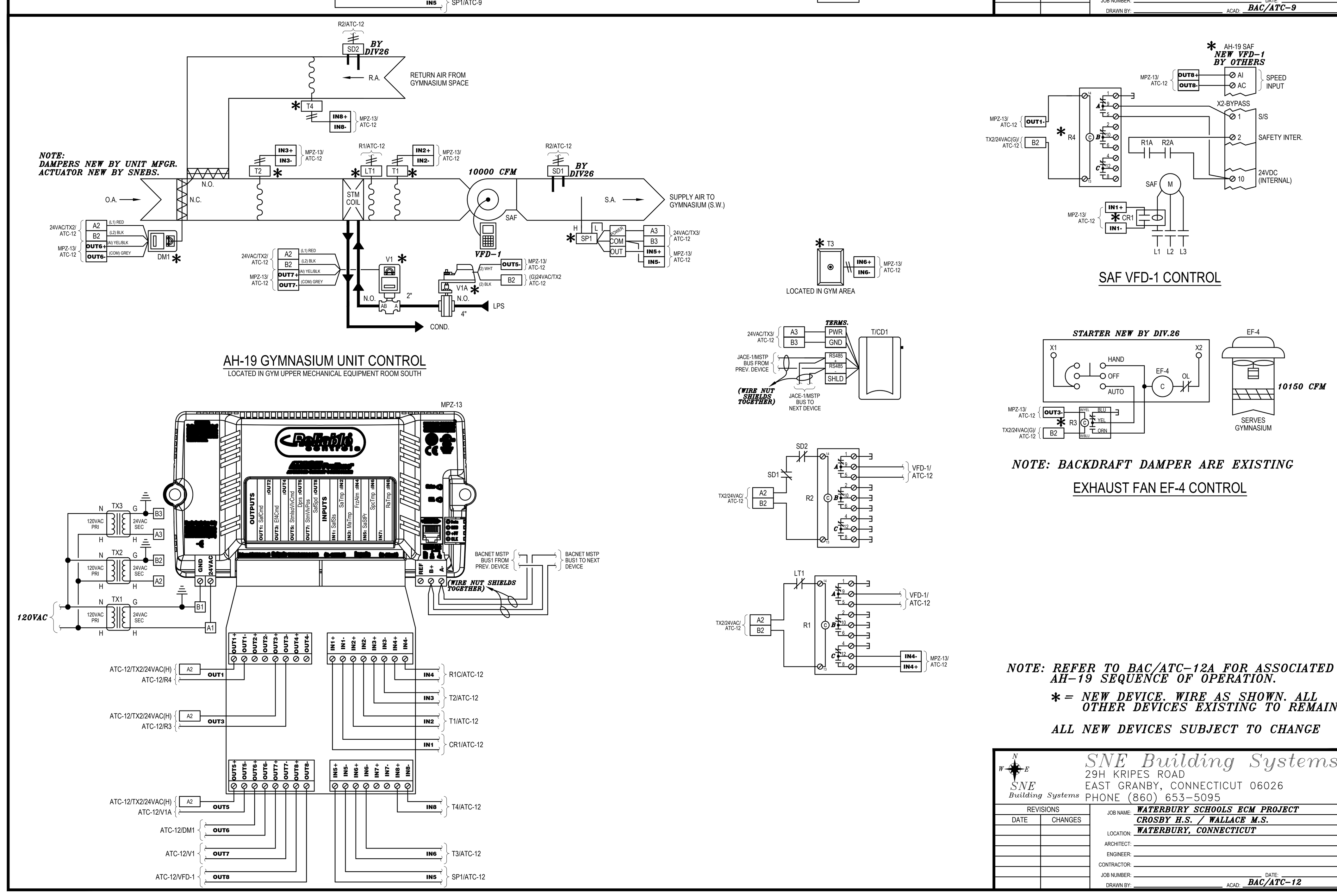

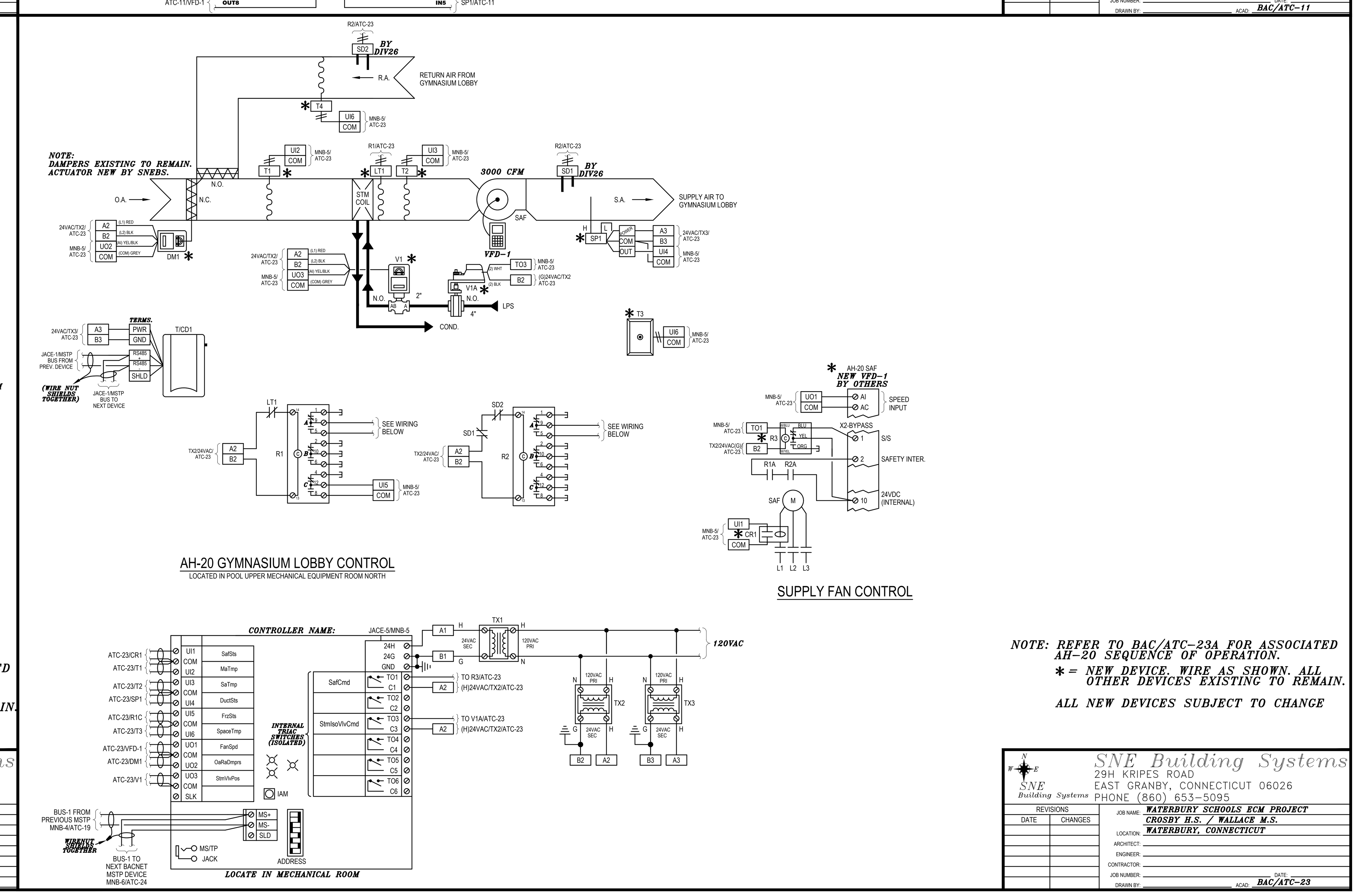

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WATERBURY, CT 06705

REVISIONS

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TMC	DTS	22106

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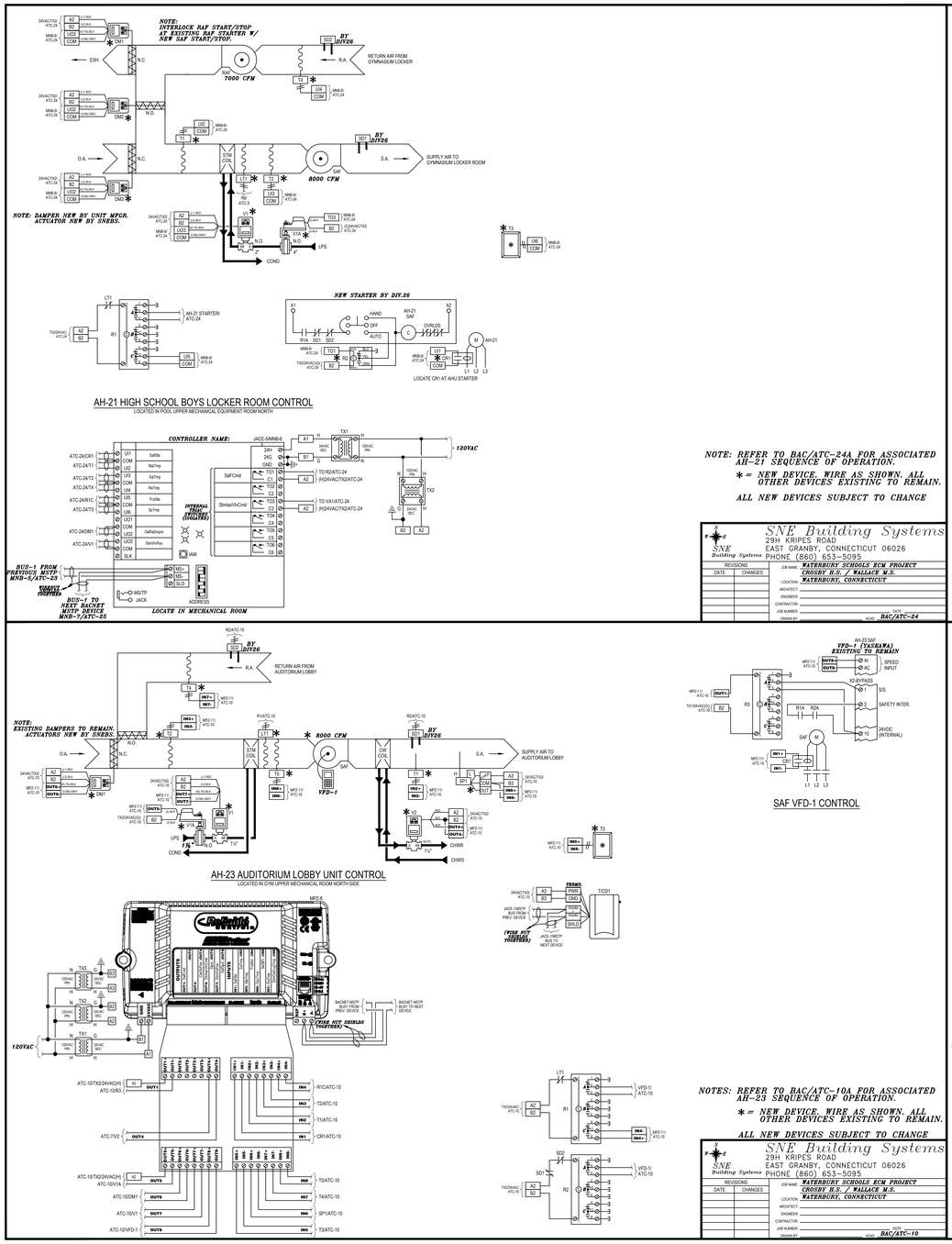

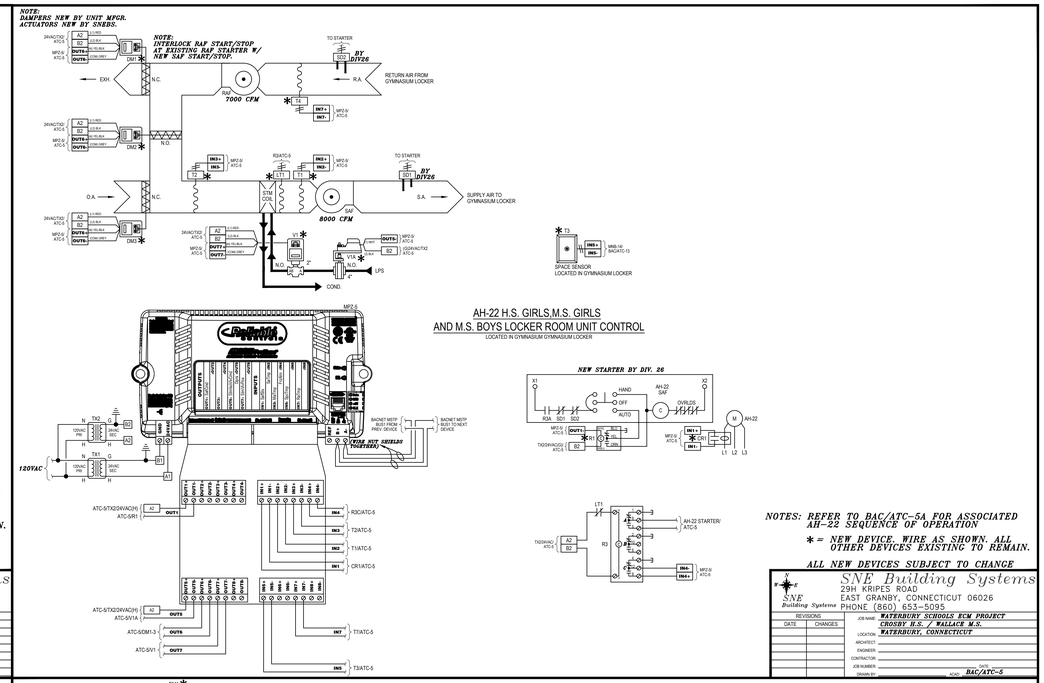

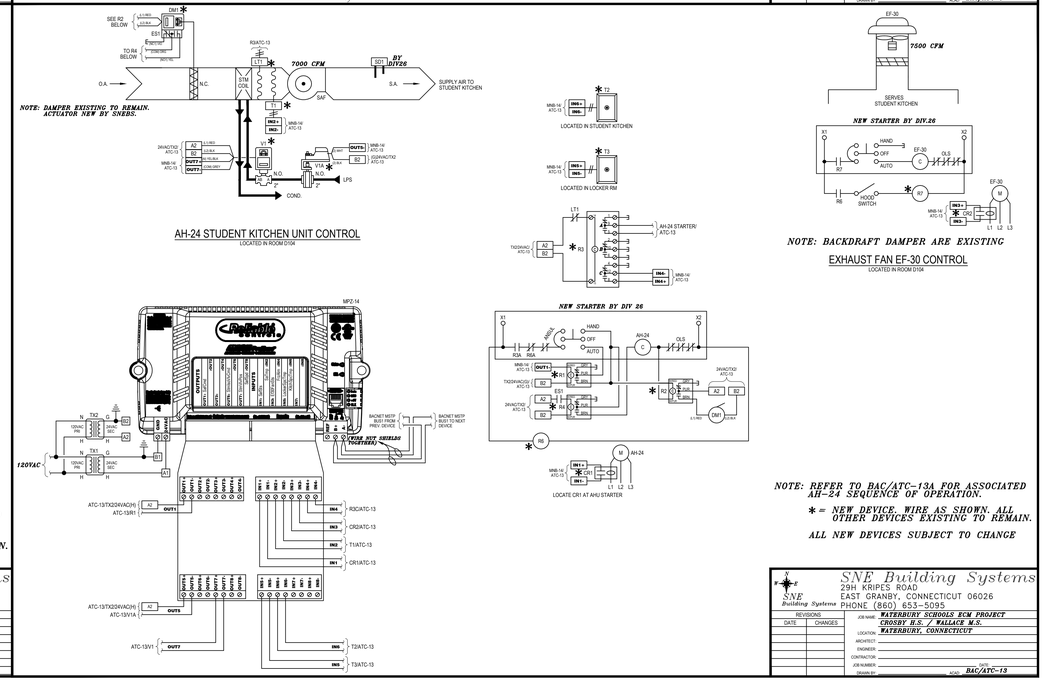

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HVAC EQUIPMENT REPLACEMENT
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WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23

SHEET TITLE

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M-805

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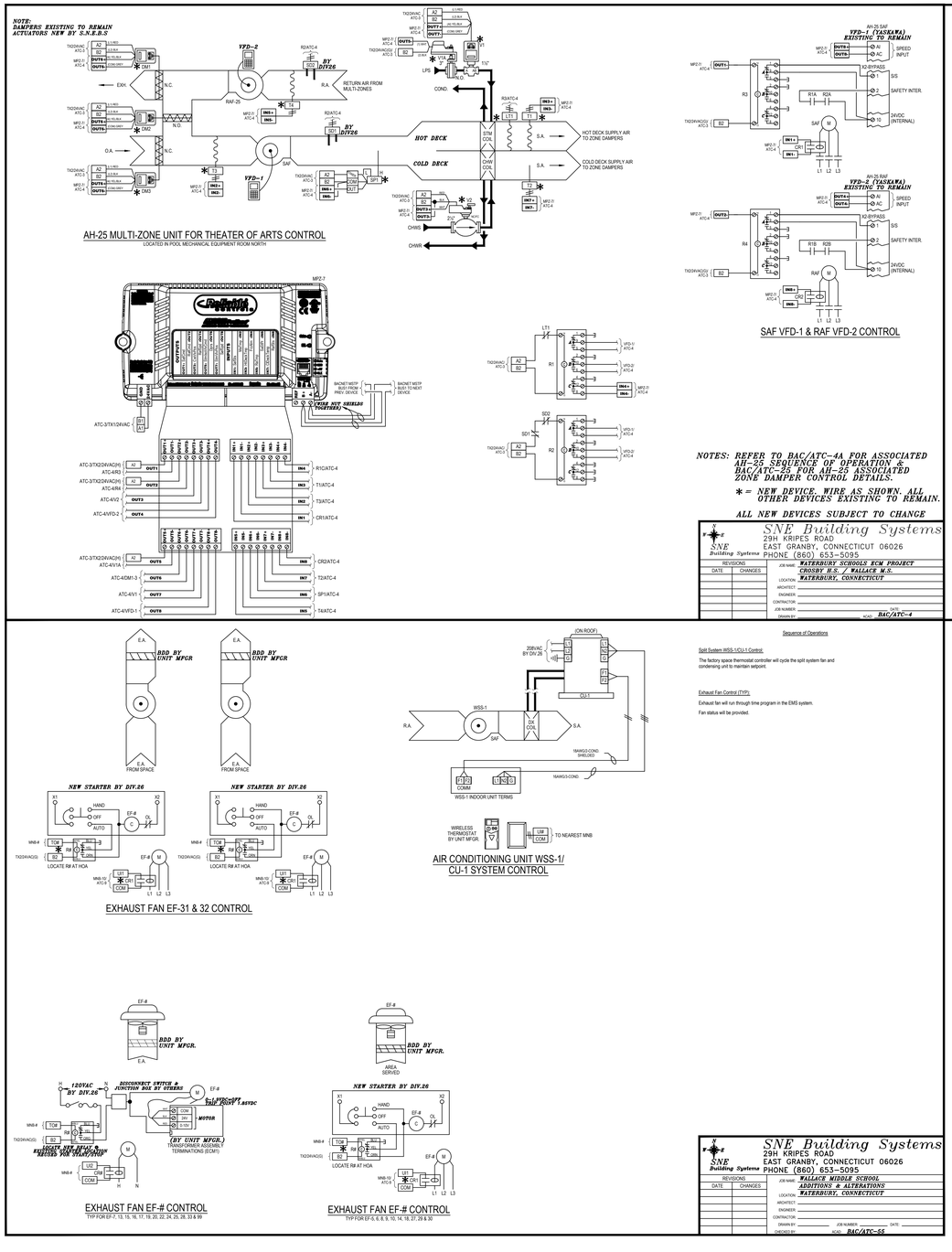


AH-25 MULTI-ZONE UNIT FOR THEATER OF ARTS CONTROL

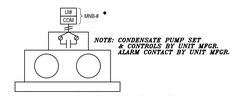
LOCATED IN POOL MECHANICAL EQUIPMENT ROOM NORTH

SAF VFD-1 & RAF VFD-2 CONTROL

SNE Building Systems
29H KRIPES ROAD
EAST GRANBY, CONNECTICUT 06026
PHONE (860) 653-5095

REVISIONS	
DATE	CHANGES

JOB NAME: WATERBURY SCHOOLS ECM PROJECT
CROSBY H.S. / WALLACE M.S.
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT:
ENGINEER:
CONTRACTOR:
JOB NUMBER: DATE:
DRAWN BY: AGAC: BAC/ATC-4



CONDENSATE PUMP CP-# MONITORING

TYPICAL FOR CP-1 THRU 3

Sequence of Operations

Condensate pump Alarm Monitoring:

The BMS will monitor the Condensate pump set alarm status.

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29H KRIPES ROAD
EAST GRANBY, CONNECTICUT 06026
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REVISIONS	
DATE	CHANGES

JOB NAME: CROSBY/WALLACE SCHOOLS
ADDITIONS & ALTERATIONS
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT:
ENGINEER:
CONTRACTOR:
DRAWN BY: JOB NUMBER: DATE:
CHECKED BY: AGAC: BAC/ATC-11

EXHAUST FAN EF-31 & 32 CONTROL

AIR CONDITIONING UNIT WSS-1/ CU-1 SYSTEM CONTROL

EXHAUST FAN EF-# CONTROL

TYP FOR EF-7, 13, 15, 16, 17, 19, 20, 22, 24, 25, 28, 33 & 99

EXHAUST FAN EF-# CONTROL

TYP FOR EF-5, 6, 8, 9, 10, 14, 18, 27, 29 & 30

Sequence of Operations

Split System WSS-1/CU-1 Control:

The factory space thermostat controller will cycle the split system fan and condensing unit to maintain setpoint.

Exhaust Fan Control (TYP):

Exhaust fan will run through time program in the EMS system.

Fan status will be provided.

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REVISIONS	
DATE	CHANGES

JOB NAME: WALLACE MIDDLE SCHOOL
ADDITIONS & ALTERATIONS
LOCATION: WATERBURY, CONNECTICUT
ARCHITECT:
ENGINEER:
CONTRACTOR:
DRAWN BY: JOB NUMBER: DATE:
CHECKED BY: AGAC: BAC/ATC-5S

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SHEET TITLE

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EXISTING CONTROL DIAGRAMS

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08/11/2023

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TMC	DTS	22106

SHEET NO.

M-806

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9/18/2023 3:17 PM

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #3

September 27, 2023

RFP 7815 HVAC Replacement Crosby High School/Wallace Middle Schools

All proposals of the above captioned project are hereby notified that the Contract Documents for the above referenced project are amended as noted in this Addendum No. 3. This Addendum shall be part of the Contract Documents for the above referenced project as provided in the Request for Proposal.

Receipt of this Addendum shall be acknowledged in writing on the form included in Attachment C of the RFP. Failure to do so may subject Proposer to disqualification.

The Contract Documents are hereby amended as follows:

Changes to Drawings:

<u>Mechanical</u>

1. **Drawing M-201**
   a. **Added chilled water isolation valves at AHU-23.**
2. **Drawing M-600**
   a. **Revised steam trap note on typical steam coil connection detail.**

<u>Electrical</u>

1. **Drawing E-000**
   a. **Revised the description of the ceiling mount speaker symbol in the symbol legend.**
   b. **Added the wall mount speaker symbol in the symbol legend.**
   c. **Added the clock symbol in the symbol legend.**
   d. **Added a pa speaker call in switch symbol in the symbol legend.**

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2. **Drawing E-101**
   a. **Changed the new combo clock / speaker in the music room to an individual clock and an individual speaker.**
   b. **Added a ceiling mount clock to the new hall adjacent to the music room.**
   c. **Changed the 'call button' in the music room to a pa speaker call in switch.**

Please refer to the questions and answers below.

Question: Can you please add a second date for additional questions after the first round has been answered?
Answer: In addendum #1 an additional date for RFI's were provided. No additional RFI periods will be provided.

Question: Will all replacement exhaust fans be provided by the mechanical contractor with back draft dampers as shown on the mechanical drawings?
Answer: All new exhaust fans shall be provided with new counterbalanced backdraft dampers. Awarded contractor is responsible for coordinating the sizes of new back draft dampers with existing roof curbs.

Question: Are the mechanical spaces always open for work during normal business hours.
Answer: Mechanical spaces will be open for work during normal business hours. Awarded contractor will be required to coordinate work schedule with Department of Education.

Question: A note on mechanical control drawings M800s states that the modulating dampers will be provided by the unit manufacturer or presumably the mechanical contractor. Who is responsible for providing the motorized dampers.
Answer: The controls diagram shown on M-800 series drawings are existing. They are to be modified and reapplied to the new units by the controls contractor (SNE Building Systems). The mechanical contractor shall provide new motor operated dampers or reinstall the existing motor dampers as indicated on the plans.

Question: This project has the shutdown of an equipment room that serves a complete section of the building. Can you confirm these rooms can be shut down for weeks while school is in session?
Answer: Awarded contractor shall coordinate and phase all required shut down for minimum effect on the operation of the school and perform these shutdowns outside of cooling season. The specific phasing of these shutdowns will be more closely scheduled with the awarded contractor and the District.

Question: I see that Schneider Electric-SNE is the only approved vendor but not the only Control provider of controls for Waterbury. Will Automated Logic be permitted to provide proposal and connect to existing WebCTRL BMS.

Answer: SNE is the current vendor for controls in the facility which is why they are the only approved vendor. Automated Logic will not be permitted to provide a proposal for the controls work in this scope.

Question: Could you provide a part number on the speaker /clock combination unit that needs to be provided in the music studio?
Answer: Refer to legend revised in Addendum #3. A new clock and speaker shall be provided by Contractor as shown and described.

Question: Could you provide what is the distance from the Music Suite to the data cabinet?
Answer: Data, etc. outlets for the music suite shall be run from the music suite in the basement to the MDF on the first floor. The distance is approximately 200 feet. This includes horizontal and vertical distance.

Question: Could you provide a part number for the call button seen in the detail of the music suite?
Answer: Refer to legend revised in addendum #3. A new call-in button shall be provided by Contractor as shown and described.

Question: Please provide Start and end dates of Cooling season.
Answer: May 1 to October 15.

Question: Does the entire building require cooling during Summer Vacation?
Answer: No, the entire building does not require cooling during Summer Vacation. It is okay to provide cooling in selected areas at any given time during Summer Vacation. Awarded contractor shall coordinate and phase all required shut down for minimum effect on the operation of the school and perform these shutdowns outside of cooling season.

Question: Who provides AFMS ?
Answer: Assuming the question is referring to airflow monitoring stations, the scope does not include them.

Question: Is there any objection to having a job site trailer, Conex box and port-O-let on site?
Answer: Contractor will be permitted to have jobsite trailer, connex box and port-O-let on site. Contractor will be responsible for any temporary electric costs for the jobsite trailer if they choose to have one and must coordinate the final location with the school.

Question: Can you give us some guidance as to the size of the Steam Traps? Do we size them the same as the steam condensate return lines, or to the Detail 6 on drawing M-600 or somewhere in between?

Answer: Please refer to revised Detail 5 on Drawing M-600 in Addendum #3. Steam traps and condensate piping from steam coils shall be sized based on design maximum condensate flow and pressure differential. Steam traps shall not be oversized.

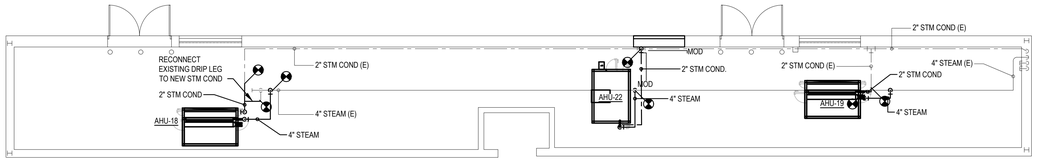
Question: Can you please provide the contractor sign in sheet from the walkthrough. / Can you please share attendants list?

Answer: Contractor Sign-In sheet was provided in Addendum #1 and is reattached in Addendum #3 for reference.

Thank you.

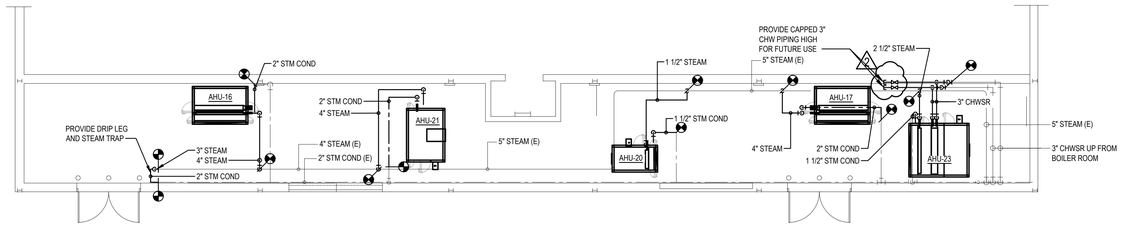
Maureen McCauley

Assistant Director of Purchasing – City of Waterbury



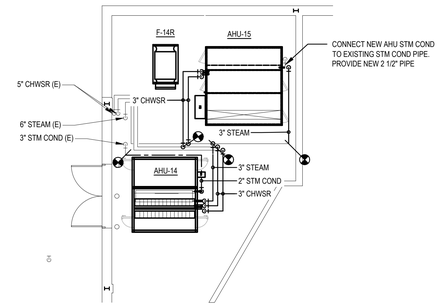
1 M-201 FAN ROOM #13 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



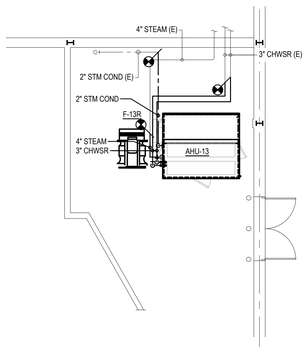
2 M-201 FAN ROOM #14 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



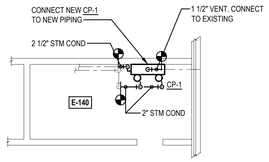
3 M-201 FAN ROOM #10 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



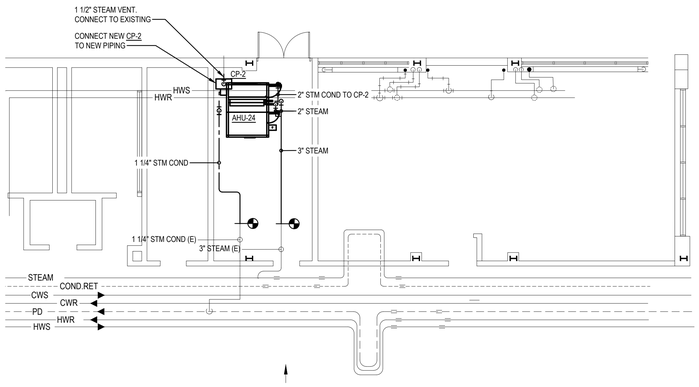
4 M-201 FAN ROOM #11 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



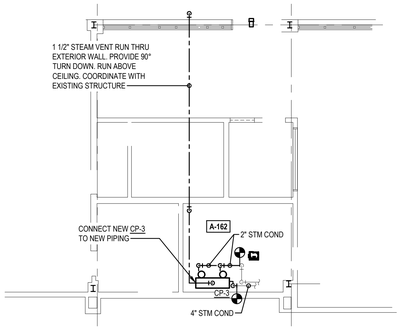
6 M-201 ROOM E140 MECH NEW PLAN

SCALE: 1/8" = 1'-0"



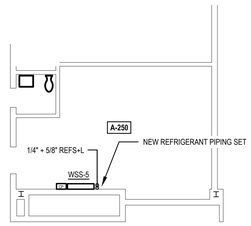
5 M-201 ROOM D104 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



7 M-201 ROOM A162 MECH PLAN

SCALE: 1/8" = 1'-0"



8 M-201 ROOM A250 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

PIPING NEW WORK NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE ALL PIPING INSULATION IN FAN ROOMS 10, 11, 13 & 14. DEMOLISH AND REPLACE ALL PIPING INSULATION IN ROOM D104. PROVIDE NEW INSULATION PER SPECIFICATIONS.
3. DEMOLISH AND REPLACE ALL ISOLATION VALVES AND COOLING CONDENSATE PIPING IN FAN ROOMS 10, 11, 13 & 14. ALL NEW COOLING CONDENSATE PIPING SHALL BE 1 1/4" PVC. PIPE TO NEAREST FLOOR DRAIN
4. PROVIDE NEW CONTROL VALVE DETAILS FOR ALL NEW COILS AS SHOWN ON M-500
5. PROVIDE NEW CONTROL VALVES FOR ALL NEW COILS

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ARCHITECT / ENGINEER SEAL

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

PROJECT

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23
2	ADDENDUM #2	9/27/23

SHEET TITLE

INTERIOR PIPING NEW WORK PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-201

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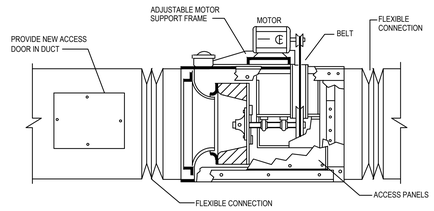
9/26/2023 1:40 PM

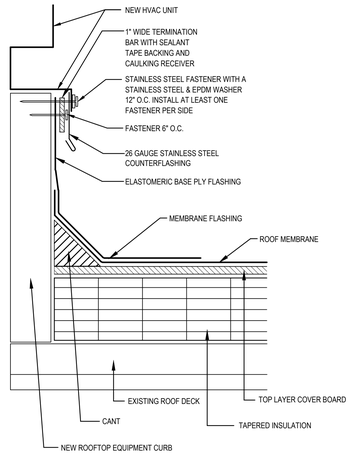


NOTES:

1. ACCESS DOOR SHALL BE HINGED-TYPE.

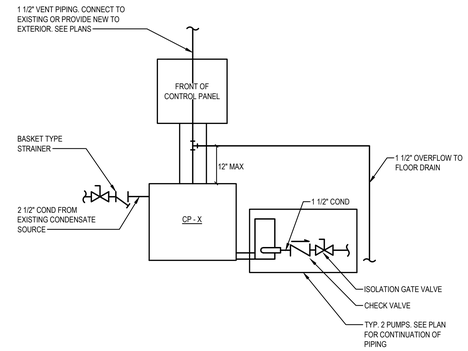
1 / M-600 TYPICAL IN-LINE FAN DETAIL

SCALE: NTS



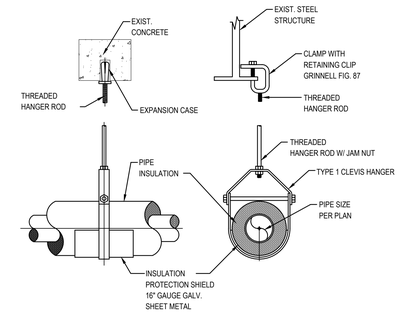
2 / M-600 ROOF CURB FLASHING DETAIL

SCALE: NTS



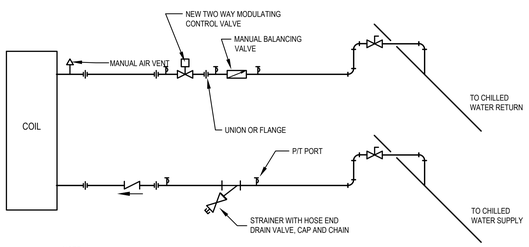
3 / M-600 STEAM CONDENSATE PUMP DETAIL

SCALE: NTS



4 / M-600 TYPICAL PIPE HANGER DETAIL

SCALE: NTS

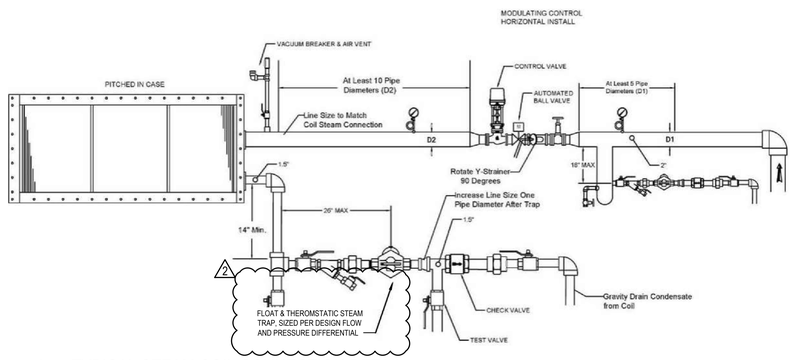


NOTE:

1. PROVIDE FLOW LIMITING DEVICE PER UNIT FLOW REQUIREMENTS AS SHOWN IN EQUIPMENT SCHEDULES.
2. THIS ARRANGEMENT IS TYPICAL FOR ALL CHILLED WATER COILS
3. PROVIDE COIL CONNECTIONS DESCRIBED ABOVE FOR AIR HANDLING UNITS AND ROOF TOP AIR HANDLING UNITS.

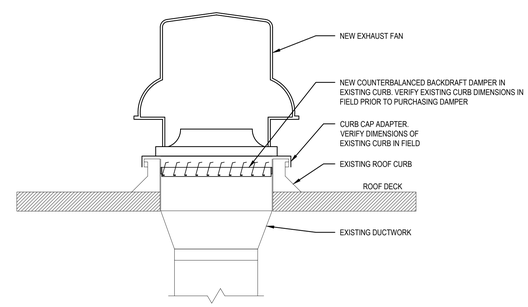
5 / M-600 TYPICAL 2-WAY VALVE DETAIL FOR AHUS

SCALE: NTS



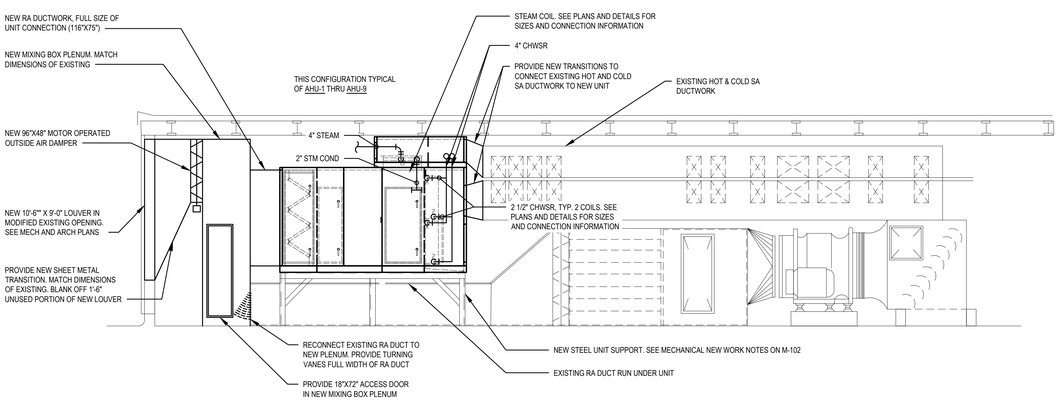
6 / M-600 TYPICAL STEAM COIL CONNECTION DETAIL

SCALE: NTS



7 / M-600 ROOF MOUNTED EXHAUST FAN DETAIL

SCALE: NTS



8 / M-600 PENTHOUSE 1 THRU 9 TYPICAL SECTION

SCALE: NTS

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIEREPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23
2	ADDENDUM #3	9/27/23

SHEET TITLE

MECHANICAL DETAILS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-600

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9/26/2023 1:38 PM

ELECTRICAL GENERAL NOTES

1. PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, COORDINATION, ADDITIONAL DESIGN AND ALL INCIDENTALS NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM AS DETAILED ON PLANS TO THE SATISFACTION OF THE ENGINEER AND THE OWNER. COORDINATE ALL WORK WITH THE ENGINEER BEFORE THE START OF WORK.
2. PRIOR TO SUBMITTING BID, THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION. CONTRACTOR SHALL INCLUDE IN THEIR BID ALL MATERIAL, LABOR, AND ALL INCIDENTALS FOR A COMPLETE INSTALLATION WHETHER SPECIFICALLY INDICATED OR NOT. ALL ERRORS, DISCREPANCIES AND MISSED ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS BY THE CONTRACTOR. THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE. NO EXTRA COST WILL BE ALLOWED FOR ANY DISCREPANCY WHICH COULD HAVE BEEN NOTICED AT THE SITE VISIT BY THE CONTRACTOR.
3. PERFORM WORK AS REQUIRED BY APPLICABLE CODES, REGULATIONS, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS AND OTHER AUTHORITIES WITH LAWFUL JURISDICTION. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE.
4. MATERIAL AND EQUIPMENT SHALL BE NEW (UNLESS NOTED), UL, NEMA, ANSI, IEEE, ADA & CMB APPROVED FOR INTENDED PURPOSE. MATERIAL AND INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND LOCAL ELECTRICAL CODE.
5. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS, AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
6. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE AND CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.
7. GUARANTEE WORK IN WRITING PER SPECIFICATIONS, REPAIR OR REPLACE DEFECTIVE MATERIALS OR INSTALLATION AT NO COST TO OWNER DURING THE GUARANTEE PERIOD. CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO COST TO OWNER. SUBMIT GUARANTEE TO OWNER BEFORE FINAL PAYMENT.
8. COORDINATE ALL ELECTRICAL ITEMS WITH EXISTING FIELD CONDITIONS. LOCATIONS SHOWN ARE APPROXIMATE AND MAY REQUIRE MINOR ADJUSTMENT IN THE FIELD TO SATISFY THE DESIGN INTENT.
9. DAMAGE TO EXISTING FACILITIES AND EQUIPMENT SHALL BE REPAIRED OR REPLACED IMMEDIATELY BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. THE LOCATIONS ON THESE PLANS ARE APPROXIMATE AND REQUIRE COORDINATION WITH ALL OTHER TRADES AND VERIFICATION OF EXISTING CONDITIONS. ROUTING OF CONDUIT IS DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW ALL REQUIRED OFFSETS AND DETAILS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING ASSOCIATED EQUIPMENT AND CONDITIONS. COORDINATE THE LOCATION OF ALL EQUIPMENT WITH THE ENGINEER AND THE OWNER. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL OTHER TRADE'S DRAWINGS AND SPECIFICATIONS AND COORDINATING WITH ALL OTHER TRADES DURING BIDDING AND CONSTRUCTION. THE CONTRACTOR IS TO INCLUDE CIRCUIT LENGTHS OF WIRE AND CONDUIT REQUIRED TO INSTALL CONNECTED DEVICES AND EQUIPMENT SUCH AS PANELBOARDS, SWITCHBOARDS, TRANSFORMERS, ETC. WITHIN 15 FEET OF THE LOCATION SHOWN.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUITY OF ALL POWER, CONTROL, FIRE ALARM, SECURITY SYSTEMS, AND COMMUNICATIONS FUNCTIONS TO ALL AREAS AFFECTED BY DEMOLITION AND/OR NEW CONSTRUCTION.
12. REPAIR AND PATCH ANY DISTURBED AREAS TO MATCH ADJACENT CONSTRUCTION.
13. DISCONNECT AND MAKE SAFE ANY EQUIPMENT TO BE REMOVED BY OTHERS. COORDINATE REMOVAL OF EQUIPMENT WITH OTHER TRADES PRIOR TO DEMOLITION.
14. IN ANY AREA REQUIRING THE PERFORMANCE OF ANY TRADE'S WORK, THIS CONTRACTOR SHALL CAREFULLY REMOVE AND STORE ANY OR ALL ELECTRICAL ITEMS IN PATH OF WORK, REINSTALLING, AND RECONNECTING SAME AS REQUIRED, IN ACCORDANCE WITH THE PLANS AND/OR AS DIRECTED AFTER COMPLETION OF OTHER TRADE'S WORK IN THAT AREA.
15. PRIOR TO THE START OF DEMOLITION, CONTRACTOR SHALL FIELD VERIFY ALL BRANCH CIRCUITS AND MAINTAIN THOSE CIRCUITS THAT EXTEND OUTSIDE THE SCOPE OF WORK.
16. AFTER RENOVATING EXISTING ELECTRICAL WORK, THE CONTRACTOR SHALL ENSURE THAT ALL REMAINING AND NEW EQUIPMENT WILL OPERATE PROPERLY, INCLUDING BUT NOT LIMITED TO BACKFEEDING OF EXISTING POWER AND LIGHTING CIRCUITS. REFER TO SINGLE LINE DIAGRAM.
17. ALL ELECTRICAL WORK INDICATED TO REMAIN SHALL BE SUITABLY PROTECTED TO PREVENT ANY DAMAGE.
18. WHERE ELECTRICAL SYSTEMS PASS THROUGH RENOVATED AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, SYSTEMS SHALL BE SUITABLY PROTECTED TO PREVENT DAMAGE OR RELOCATED AND THE SYSTEMS RESTORED TO NORMAL OPERATION. ANY OUTAGES IN SYSTEMS SHALL BE COORDINATED WITH OWNER. RESTORE POWER TO EXISTING TO REMAIN EQUIPMENT IF INTERRUPTED BY DEMOLISHED CIRCUITS IN THE AREA.
19. CONTRACTOR SHALL SUBMIT FOR REVIEW, SHOP DRAWINGS FOR ALL EQUIPMENT AND MATERIALS USED ON THE PROJECT. SUBMITTALS SHALL BE REVIEWED BY THE ENGINEER BEFORE PURCHASE OF MATERIALS.
20. ALL WIRING SHALL BE COPPER, 600V, 75°/90° RATED WITH FLAME-RETARDENT, HEAT AND MOISTURE RESISTANT INSULATION.
21. PERMANENTLY LABEL ALL NEW ELECTRICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO, DEVICE DESIGNATION AND SUPPLY CIRCUIT DESIGNATION. UPDATE OR REPLACE PANEL DIRECTORIES TO INCLUDE NEW CIRCUIT INFORMATION RESULTING FROM THIS PROJECT.
22. PROVIDE TEMPORARY POWER AND LIGHTING FOR ALL TRADES AS REQUIRED TO COMPLETE THE PROJECT. ALL TEMPORARY AND INTERIM EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS INCLUDING, BUT NOT LIMITED TO NFPA 110 AND NFPA 70.
23. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION THAT IS NOT SHOWN ON THE DRAWINGS.
24. OPENINGS IN EXISTING CONCRETE AND MASONRY WALLS AND FLOORS REQUIRED FOR CONDUIT INSTALLATION SHALL BE CORE DRILLED. MAXIMUM CORE DRILL SIZE SHALL BE 5" IN DIAMETER. CORE DRILL LOCATIONS SHALL BE SPACED A MINIMUM OF 6" FROM EACH OTHER MEASURED FROM THE OUTSIDE EDGE OF THE CORE DRILL. ALL CORE DRILL OPENINGS SHALL BE PROPERLY SEALED ACCORDING TO THEIR LOCATION AND APPLICATION.
25. ALL OUTAGES SHALL BE KEPT TO A MINIMUM. ALL WORK THAT REQUIRES A SUSTAINED EQUIPMENT OUTAGE SHALL BE PERFORMED CONTINUOUSLY AROUND THE CLOCK UNTIL WORK IS COMPLETED UNLESS NOTED OTHERWISE. COORDINATE OUTAGES WITH OWNER REPRESENTATIVE.
26. PROVIDE FOR EACH BRANCH CIRCUIT AND FEEDER CIRCUIT A DEDICATED EQUIPMENT GROUND WIRE. FOR SINGLE PHASE BRANCH CIRCUITS OF 120 V/1PH OR 277V/1 PH, PROVIDE DEDICATED HOT, DEDICATED NEUTRAL AND DEDICATED EQUIPMENT GROUND WIRES. SHARING OF NEUTRAL OR EQUIPMENT GROUND WIRES IS NOT PERMITTED. WIRING TO ALL HVAC EQUIPMENT OR OTHER TRADE EQUIPMENT SHALL BE IN CONDUIT. ALL EQUIPMENT AND FEEDER WIRING IN MECHANICAL ROOM/ELECTRICAL ROOM SHALL BE IN RIGID CONDUIT. USE OF MC CABLE IS LIMITED TO BRANCH CIRCUIT WIRING ABOVE RECESSED CEILING OR CONCEALED IN WALL. WIRING TO OUTLETS ON TABLE SHALL BE PROVIDE IN EITHER EMT CONDUIT OR FLEXIBLE METAL CONDUIT. DO NOT USE PLASTIC TIE WRAPS TO SUPPORT CONDUITS AND MC CABLES. MC CABLES SHALL BE SUPPORTED AT MAXIMUM OF 6'-0" WITH SECURELY FASTENED MC CABLE SUPPORT CLAMPS, J-HOOKS, OR METAL CABLE BRACKETS.
27. PROVIDE IDENTIFICATION LABELS FOR ALL BRANCH CIRCUITS AND FEEDERS CIRCUITS AT JUNCTION BOXES, PANELBOARDS, TROUGHS, AND SPLICE BOXES.
28. PROVIDE UNSPLICED FEEDERS FROM PANELBOARD OR SWITCHBOARD TO ALL EQUIPMENT, INCLUDING ALL 20 AMPERE, SINGLE POLE BRANCH CIRCUIT WIRING.
29. ALL WIRING DEVICES ARE TO BE RECESSED WHERE POSSIBLE. WHERE RECESSING IS NOT POSSIBLE, WIRING DEVICES ARE TO BE SURFACE MOUNTED WITH CIRCUIT WIRING ROUTED IN SURFACE MOUNTED CONDUIT PER SPECIFICATIONS.
30. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL (2) #14-3/4" FROM EACH VENDOR SUPPLIED DUCT SMOKE DETECTOR TO FACP. INSTALLATION OF DETECTOR BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY ELECTRICAL TERMINATIONS. EACH BLOWER COIL (BC) AND EACH ENERGY RECOVERY VENTILATOR (ERV) WILL HAVE (1) SUPPLY DUCT SMOKE DETECTOR AND (1) RETURN DUCT SMOKE DETECTOR.
31. VFD CABLE SHALL BE TYPE MC-HL (XHHW2). 3/C VFD CABLE SHALL BE RATED FOR 600 VAC WITH 2000 VOLT INSULATION WITHSTAND AND UL LISTED AS TYPE MC-HL CABLE PER UL2225(E38916). VFD CABLES SHALL HAVE UNCOATED SOFT COPPER STRANDED CONDUCTORS RATED FOR 90 DEG CENTIGRADE WET OR DRY , CROSS LINK POLYETHYLENE HIGH DIELECTRIC STRENGTH COLOR CODED INSULATION, AND THREE BARE SOFT STRANDED GROUND CONDUCTORS WITH NON-HYGROSCOPIC FILLER AND BINDER TAPE. SHEATH SHALL BE CLOSE FITTING, IMPERVIOUS, CONTINUOUS WELDED CORRUGATED ALUMINUM C-L-X PER UL1569. SHEATH SHALL BE PROTECTED WITH LOW TEMPERATURE BLACK PVC JACKET. CONTRACTOR SHALL PROVIDE PROPER FITTINGS FOR INSTALLATION OF VFD CABLE.
32. ALL CONDUIT PENETRATIONS THROUGH WALLS OR CEILINGS SHALL BE PATCHED AND SEALED WITH FIRE RATED FOAM SEALANT.
33. PROVIDE INSULATING BUSHINGS ON CONDUIT THREADS OR CONNECTORS WHERE RACEWAYS WITH CONDUITS OR MC CABLES ENTER A BOX OR ENCLOSURE. THIS BUSHING SHALL BE INSTALLED ON ALL CABLES AND CONDUITS.
34. PROVIDE FIRE ALARM RATED MC CABLE FOR CONNECTIONS BETWEEN FIRE ALARM DEVICES. MC CABLE SHALL RUN CONCEALED ABOVE CEILINGS AND IN DRYWALL. WHERE EXPOSED, PROVIDE EMT; NO EXPOSED MC CABLE IS PERMITTED.
35. CONTRACTOR TO PROVIDE A COORDINATION STUDY WHENEVER ANY FEEDER CIRCUITS ARE ADDED TO OR REMOVED FROM THE MAIN SWITCHBOARD / PANELBOARD OF A BUILDING. ADDITIONALLY, PROVIDE A COORDINATION STUDY WHENEVER A GENERATOR IS ADDED OR REPLACED. CONTRACTOR TO ADJUST THE TRIP OF THE MAIN CIRCUIT BREAKER AND/OR THE GENERATOR BREAKER ACCORDINGLY.

FIRE ALARM SYSTEM:

PROVIDE NEW FIRE ALARM SYSTEM DEVICES AND CONNECT TO EXISTING FIRE ALARM SYSTEMS (CROSBY HIGH SCHOOL FACP - NOTIFIER) (WALLACE MIDDLE SCHOOL FACP - NOTIFIER). ALL NEW DEVICES AND WIRING SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. PROVIDE REQUIRED TESTING AND INSPECTION AS REQUIRED BY STATE OF CONNECTICUT FIRE MARSHALL'S OFFICE.

TELECOMMUNICATION GENERAL NOTES

1. ALL LOW VOLTAGE CABLING MUST BE INSTALLED ACCORDING TO BICSI GUIDELINES.
2. ALL CABLING SHALL CONFORM TO THE LATEST EDITION OF THE EIA/TIA STANDARDS.
3. ALL CABLING SHALL BE APPROPRIATELY LABELED.
4. CONTRACTOR SHALL NOT INSTALL ANY EQUIPMENT PRIOR TO ITS APPROVAL BY THE ARCHITECT AND ENGINEER. CONTRACTOR WILL BE LIABLE FOR ITS REMOVAL IN ANY SUCH CASE.
5. PROVIDE A COMPLETE GROUNDING SYSTEM FOR ALL LOW VOLTAGE SYSTEMS AS SHOWN.
6. CONTRACTOR TO PROVIDE PATHWAYS FOR LOW VOLTAGE SYSTEMS. PATHWAYS SHALL CONSIST OF IN-WALL CONDUIT, SURFACE MOUNTED SPLIT CHANNEL METALLIC RACEWAY, BACK BOXES, SLEEVES, CHASES, CABLE TRAY AND J-HOOKS. ANY PENETRATION OF A FIRE-RATED BARRIER MUST BE FIRE-STOPPED IN ACCORDANCE WITH LOCAL AND STATE LAWS AND THE AUTHORITY HAVING JURISDICTION.
7. PRIOR TO BEGINNING ANY WORK, SECURE NECESSARY PERMITS OR CLEARANCES FROM THE AUTHORITIES HAVING JURISDICTION. PROVIDE ALL LABOR AND MATERIALS FOR A COMPLETE INSTALLATION. WORK SHALL BE EXECUTED BY EXPERIENCED TRADESMEN WHO ARE LICENSED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED.
8. CONDUITS SHALL BE RUN BEHIND FINISHED SURFACES WHERE POSSIBLE UNLESS OTHERWISE NOTED.
9. THE TELECOMMUNICATION PLANS ARE DIAGRAMMATIC ONLY. COORDINATE TECHNOLOGY EQUIPMENT LOCATION AND INSTALLATION WITH EQUIPMENT BEING SERVED.
10. CONTRACTOR SHALL INFORM THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION AND PRIOR TO COMPLETION OF CONSTRUCTION TO ALLOW SUFFICIENT TIME FOR COORDINATION OF EXISTING BUILDING ACTIVITIES WITH THE CONSTRUCTION WORK.
11. THE CONTRACTOR SHALL INCLUDE IN THE WORK, WITHOUT EXTRA COST, ANY LABOR, MATERIALS, SERVICES, APPARATUS, DRAWINGS (IN ADDITION TO CONTRACT DRAWINGS AND DOCUMENTS), IN ORDER TO COMPLY WITH ALL APPLICABLE LAWS, INDICATED AND/OR SPECIFIED.
12. BEFORE SUBMITTING BIDS, THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL ADJOINING EXISTING BUILDINGS, EQUIPMENT AND SPACE CONDITIONS ON WHICH HIS/HER WORK IS ANY WAY DEPENDENT FOR THE BEST WORKMANSHIP AND OPERATION ACCORDING TO THE INTENT OF THE SPECIFICATIONS AND DRAWINGS. HE/SHE SHALL REPORT TO THE ARCHITECT/ENGINEER ANY CONDITION WHICH MIGHT PREVENT HIM/HER FROM INSTALLING HIS/HER EQUIPMENT IN THE MANNER SPECIFIED TEN DAYS PRIOR TO SUBMISSION OF BIDS.
13. NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT THE SITE, NOR FOR ANY ALLEGED MISUNDERSTANDING OF MATERIALS TO BE FURNISHED OR WORK TO BE PERFORMED.
14. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCOVERED CONFLICTS BETWEEN EXISTING INSTALLATIONS WHICH ARE NOT SCHEDULED FOR DEMOLITION AND THE NEW WORK INDICATED WITHIN THE CONTRACT DOCUMENTS. SUCH NOTIFICATION SHALL BE ACCOMPANIED BY A DRAWING DELINEATING THE PROPOSED SOLUTION PRIOR TO STARTING ANY WORK IN THE AFFECTED AREA.
15. THE EXACT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL SYSTEMS. PROVIDE ALL WIRES AND CABLES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON PLAN OR NOT.
16. REFER TO ARCHITECTURAL DRAWINGS FOR THE FINISH, EXACT LOCATION, ELEVATION, MOUNTING HEIGHTS AND DETAILS OF ALL LIGHT FIXTURES AND DEVICES WITHIN THE CEILING GRID FOR COORDINATION WITH TECHNOLOGY EQUIPMENT. REPORT ANY DISCREPANCIES TO THE ARCHITECT IMMEDIATELY.
17. WHEREVER CONDUITS PENETRATE WALLS OR FLOORS, SPACE REMAINING IN SUCH PENETRATIONS SHALL BE FILLED. FILLING MATERIAL SHALL BE FIRE RESISTIVE WITH RATING EQUAL TO THE RATING OF THE FLOOR OR WALL ITSELF.
18. PROVIDE AND LEAVE ACCESSIBLE PULL STRINGS IN ALL CONDUITS, RACEWAYS, SLEEVES AND CHASES TO LOW VOLTAGE WIRING TO BE INSTALLED.
19. OUTLET BOXES INSTALLED ON OPPOSITE SIDES OF THE SAME PARTITION SHALL BE STAGGERED. DO NOT MOUNT OUTLET BOXES BACK TO BACK.
20. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS, CUT SHEETS, CALCULATIONS AND EQUIPMENT LITERATURE FOR ALL EQUIPMENT BEING PROVIDED AS PART OF THIS SCOPE OF WORK. THE EXACT DEVICE OR PIECE OF EQUIPMENT TO BE INSTALLED MUST BE CLEARLY CALLED OUT FOR THE DESIGN TEAM TO REVIEW.
21. CONTRACTOR SHALL PROVIDE COMPLETE AS-BUILT DRAWINGS FOR REVIEW AND APPROVAL BY THE DESIGN TEAM PRIOR TO JOB COMPLETION.
22. CONTRACTOR SHALL PROVIDE A COMPLETE PUNCH LIST OF ALL INSTALLED SYSTEMS TO THE CONSTRUCTION MANAGER WHEN THE INSTALLED WORK IS READY TO BE EXAMINED BY THE DESIGN TEAM. INCOMPLETE SYSTEMS SHALL NOT BE REVIEWED UNTIL IT IS DETERMINED THAT THE SYSTEMS ARE APPROXIMATELY COMPLETE.
23. ALL TELECOMMUNICATIONS CABLING SHALL BE PLENUM RATED CAT6, 4 PAIRS, UNSHIELDED TWISTED PAIR CABLE, HUBBELL CAT NO C6RPX OR EQUAL ROUTED BETWEEN TELE/DATA ROOM AND EACH VOICE AND/OR DATA JACK. THE USE OF J-HOOKS IS PERMITTED IN AREAS WITH A SUSPENDED CEILING WHERE ADEQUATE CLEARANCE CAN BE OBTAINED. ALL WIRING IN SPACES WITHOUT CEILINGS OR AREAS WITH INADEQUATE SPACE ABOVE THE CEILING SHALL BE RUN IN EMT. PROVIDE TERMINATIONS AT BOTH PATCH PANEL AND OUTLET. PROVIDE CAT6 PATCH CORDS (36" L) FOR CONNECTION OF PATCH PANEL TO FUTURE ETHERNET SWITCH. CONTRACTOR SHALL TONE/TEST/TERMINATE ALL CONNECTIONS. PROVIDE ADDITIONAL CAT6 48 PORT PATCH PANEL(S) IN MDF OR IDF, AS APPLICABLE, AS REQUIRED TO SUPPORT ADDITIONAL DATA CONNECTIONS IN MDF/IDF. DATA PATCH PANELS SHALL BE HUBBELL M/N HP648 OR APPROVED EQUAL.
24. CABLE AND JACKS SHALL BE OF TYPE AND COLOR SHOWN:

FUNCTION	TYPE	CABLE AND JACK
DATA	CAT6	MATCH EXISTING (COORDINATE WITH OWNER)
VOICE	CAT6	MATCH EXISTING (COORDINATE WITH OWNER)
VIDEO	CAT6	MATCH EXISTING (COORDINATE WITH OWNER)
WAP	CAT6A	MATCH EXISTING (COORDINATE WITH OWNER)
CATV	RG6	MATCH EXISTING (COORDINATE WITH OWNER)

25. CONNECT TELECOMMUNICATION OUTLETS TO APPROPRIATE MDF/IDF IN ACCORDANCE WITH OWNERS REQUIREMENTS AND DIRECTION.

ELECTRICAL SYMBOL LEGEND

Power Devices

SYMBOL	DESCRIPTION
	GENERAL PURPOSE DUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP (MIN.).
	GENERAL PURPOSE QUADRUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP (MIN.).
GFCI OR GFCI	GENERAL PURPOSE GFCI RECEPTACLE (DUPLEX OR QUADRUPLEX) - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP.
WP/GFCI	GENERAL PURPOSE GFCI DUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP. OUTLETS INSTALLED OUTDOORS OR ON ROOF SHALL HAVE DIECAST ALUMINUM BOX 2-1/8" DEEP (MIN.), AND WHILE IN USE WEATHERPROOF COVER; THOMAS&BETTS CKSUV OR APPROVED EQUAL.
JB	JUNCTION BOX
SM	FRACTIONAL HORSEPOWER MOTOR STARTER WITH OVERLOAD IN NEMA 1 ENCLOSURE; SQ'D FG2P OR APPROVED EQUAL FOR INDOORS, FW2P FOR OUTDOORS WITH NEMA 4 ENCLOSURE
	FUSED DISCONNECT SWITCH-HEAVY DUTY, 3POLE WITH FUSE CLIPS SUITABLE FOR CLASS "R" FUSES. NEMA1 UNLESS NOTED. WP-WEATHER PROOF-NEMA3R ENCLOSURE. (NOMENCLATURE: 30A/20A = SWITCH SIZE/FUSE SIZE). SQ D CLASS 3110 OR EQUAL. DO NOT INSTALL ON TOP OF EQUIPMENT LABELS OR NAMEPLATES.
	COMBINATION MAGNETIC STARTER, FUSIBLE DISCONNECT SWITCH TYPE, 3POLE, FULL VOLTAGE NON-REVERSIBLE TYPE WITH: FUSED CONTROL TRANSFORMER, BI-METALLIC OVERLOAD RELAYS, ON/OFF PUSH BUTTONS OR HAND-OFF-AUTO.SELECTOR SWITCH, (1)N.O./(1)N.C., AUXILIARY CONTACTS AND LED PILOT LIGHT, CLASS "R" FUSE CLIPS. NEMA1 ENCLOSURE UNLESS NOTED- SQ D CLASS 8538 OR EQUAL. NEMA 1 - SIZE 1 UNLESS NOTED OTHERWISE.
VFD	VFD - SUPPLIED BY VENDOR, INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECTRICAL GENERAL NOTE #31 ON THIS SHEET FOR VFD CABLE REQUIREMENTS.

Lighting Controls

SYMBOL	DESCRIPTION
$	WALL SWITCH - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
$3K	KEYED WALL SWITCH (3-WAY) - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
$D	SLIDING DIMMER WITH ON/OFF SWITCH, RATED FOR 120/277V - 10/5 AMP, LEGRAND / CD4FBL3P OR APPROVED EQUAL. COLOR TO BE SELECTED BY ARCHITECT. PROVIDE LOW VOLTAGE WIRING BETWEEN SWITCH AND LIGHT FIXTURES.
EL	EMERGENCY LIGHTING CONTROL UNIT. WATTSTOPPER: ELCU-200 OR APPROVED EQUAL. SEE EMERGENCY LIGHTING RELAY DETAIL.
MS	MOTION SENSOR, CEILING MOUNTED, 2000 SQFT - HUBBELL / OMNI-DT-2000 OR APPROVED EQUAL. PROVIDE LOW VOLTAGE WIRING TO POWER PACK.
PP	POWER PACK - HUBBELL / UVPP OR APPROVED EQUAL. PROVIDE LOW VOLTAGE WIRING TO MOTION SENSOR. CONNECT TO LOCAL LIGHTING CIRCUIT WITH 2#12 + 1#12G - 3/4"C WIRING.

Fire Alarm Devices

SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
DD OR DD	DETECTION DEVICE - SMOKE DETECTOR - DUCT DETECTOR (INSTALLED BY MECHANICAL EQUIPMENT VENDOR, SUPPLIED AND WIRED BY ELECTRICAL CONTRACTOR). PROVIDE WITH CONTROL RELAY AND TEST SWITCH. SEE DUCT DETECTOR CONTROL WIRING DIAGRAM AND DUCT DETECTOR CONTROL WIRING DETAIL.
CTR	CONTROL RELAY - PROVIDE A CONTROL RELAY WITH EACH DUCT DETECTOR. PROVIDE LOW VOLTAGE WIRING TO FACP.
$DD	DUCT DETECTOR REMOTE TEST SWITCH - SEE DUCT DETECTOR CONTROL WIRING DIAGRAM & DUCT DETECTOR CONTROL WIRING DETAIL. COORDINATE LOCATION OF TEST SWITCH IN FIELD. PROVIDE A TEST SWITCH WITH EACH DUCT DETECTOR.
Xcd	FIELD CONFIGURABLE NOTIFICATION DEVICE (AUDIO/VISUAL) - CEILING MOUNTED HORN WITH STROBE AS SINGLE ASSEMBLY, REQUIRED CANDELA RATING 'X' INDICATED "X cd".
	DETECTION DEVICE - SMOKE DETECTOR - PHOTOELECTRIC PRODUCTS OF COMBUSTION DETECTOR

Communication Devices

SYMBOL	DESCRIPTION
X	TYPE CX TELECOMMUNICATION OUTLET - DATA WIRING DEVICE WITH RJ45, CAT6 JACKS. PROVIDE 4-PAIR, CAT-6 CABLE BETWEEN EACH JACK AND IDF, (TR) ROOM WITH ADEQUATE SLACK FOR FINAL TERMINATION TO NETWORK OR TELEPHONE PATCH PANEL. NUMBER INSCRIBED IN TRIANGLE SHOWS NUMBER OF JACKS/DROPS AT THAT OUTLET LOCATION. ELECTRICAL BOX TO BE 2-1/8" DEEP. SEE TYPE CX TELECOMMUNICATION OUTLET DETAIL ON SHEET E-500.
2 WAP	TYPE C2 TELECOMMUNICATION OUTLET - C2(WAP) - WITH TWO DATA CONNECTIONS FOR WIRELESS ACCESS POINT CONNECTION AND/OR PA SPEAKER CONNECTION. MOUNT ABOVE CEILING UNLESS OTHERWISE SHOWN OR STATED. SEE TYPE C2 TELECOMMUNICATION OUTLET FOR CEILING WIRELESS ACCESS POINT DETAIL ON SHEET E-500.
	WIRELESS ACCESS POINT - OWNER SUPPLIED, CONTRACTOR INSTALLED. SEE TYPICAL CEILING MOUNTED WIRELESS ACCESS POINT DETAIL ON SHEET E-500.
IFP	IFP - INTERACTIVE FLAT PANEL AND MOUNTING BRACKET PROVIDED BY OWNER.
IFP	IFP OUTLET - REFER TO IFP OUTLET DETAIL ON SHEET E-500 FOR DETAILS AND ALL REQUIRED ITEMS, ETC. TO BE PROVIDED.
T	TEACHER STATION OUTLET - MOUNT AT 18"AFF UNLESS OTHERWISE SHOWN OR STATED. PROVIDE ASSOCIATED CABLING, CONDUIT, DEVICES, ETC. REFER TO TEACHER STATION OUTLET DETAIL ON SHEET E-500 FOR FURTHER DETAILS AND ALL REQUIRED ITEMS, ETC. TO BE PROVIDED.
SP	PA SPEAKER - CEILING MOUNTED - PROVIDE ONE WAY CEILING MOUNTED SPEAKER BY VALCOM OR APPROVED EQUAL. SPEAKER SHALL BE ROUND, 8-INCH SPEAKER COLORED WHITE WITH VOLUME CONTROL AND ASSOCIATED POP-ON/POP-OFF KNOB. SPEAKER SHALL BE COMPATIBLE WITH SCHOOL PA SYSTEM. CONNECT SPEAKER TO SCHOOL'S PA SYSTEM AND CALL BUTTON TO ALLOW FOR ONE WAY BROADCAST COMMUNICATIONS THROUGH THE SPEAKER. ENSURE PROPER ONE WAY OPERATION WITH SCHOOL'S PA SYSTEM.
SP	SPEAKER/CLOCK COMBINATION UNIT - WALL MOUNT
	CLOCK - WALL MOUNT - PROVIDE ANALOG WIRED 12 INCH CLOCK BY VALCOM OR APPROVED EQUAL. CLOCK SHALL BE CONSTRUCTED OF A ROUND METAL CASE WITH SHATTER-PROOF POLYCARBONAGE CYSTAL. CLOCK SHALL BE COMPATIBLE WITH SCHOOL CLOCK SYSTEM. CONNECT CLOCK TO SCHOOL'S CLOCK SYSTEM TO ALLOW FOR PROPER CONTROL BY THE SCHOOLS'S MASTER CLOCK AS WELL AS POWER TO RUN THE CLOCK. PROVIDE DOUBLE GANG RECESSED METAL ELECTRICAL JUNCTION BOX IN WALL THROUGH WHICH TO INSTALL THE APPLICABLE CABLING. PROVIDE EMT CONDUIT FROM BOX INSIDE WALL TO POINT ABOVE ADJACENT CEILING. STUB CONDUIT OUT OF WALL 6 INCHES. ENSURE PROPER TWO WAY OPERATION WITH SCHOOL'S PA SYSTEM. CLOCK SHALL COVER/HIDE THE ABOVE MENTIONED JUNCTION BOX. MOUNT CLOCK AT 6'-6" AFF UNLESS OTHERWISE SHOWN OR INDICATED.
SP	PA SPEAKER - PROVIDE TWO WAY WALL MOUNT SPEAKER BY VALCOM OR APPROVED EQUAL. SPEAKER SHALL BE METAL, ANGLED WALL MOUNT WITH 8-INCH SPEAKER COLORED GRAY WITH BLACK CLOTH GRILLE. SPEAKER SHALL BE COMPATIBLE WITH SCHOOL PA SYSTEM. CONNECT SPEAKER TO SCHOOL'S PA SYSTEM AND CALL BUTTON TO ALLOW FOR TWO WAY COMMUNICATIONS THROUGH THE SPEAKER. PROVIDE SINGLE GANG RECESSED METAL ELECTRICAL JUNCTION BOX IN WALL THROUGH WHICH TO INSTALL THE APPLICABLE CABLING. PROVIDE EMT CONDUIT FROM BOX INSIDE WALL TO POINT ABOVE ADJACENT CEILING. STUB CONDUIT OUT OF WALL 6 INCHES. ENSURE PROPER TWO WAY OPERATION WITH SCHOOL'S PA SYSTEM. SPEAKER SHALL COVER/HIDE THE ABOVE MENTIONED JUNCTION BOX. MOUNT SPEAKER AT 6'-6" AFF UNLESS OTHERWISE SHOWN OR INDICATED.
CIB	PA SPEAKER CALL-IN SWITCH - PROVIDE WALL MOUNTED, RECESSED PA SPEAKER CALL-IN SWITCH BY VALCOM OR APPROVED EQUAL. CALL-IN SWITCH SHALL HAVE STAINLESS STEEL FACEPLATE WITH CALL-IN BUTTON AND ADJUSTABLE VOLUME CONTROL. CALL -IN SWITCH SHALL BE COMPATIBLE WITH SCHOOL PA SYSTEM AND ASSOCIATED SPEAKER. CONNECT CALL-IN SWITCH TO SCHOOL'S PA SYSTEM AND ASSOCIATED SPEAKER TO ALLOW FOR TWO WAY COMMUNICATIONS THROUGH THE SPEAKER AS WELL AS VOLUME CONTROL OF THE SPEAKER. PROVIDE SINGLE GANG RECESSED METAL ELECTRICAL JUNCTION BOX IN WALL IN WHICH TO INSTALL CALL-IN SWITCH AND THE APPLICABLE CABLING. PROVIDE EMT CONDUIT FROM BOX INSIDE WALL TO POINT ABOVE ADJACENT CEILING. STUB CONDUIT OUT OF WALL 6 INCHES. ENSURE PROPER CALL-IN OPERATION WITH SCHOOL'S PA SYSTEM. MOUNT AT 48" AFF.

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GRAPHIC CONVENTIONS

Wiring Devices

HOMERUN PANEL DESIGNATION → PLA-11 ← BRANCH CIRCUIT DESIGNATION

OUTLETS TO BE MOUNTED AT STANDARD HEIGHT UNLESS OTHERWISE NOTED

Disconnects

30A, WP ← DISCONNECT SIZE, WP: WEATHER PROOF

20A, RK1 ← FUSE SIZE, TYPE RK1

Lighting Fixtures

TYPE: A ← LUMINAIRE TYPE - SEE LIGHT FIXTURE SCHEDULE

PLA-11-d — CONTROL DEVICE IDENTIFICATION; BRANCH CIRCUIT NUMBER; PANEL DESIGNATION

Lighting Switches

$a ← CONTROL DEVICE IDENTIFICATION

D ← DEVICE TYPE DESIGNATION

ELECTRICAL ABBREVIATIONS

(D) - DENOTES EQUIPMENT OR WIRING TO BE DEMOLISHED
(E) - DENOTES EXISTING EQUIPMENT OR WIRING TO REMAIN
(N) - DENOTES NEW EQUIPMENT OR WIRING

A - AMPS
AF - AMPERE FRAME
AFF - ABOVE FINISHED FLOOR
AT - AMPERE TRIP
ATS - AUTOMATIC TRANSFER SWITCH
BLDG - BUILDING
C - CONDUIT
CB - CIRCUIT BREAKER
ENCL - ENCLOSURE
FA - FIRE ALARM
G - GROUND
GE - GENERAL ELECTRIC
KA - KILO AMPERE
KV - KILO VOLT
KVA - KILO VOLT AMPERE
LG - LG CORPORATION
LI - LONG TIME + INSTANTANEOUS
LSI - LONG TIME + SHORT TIME + INSTANTANEOUS
MCB - MAIN CIRCUIT BREAKER
MDP - MAIN DISTRIBUTION PANEL
MTS - MANUAL TRANSFER SWITCH
MVASC - MEGA VOLT AMPERE SHORT CIRCUIT
OC - ON CENTER
PH - PHASE
QO - QWIK OPEN PROTECTION
SPD - SURGE PROTECTIVE DEVICE
SW - SWITCH
SWBD - SWITCHBOARD
UG - UNDERGROUND
V - VOLTS
W - WATTS OR WIRE
Z - IMPEDANCE

LIGHTING FIXTURE SCHEDULE

TYPE	LAMPS	VOLTAGE	MOUNT	FIXTURE DESCRIPTION	MANUFACTURER/CATALOG NUMBER	REMARKS
A	LED 5500 LUMENS	120/277	SUSPENDED	4' WRAPAROUND FIXTURE	H E WILLIAMS / 17-4-8-40-AF-VBY-2-DRV-UNV OR APPROVED EQUAL	PROVIDE WITH MOUNTING HARDWARE. COORIDNATE MOUNTING HEIGHT AND LOCATION WITH MECHANICAL EQUIPMENT AND DUCTWORK.
B	LED 4760 LUMENS	120/277	RECESSED	2'X2' LED FLAT PANEL FIXTURE	MAXLITE / MLFP-22-G4-40-40 OR APPROVED EQUAL.	PROVIDE MOUNTING HARDWARE AS REQUIRED.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #3	9/27/23

SHEET TITLE

ELECTRICAL COVER SHEET

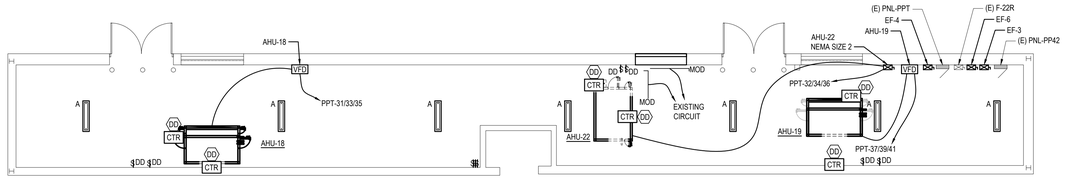
100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

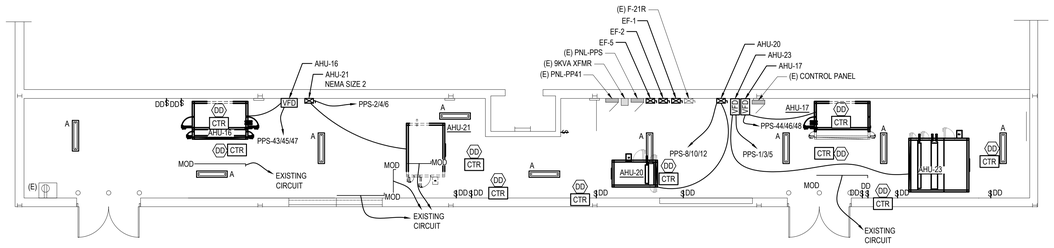
SHEET NO.

E-000

9/26/2023 2:30 PM



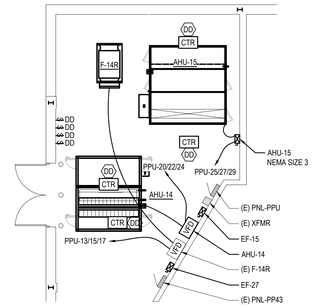
1 FAN ROOM #13 ELECTRICAL NEW WORK PLAN
E-101 SCALE: 1/8" = 1'-0"



2 FAN ROOM #14 ELECTRICAL NEW WORK PLAN
E-101 SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTE - FAN ROOM #13 AND #14:

1. CONNECT NEW LIGHTING FIXTURES AND LIGHT SWITCH TO THE EXISTING LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.



3 FAN ROOM #10 ELECTRICAL NEW WORK PLAN
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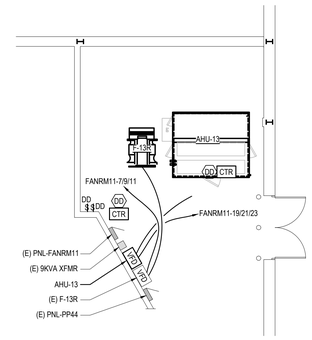

4 FAN ROOM #11 ELECTRICAL NEW WORK PLAN
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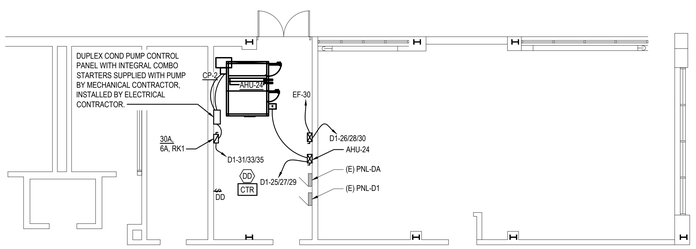
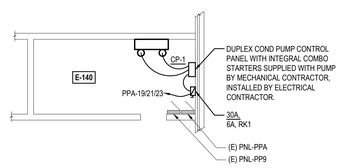
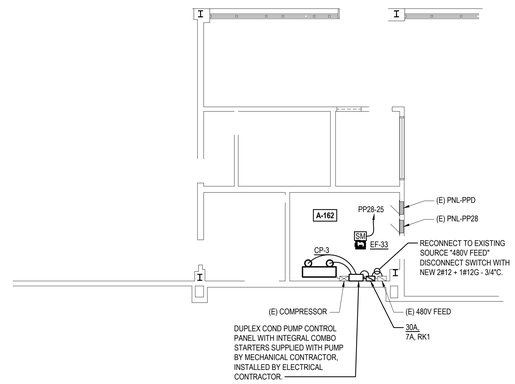


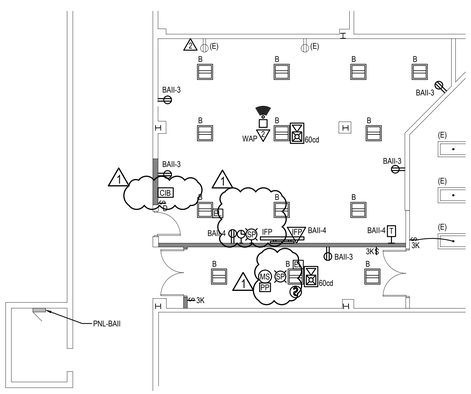
5 ROOM D104 ELECTRICAL NEW WORK PLAN
E-101 SCALE: 1/8" = 1'-0"



6 ROOM E140 ELEC NEW PLAN
E-101 SCALE: 1/8" = 1'-0"



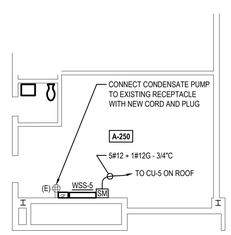
7 ROOM A162 ELEC DEMO PLAN
E-101 SCALE: 1/8" = 1'-0"



ELECTRICAL NEW WORK NOTES - MUSIC SUITE:

1. CONNECT NEW LIGHTING FIXTURES TO THE NEW LIGHT SWITCHES AND MOTION SENSOR / POWER PACKS SHOWN. CONNECT TO THE EXISTING LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.
2. IN THE EXISTING MUSIC ROOM, CONNECT THE NEW LIGHT SWITCH TO THE EXISTING LIGHT FIXTURES / LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.
3. WHERE EMERGENCY LIGHTING CONTROL UNIT IS SHOWN, CONNECT TO A LOCAL EMERGENCY LIGHTING CIRCUIT. CONTRACTOR TO FIELD VERIFY THE LOCATION OF THE EXISTING EMERGENCY LIGHTING CIRCUIT.
4. WHERE CALL BUTTON IS INDICATED, PROVIDE A NEW CALL BUTTON AND CALL SPEAKER MATCHING EXISTING AND CONNECT TO THE SCHOOL'S EXISTING CALL BUTTON SYSTEM. COORDINATE SYSTEM TYPE AND REQUIREMENTS WITH OWNER. PROVIDE NEW WIRE AND CONDUIT AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. CONFIRM PROPER OPERATION AND MAKE ALL MODIFICATIONS AND REPAIRS TO ENSURE PROPER OPERATION.
5. PROVIDE NEW RECEPTACLES, WIRE, AND CONDUIT AND CONNECT TO THE PANEL INDICATED.
6. PROVIDE NEW TELECOMMUNICATION DEVICES WITH NEW CABLING AND CONDUIT.
7. PROVIDE NEW FIRE ALARM DEVICES WITH NEW WIRE AND CONDUIT.
8. PROVIDE A NEW SPEAKER / CLOCK COMBINATION UNIT MATCHING EXISTING. PROVIDE NEW CABLING, WIRE, AND CONDUIT TO CONNECT TO THE EXISTING SYSTEMS. CONFIRM PROPER OPERATION AND MAKE ALL MODIFICATIONS AND REPAIRS TO ENSURE PROPER OPERATION.

8 MUSIC SUITE ELEC NEW PLAN
E-101 SCALE: 1/8" = 1'-0"



9 ROOM A250 ELEC NEW PLAN
E-101 SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTES:

1. UNLESS NOTED OTHERWISE, FOR ALL NEW AHU'S, PROVIDE NEW VFD CABLE FROM EXISTING VFD TO NEW AHU. SEE PANEL SCHEDULES FOR MORE INFORMATION. PROVIDE NEW WIRE AND CONDUIT EXISTING VFD TO SOURCE PANEL. SEE ELECTRICAL GENERAL NOTE #31 ON SHEET E-000 FOR VFD CABLE REQUIREMENTS.
2. PROVIDE NEW STARTERS FOR ALL NEW CONDENSATE PUMPS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
3. WHERE SHOWN, PROVIDE NEW FRACTIONAL HORSEPOWER MOTOR STARTERS FOR ALL NEW EXHAUST FANS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
4. WHERE SHOWN, FOR ALL EXHAUST FANS, PROVIDE A NEW DISCONNECT SWITCHES AT THE UNITS AND NEW COMBO STARTERS IN THE PENTHOUSES. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
5. CONNECT NEW MODs TO THE EXISTING SOURCE WITH NEW 2#12 + 1#12G - 3/4"C.

STUDIOJAED
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CONSULTANT

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #3	9/27/23

SHEET TITLE

INTERIOR ELECTRICAL PLANS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

E-101

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: - THIS ELECTRONIC DATA TRANSMITTED (DATA) MAY BE ALTERED DURING TRANSIT AND TRANSLATION. - JAED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. - THE RECEIVER WILL COMPARE THE DATA WITH AVAILABLE HARD COPIES. - JAED CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. - THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PROVIDED. - THE RECEIVER WILL NOT DISTRIBUTE THE DATA TO ANY OTHER PARTY WITHOUT JAED CORPORATION'S WRITTEN CONSENT. - THE RECEIVER AGREES TO DELETE ALL COPIES OF THE DATA FROM ITS MEMORY AND DISCONTINUE ITS USE IF ASKED BY JAED CORPORATION TO DO SO.

9/26/2023 2:30 PM

Company Information

Date:	**Tuesday, September 12, 2023**
RFP #:	**7815: HVAC Replacements at Crosby/Wallace**

Representative:	Lee Scheinfeld
Company Name:	Action Air Systems
City, State, Zip Code	Manchester Ct 06042
Tel:	860 645-8838
Fax:	860 645-0226
Email:	lee@actionairsystems.com

Representative:	Don Jillson
Company Name:	Saccacco Mechanical
City, State, Zip Code	Wtby Ct 06706
Tel:	203-410-6168
Fax:	
Email:	DJillson@Saccacco.com

Representative:	Daniela Londono
Company Name:	All State Construction
City, State, Zip Code	Farmington CT 06032
Tel:	860 357 03 05
Fax:	
Email:	dlondono@allstateconstructioninc.com

Representative:	Jeremy Doubleday
Company Name:	Saccacco mechanical
City, State, Zip Code	Waterbury CT 06705
Tel:	203 720-3823
Fax:	
Email:	Jdoubleday@Saccacco.com

Company Information

Date:	**Tuesday, September 12, 2023**
RFP #:	**7815: HVAC Replacements at Crosby/Wallace**

Representative:	Mike Girard
Company Name:	SNE Building Systems
City, State, Zip Code	East Granby CT
Tel:	860 882 3178
Fax:	
Email:	Michael.girard@snebuildingsystems.com

Representative:	Kevin George
Company Name:	Synergy Electric
City, State, Zip Code	Plainville, CT 06062
Tel:	860-966-8469
Fax:	
Email:	kgeorge@synergyelectric.net

Representative:	Brian Karwowski
Company Name:	Sav-Mor Cooling + Heating
City, State, Zip Code	Southington, CT 06489
Tel:	860-621-9959
Fax:	—
Email:	Brian@savmorct.com

Representative:	JAY Hicken
Company Name:	PRO-MECH
City, State, Zip Code	BLOOMFIELD
Tel:	860 243 3952
Fax:	
Email:	PROMECHINC@COMCAST.NET

Company Information

Date:	**Tuesday, September 12, 2023**
RFP #:	**7815: HVAC Replacements at Crosby/Wallace**

Representative:	David Spangler
Company Name:	Studio JAED
City, State, Zip Code	Bear, DE, 19701
Tel:	302-832-1652
Fax:	302-832-1433
Email:	spanglerd@studiojaed.com

Representative:	
Company Name:	
City, State, Zip Code	
Tel:	
Fax:	
Email:	

Representative:	
Company Name:	
City, State, Zip Code	
Tel:	
Fax:	
Email:	

Representative:	
Company Name:	
City, State, Zip Code	
Tel:	
Fax:	
Email:	

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #4

October 3, 2023

RFP 7815 HVAC Replacement Crosby High School/Wallace Middle Schools

All proposals of the above captioned project are hereby notified that the Contract Documents for the above referenced project are amended as noted in this Addendum No. 4. This Addendum shall be part of the Contract Documents for the above referenced project as provided in the Request for Proposal.

Receipt of this Addendum shall be acknowledged in writing on the form included in Attachment C of the RFP. Failure to do so may subject Proposer to disqualification.

The Contract Documents are hereby amended as follows:

The proposal due date has been extended to October 19, 2023 at 11:30AM.

NOTE: Each Proposal over $50,000.00 submitted shall be accompanied by a Proposal Security (a Certified Check or Bid Bond) in the amount of ten (10) percent of the Total Proposal Price.

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE: (203) 574-6749 • FAX: (203) 597-3437

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #5

October 4, 2023

RFP 7815 HVAC Replacement Crosby High School/Wallace Middle Schools

All proposals of the above captioned project are hereby notified that the Contract Documents for the above referenced project are amended as noted in this Addendum No. 5. This Addendum shall be part of the Contract Documents for the above referenced project as provided in the Request for Proposal.

Receipt of this Addendum shall be acknowledged in writing on the form included in Attachment C of the RFP. Failure to do so may subject Proposer to disqualification.

The Contract Documents are hereby amended as follows:

The question portal has been reopened and will close at 2:00PM on October 10, 2023.

Answers to questions will be posted by 2:00PM on October 13, 2023.

The proposal due date has been extended to October 19, 2023 at 11:30AM.

NOTE: Each Proposal over $50,000.00 submitted shall be accompanied by a Proposal Security (a Certified Check or Bid Bond) in the amount of ten (10) percent of the Total Proposal Price.

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

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MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #6

October 13, 2023

RFP 7815 HVAC Replacement Crosby High School/Wallace Middle Schools

All proposals of the above captioned project are hereby notified that the Contract Documents for the above referenced project are amened as noted in this Addendum No. 6. This Addendum shall be part of the Contract Documents for the above referenced project as provided in the Request for Proposal.

Receipt of this Addendum shall be acknowledged in writing on the form included in Attachment C of the RFP. Failure to do so may subject Proposer to Disqualification.

The Contract Documents are hereby amended as follow:

Changes to Specifications:

1. *Section 23 07 13 – Duct Insulation*
    a. Revised flexible glass fiber product description
    b. Revised insulation schedules
    c. Removed requirement to jacket and paint ductwork exposed in mechanical rooms
2. *Section 23 73 14* – Custom Air Handling Units
    a. Revised acceptable manufacturers
3. *Section 26 29 13 - Enclosed Controllers*
    a. Added non-combination starters to section 2.02-I.
    b. Non-combination starters may be provided in place of combination starters for fans where within sight of the associated circuit breaker.

Changes to Drawings:

Architectural

1. Drawing A-601

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE: (203) 574-6749 • FAX: (203) 597-3437

a. Revised pipe guard rail detail

Mechanical

4. *Drawing M-201*
    a. Revised sheet reference in Piping New Work Note #4
    b. Added note at AHU-24
    c. Clarified steam and steam condensate notes at AHU-24. Offset piping for clarity.
5. *Drawing M-202*
    a. Revised "Mechanical New Work Notes" title to "Piping New Work Notes" to match drawing M-201.
    b. Revised sheet reference in Piping New Work Note #4
    c. Added note at AHU-11
6. Drawing M-700
    a. Revised AHU-11 sequence of operations
7. *Drawing M-701*
    a. Revised AHU-16,17,18,19 sequence of operations

Electrical

1. *Drawing E-101*
    a. Added a 120V circuit to all AHUs for connection to AHU's integral receptacle and LED lighting.
    b. Deleted the combo motor starter and added a VFD for EF-1, EF-2, EF-3, and EF-4.
2. *Drawing E-102*
    a. Added a 120V circuit to all AHUs for connection to AHU's integral receptacle and LED lighting.
    b. Deleted the combo motor starter and added a VFD for EF-8 and EF-9
3. *Drawing E-103*
    a. Changed "combo starter" to "VFD" at EF-1, EF-2, EF-3, EF-4, EF-8, and EF-9.
4. *Drawing E-600*
    a. Added a panel schedule for existing PNL-PP31, PNL-PP33, and PNL-PP37. Added a circuit breaker to PNL-PP31, PNL-PP33, and PNL-PP37 for the AHU 120V circuit for integral receptacle and lights.
    b. Added a circuit breaker to PNL-PP32, PNL-PP35, and PNL-PP36 for the AHU 120V circuit for integral receptacle and lights.
    c. Added a circuit to the spare circuit breaker in PNL-PP34 for the AHU 120V circuit for integral receptacle and lights.
    d. Removed panel schedule for PNL-PPN (moved panel schedule to sheet E-601).
5. *Drawing E-601*

a. Added panel schedule for PNL-PPN (moved panel schedule from sheet E-600).
b. Added a circuit breaker to PNL-PP4, PNL-PP38, PNL-PP39, PNL-PP41, PNL-PP42, PNL-PP43, and PNL-PP44 for the AHU(s) 120V circuit for integral receptacles and lights.

6. *Drawing E-602*
   a. Added a panel schedule for existing PNL-DA. Added a circuit breaker to PNL-DA for the AHU 120V circuit for integral receptacle and lights.

Question: Would EOR accept Carrier & Mafna listed as an approved equal for the air handlers.
Answer: York, Daikan, and Trane are the approved equal manufacturers for the non-custom air handling units. The approved manufacturers for the custom air handling units are Nortek, Temtrol, Governair, Innovent, Air Enterprises, Buffalo Air Handling, and Huntair. Carrier and Mafna are not approved equals to the applicable manufacturers. Refer to revised drawings in addendum #6.

Question: The Existing Control Diagram Drawings M-800 through M-806 indicate existing conditions, however, can you verify that they are not to be followed as far as the quantity of coils is concerned, because In the Equipment Schedule M-500 and the Detail drawing M-600 seem to indicate 26 Cooling Coils (6-Singles and 10 doubles) and 27 Steam Coils (23 singles and 2 doubles). But Drawings M-800 through M-806 shows less Cooling Coils (with no doubles) and more Steam Coils (with many doubles). Can you Clarify?
Answer: Refer to Drawing M-500 to confirm the correct quantities of cooling coils and steam heating coils.

Question: Drawing E-001 symbols shows each fan receives commination motor starter disconnect. Is necessary as circuit breaker is in line of site?
Answer: For fans with a combination motor starter within sight of the associated circuity breaker, it is acceptable to provide a non-combination motor starter. Refer to revised drawings in addendum #6.

Question: Drawing M5-100 Exhaust fan notes PROVIDE FANS EF-1,2,3,4,8 & 9 WITH STANDARD MOTORS. These fans and more not identified in drawings are > 1HP do they require soft start or VFD?
Answer: Provide VFDs for each of these fans. Refer to revised drawings in addendum #6.

Question: Drawing M5-100 notes PROVIDE LED LIGHTING IN ALL ACCESS SECTIONS. PROVIDE GFCI CONVENIENCE OUTLET ON THE EXTERIOR OF THE SUPPLY FAN

SECTION. Current electrical drawings do not provide circuitry for devices, where will the power come from?
Answer: All AHU's shall have a separate, dedicated, 120V connection for the LED lights and convenience outlets. Refer to revised drawings in addendum #6.

Question: Drawing M5-100 AHU schedule notes Provide all fans with variable frequency drives, except where being reused, however on drawing E-102 shows AHU 11 receiving a combination starter / disconnect for a 15 HP fan motor. This motor requires a VFD correct?
Answer: Provide a combination starter/disconnect as shown and specified. No VDF is required for this AHU.

Question: There may be a better delivery solution from a different manufacture. Can this be discussed during Scope review?
Answer: Proposals shall include equipment as shown and specified. Acceptable alternative manufacturers are indicated in the bidding documents where applicable.

Question: Will the AHU's require a separate power supply for the service lights and convenience outlets?
Answer: All AHU's shall have a separate, dedicated, 120V connection for the LED lights and convenience outlets. Refer to revised drawings in addendum #6.

Question: Addendum 3 did not provide part numbers for the clocks and pa speakers that need to mated and be compatible with the buildings system. Please provide part numbers for the pa speakers and wall clocks.
Answer: Clocks and speakers are to be provided as shown and specified in accordance with the performance, material, etc. requirements indicated.

Question: The specified AHU's have a current lead time of 25 weeks. Can the project completion date be extended due to this lead time?
Answer: The city will work with the awarded contractor regarding the final contract completion date because of material lead time. The contract is intended to be 1-Year, which should allow the awarded contractor to complete the scope with a 25-week lead time on the material.

Question: Duct insulation specification section Part 3 - 3.02-E on page 27 07 13 - 4 states for ducts exposed in mechanical rooms to have Aluminum jack and paint per architects specifications. Is this requirement required?

Answer: Ducts exposed in mechanical rooms shall not require aluminum jacketing or paint. Refer to revised drawings in addendum #6.

Question: Equipment lead times may drive the project past Completion date deadline. How will this be handled? Current best guess is March 2025. If all equipment arrives by August 2024 does not mean the project can be completed on time.
Answer: The city will work with the awarded contractor regarding the final contract completion date because of material lead time.

Question: Will the city be able to complete the process of receipt of invoice to payment in 30 days?
Answer: Payment will be made by the City upon its review and approval of the Contractor's invoices for completed work. Section 6.10.1 of the draft form contract further outlines the Payment applications under this contract.

NOTE: Each Proposal over $50,000.00 submitted shall be accompanied by a Proposal Security (a Certified Check or Bid Bond) in the amount of ten (10) percent of the Total Proposal Price.

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

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ARCHITECTS ENGINEERS FACILITIES SOLUTIONS

Addendum #6

Addendum Date: October 13, 2023

Project: Crosby HS/Wallace MS Complex – HVAC Equipment Replacement

The work herein shall be considered part of the bid documents for the referenced project and carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Acknowledge receipt of addendum on the bid form as indicated.

Changes to Specifications:

1. Section 23 07 13 – Duct Insulation

a. Revised flexible glass fiber product description
b. Revised insulation schedules
c. Removed requirement to jacket and paint ductwork exposed in mechanical rooms

2. Section 23 73 14 – Custom Air Handling Units

a. Revised acceptable manufacturers

3. Section 26 29 13 - Enclosed Controllers

a. Added non-combination starters to section 2.02-I.
b. Non-combination starters may be provided in place of combination starters for fans where within sight of the associated circuit breaker.

Changes to Drawings:

Architectural

1. Drawing A-601

a. Revised pipe guard rail detail

Mechanical

4. Drawing M-201

a. Revised sheet reference in Piping New Work Note #4
b. Added note at AHU-24
c. Clarified steam and steam condensate notes at AHU-24. Offset piping for clarity.

5. Drawing M-202

a. Revised “Mechanical New Work Notes” title to “Piping New Work Notes” to match drawing M-201.
b. Revised sheet reference in Piping New Work Note #4
c. Added note at AHU-11

6. Drawing M-700
    a. Revised AHU-11 sequence of operations
7. *Drawing M-701*
    a. Revised AHU-16,17,18,19 sequence of operations

Electrical

1. *Drawing E-101*
    a. Added a 120V circuit to all AHUs for connection to AHU's integral receptacle and LED lighting.
    b. Deleted the combo motor starter and added a VFD for EF-1, EF-2, EF-3, and EF-4.
2. *Drawing E-102*
    a. Added a 120V circuit to all AHUs for connection to AHU's integral receptacle and LED lighting.
    b. Deleted the combo motor starter and added a VFD for EF-8 and EF-9
3. *Drawing E-103*
    a. Changed "combo starter" to "VFD" at EF-1, EF-2, EF-3, EF-4, EF-8, and EF-9.
4. *Drawing E-600*
    a. Added a panel schedule for existing PNL-PP31, PNL-PP33, and PNL-PP37. Added a circuit breaker to PNL-PP31, PNL-PP33, and PNL-PP37 for the AHU 120V circuit for integral receptacle and lights.
    b. Added a circuit breaker to PNL-PP32, PNL-PP35, and PNL-PP36 for the AHU 120V circuit for integral receptacle and lights.
    c. Added a circuit to the spare circuit breaker in PNL-PP34 for the AHU 120V circuit for integral receptacle and lights.
    d. Removed panel schedule for PNL-PPN (moved panel schedule to sheet E-601).
5. *Drawing E-601*
    a. Added panel schedule for PNL-PPN (moved panel schedule from sheet E-600).
    b. Added a circuit breaker to PNL-PP4, PNL-PP38, PNL-PP39, PNL-PP41, PNL-PP42, PNL-PP43, and PNL-PP44 for the AHU(s) 120V circuit for integral receptacles and lights.
6. *Drawing E-602*
    a. Added a panel schedule for existing PNL-DA. Added a circuit breaker to PNL-DA for the AHU 120V circuit for integral receptacle and lights.

END

SECTION 23 07 13
DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Duct insulation.

B. Duct Lagging.

C. Insulation jackets.

1.02 RELATED REQUIREMENTS

A. Section 09 90 00 - Painting and Coating: Painting insulation jackets.

B. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

C. Section 23 05 53 - Identification for HVAC Piping and Equipment.

D. Section 23 31 00 - HVAC Ducts and Casings: Glass fiber ducts.

1.03 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

C. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

D. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.

E. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

F. ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation.

G. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material).

H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

I. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

K. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association.

L. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.

M. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

B. Manufacturer's Instructions: Indicate installation procedures necessary to ensure acceptable workmanship and that installation standards will be achieved.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section with not less than three years of documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of experienceand approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.07 FIELD CONDITIONS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

2.02 GLASS FIBER, FLEXIBLE

A. Manufacturer:
   1. Knauf Insulation: www.knaufusa.com.
   2. Johns Manville Corporation: www.jm.com/#sle.
   3. Owens Corning Corp: www.owenscorning.com/#sle.
   4. CertainTeed Corporation: www.certainteed.com/#sle.

B. Insulation: ASTM C553; flexible, noncombustible blanket.
   1. K value: 0.25 at 75 degrees F, when tested in accordance with ASTM C518.
   2. Minimum "R" Value: Minimum R value of (8) is required for interior installations and a minimum R value of (12) is required for exterior installations.
   3. Maximum Service Temperature: 450 degrees F.
   4. Maximum Water Vapor Sorption: 5.0 percent by weight.

C. Vapor Barrier Jacket:
   1. Kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
   3. Secure with pressure sensitive tape.

D. Vapor Barrier Tape:
   1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Outdoor Vapor Barrier Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

F. Tie Wire: Annealed steel, 16 gage.

2.03 GLASS FIBER, RIGID

A. Manufacturer:
   1. Knauf Insulation: www.knaufusa.com.
   2. Johns Manville Corporation: www.jm.com/#sle.
   3. Owens Corning Corp: www.owenscorning.com.
   4. CertainTeed Corporation: www.certainteed.com/#sle.

B. Insulation: ASTM C612; rigid, noncombustible blanket.

1. K Value: 0.24 at 75 degrees F, when tested in accordance with ASTM C518.
2. Minimum "R" Value: Minimum R value of (8) is required for interior installations and a minimum R value of (12) is required for exterior installations.
3. Maximum service temperature: 450 degrees F.
4. Maximum Water Vapor Sorption: 5.0 percent.

C. Vapor Barrier Jacket:
1. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
2. Secure with pressure sensitive tape.

D. Vapor Barrier Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Indoor Vapor Barrier Finish:
1. Cloth: Untreated; 9 oz/sq yd weight, glass fabric.
2. Vinyl emulsion type acrylic, compatible with insulation, black color.

2.04 JACKETS

A. Canvas Jacket: UL listed 6 oz/sq yd plain weave cotton fabric treated with dilute fire retardant lagging adhesive.
1. Lagging Adhesive:
a. Compatible with insulation.

B. Aluminum Jacket: ASTM B209 (ASTM B209M).
1. Thickness: 0.016 inch sheet.
2. Finish: Embossed.
3. Joining: Longitudinal slip joints and 2 inch laps.
4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.
6. Metal Jacket Bands: 3/8 inch wide; 0.010 inch thick stainless steel.

2.05 DUCT LAGGING

A. Manufacturers:
1. Sound Seal: www.soundseal.com
2. Kinetics Noise Control: www.kineticsnoise.com.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Lagging: Loaded vinyl noise barrier with a scrim reinforced aluminum foil facing on one side with a 1" thick fiberglass decoupler.
1. Apparent Thermal Conductivity: Maximum of.25 at 75 degrees F
2. Service Temperature: Up to 350 degrees F.

C. Adhesive: Waterproof, fire-retardant type, ASTM C916.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that ducts have been tested before applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Insulated ducts conveying air below ambient temperature:
1. Provide insulation with vapor barrier jackets.

2. Finish with tape and vapor barrier jacket.
3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

D. Insulated ducts conveying air above ambient temperature:
1. Provide with or without standard vapor barrier jacket.
2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

E. Exterior Applications: Provide insulation with vapor barrier jacket. Cover with with calked aluminum jacket with seams located on bottom side of horizontal duct section. Provide tapered caps on all horizontal ducts for shedding water.

F. External Duct Insulation Application:
1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
2. Secure insulation without vapor barrier with staples, tape, or wires.
3. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

3.03 SCHEDULES

A. INDOOR DUCT AND PLENUM APPLICATION SCHEDULE
1. NOTE: Apply duct lagging where indicated on drawings.
2. Service: Rectangular and Round, supply-air, return-air, and outside-air ducts.
   a. Material: Glass fiber blanket.
   b. Minimum "R" value: 8.
   c. Vapor Retarder Required: Yes.
3. Service: Rectangular and Round, exhaust-air ducts and relief-air ducts within 5 feet of exterior exhaust opening
   a. Material: Glass fiber blanket.
   b. Minimum "R" value: 8.
   c. Vapor Retarder Required: Yes.

B. OUTDOOR DUCT AND PLENUM APPLICATION SCHEDULE
1. Service: Round, supply-air ducts.
   a. Material: Glass fiber board.
   b. Thickness: 3 inches.
   c. Minimum "R" value: 12.
   d. Field-Applied Jacket: aluminum
      1) Aluminum Thickness: 0.032 inch
   e. Vapor Retarder Required: Yes.
2. Service: Round, return-air ducts.
   a. Material: Glass fiber board.
   b. Thickness: 3 inches.
   c. Minimum "R" value: 12.
   d. Field-Applied Jacket: aluminum
      1) Aluminum Thickness: 0.032 inch
   e. Vapor Retarder Required: Yes.
3. Service: Rectangular, supply-air ducts.
   a. Material: Glass fiber board.

b. Thickness: 3 inches.
c. Minimum "R" value: 12.
d. Field-Applied Jacket: aluminum
   1) Aluminum Thickness: 0.032 inch
e. Vapor Retarder Required: Yes.

4. Service: Rectangular, return-air ducts.
   a. Material: Glass fiber board.
   b. Thickness: 3 inches.
   c. Minimum "R" value: 12.
   d. Field-Applied Jacket: aluminum
      1) Aluminum Thickness: 0.032 inch
   e. Vapor Retarder Required: Yes.

END OF SECTION

SECTION 23 73 14
CUSTOM AIR-HANDLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Custom Air-Handling Units

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of all units with size, location and installation of service utilities.

B. Coordinate the work with other trades for installation of indoor air handling units.

C. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

D. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data:
   1. Published Literature: Indicate dimensions, weights, capacities, ratings, gages and finishes of materials, and electrical characteristics and connection requirements.
   2. Filters: Data for filter media, filter performance data, filter assembly, and filter frames.
   3. Fans: Performance and fan curves with specified operating point clearly plotted, power, RPM.
   4. Sound Power Level Data: Fan outlet and casing radiation at rated capacity.
   5. Electrical Requirements: Power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.

C. Sustainable Design Documentation: Submit manufacturer's product data on refrigerant used, showing compliance with specified requirements.

D. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.

E. Executed Warranty: Submit documentation of final executed warranty completed in Owner's name and registered with manufacturer.

F. Manufacturer's Instructions: Include installation instructions.

G. Maintenance Data: Include instructions for lubrication, filter replacement, motor and drive replacement, spare parts lists, and wiring diagrams.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept products on site in factory-fabricated protective containers, with factory-installed shipping skids and lifting lugs. Inspect for damage.

B. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

C. Do not operate units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide minimum two year manufacturer parts and labor warranty covering repair or replacement due to defective materials or workmanship.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, all air-handling units shall be manufactured by Nortek Ventrol. Other manufacturers offering similar products may be incorporated, they include and are limited to, the following:
   1. Nortek Ventrol, basis of design
   2. Temtrol
   3. Governair
   4. Huntair
   5. Innovent
   6. Air Enterprises
   7. Buffalo Air Handling

2.02 MANUFACTURED UNITS

A. General Description: Factory assembled, consisting of fans, motor and drive assembly, coils, dampers, plenums, filters, drip pans, mixing dampers and other accessories as indicated on drawings or schedules.

B. Motor and Electrical Components: Refer to Division 15 Section "Electrical Requirements for Mechanical Equipment."

2.03 AIR HANDLING UNITS

A. GENERAL: This specification covers the performance requirements and the material/construction requirements of custom-built air handling units. The detailed performance and data sheets and/or equipment schedule drawing(s) are considered part of this specification.

B. Submittal: The successful manufacturer shall provide Shop drawings and submittal data for review. The submittals and shop drawings shall be complete in all respects including the following information:
   1. Overall unit dimensions and individual components and section dimensions.
   2. Sound analysis consisting of inlet, outlet and radiated sound power levels per unit performed by an AMCA 300 accredited lab.
   3. Shipping and operating weight of unit and/or sections.
   4. Materials of construction.
   5. Cross section details of typical wall, floor and roof construction.
   6. Component equipment data as detailed in component specification section.
   7. Unit performance data including sound data.
   8. Details of coil support in a coil bank.
   9. Piping connection sizes and approximate locations.
   10. Door and window sizes and elevations.
   11. Drain pan details.
   12. Operating and Maintenance Data

C. Product Delivery, Storage and Handling
   1. All equipment shall be delivered to the job site suitably packaged and protected for overland trucking using heavy-duty protective shrink-wrap plastic. Where multiple units are required, a schedule of priority will be furnished which shall determine the manufacturing and delivery sequence. In general, units shall be delivered in one piece unless indicated otherwise. Where building constraints, unit size or trucking limitations

require that units ship in more than one piece, the manufacturer shall indicate all split points on the shop drawings. All items shipped loose such as filters, steam humidifier assemblies, caulking, etc. shall be itemized on the packing slip and be suitably secured in the unit or on a separate pallet.

D. General Design Considerations
   1. Coils shall be arranged so that space between coils is a minimum of 24", unless specifically shown otherwise on drawings. Fan compartment shall be arranged such that the space between the fan inlet(s) and the housing is a minimum of 75% of fan diameter, unless noted or shown otherwise on the schedule or drawings. Coil assembly shall have provisions to facilitate total or partial removal from coil bank. Housing shall be designed and sealed to minimize air and water vapor leakage. Housing shall be designed and tested to meet maximum leakage of SMACNA class 3 when tested in accordance with the procedure outlined in the SMACNA HVAC Air Duct Leakage Manual.

2.04 UNIT CONSTRUCTION

A. Unit Base / Floor / Frame Work:
   1. The unit base frame is manufactured with an aluminum 2" X 5" X 0.125" HSS type rectangular structural tubing. Unit base is fitted with 20" on-center C-channel cross support members. The completed unit base coating must be able to sustain salt spray testing of 1000 hours, per ASTM 117B. Sheet metal formed unit bases are not acceptable. The "Double Bottom" base features a 4.5" thick insulated walk-on floor as specified below. The base rails are fitted with Bolted removable lifting lugs at the unit or module (if demounted) corners. Sheet metal lifting lugs are not acceptable. Floor liner shall be 16-ga, G-90 galvanized steel. Floor seams shall be sealed to create leak free joints. The perimeter of the unit consists of a 1½" upturned perimeter lip to create a drainable floor. The under floor liner shall be G-90 galvanized steel and recessed nominal ½" to allow for air circulation under the unit floor. All floor openings on outdoor units are complete with floor grating. The entire unit base must be polyurethane foamed in place with a minimum thickness of 3" and a minimum R value of 20. Fiberglass insulated unit bases will not be acceptable. Maximum deflection of floor shall be L/360 at design loading (L=span in inches), the minimum floor design load is 150 lbs/sqft (distributed load), and the maximum point load on floor shall be 300 lbs (over 1 square foot).

CONSTRUCTION OPTIONS			
WALL THICKNESS	**R-VALUE**	**CABINET INSULATION OPTIONS**	**THERMAL BREAK OPTIONS**
2"	**16.0**	**INJECTED FOAM**	**GASKET THERMAL BREAK**

A. Panel structural strength:
   1. Maximum deflection of walls and roof shall be L/180 at +/- 8" w.c. for 2" construction (L= span in inches). Deflection is worst case at the center of wall span.
      a. Minimum roof and wall load is 75 lbs /sqft (distributed load such as wind and snow)
      b. Maximum point load on roof shall be 300 lbs (over 1 square foot)

B. Cabinet Insulation:
   1. The polyurethane injected foam, 2.5 pcf with an effective thermal conductivity (C) of 0.125 BTU in/hr sq.ft°F). The foam insulation has an ozone depletion potential of 0, a global warming potential of 0 and is VOC exempt. It is also rated UL94 HF-1.

C. Cabinet – Smooth Exterior Panels:
   1. Formed and reinforced wall panels, fabricated to allow removal for access to internal parts and components, with joints between sections sealed. Outside Casing shall be solid 16-ga, Bright spangled G-90 galvanized steel, double die-formed 2" thick panel secured with 1/4" hex head, zinc plated fasteners at 12" on-centers.The inside liner shall be 20-ga, G-90 galvanized steel. Liner shall be secured with sheet metal screws to outside casing at 12" on-centers. The unit construction needs to be thermal break PVC (poly-vinyl chloride) closed cell foam gasket meeting NFPA 90 A and B. The panel construction must meet a minimum R value of 16 in the walls and ceiling.

D. Drain Pans and Cooling Coil Support Structure
   1. Condensate Drain Pans are IAQ design, 18-ga., 304 stainless steel and incorporate a double slope shape to eliminate standing water. All drain pans have a "Double Bottom" attached to welded structural steel base, with a minimum of 1.25" of polyurethane spray foam insulation under the drain pan under the lowest point. Drain connections are standard stainless steel 1-1/4" MPT connection. All coils are self-supported to reduce unit height to a minimum. All coils shall be mounted on raised supports above drain pan to facilitate cleaning and coil removal. Coils shall have independent removable access panels on both sides of the coil to allow for coil pull.

2.05 ACCESS DOORS AND PANELS:

A. Access doors are constructed with a double wall construction and an extruded aluminum frame. The door frame features a built-in no-through-metal high density resin barrier and a perimeter gasket. Door frames with no thermal break are not acceptable. The door gasket is seamed together at each corner to prevent leakage through the door. Door is attached to the unit with 3 axes adjustable stainless steel hinges. Doors shall open against higher pressure side. Where this is not feasible due to site constraints, an interlocking mechanism furnished on the fan section access door with a de-energizing switch complying with CAL-OSHA, ETL and the mechanical protection requirements of UL 1995 will be provided.

B. Inspection access panels and doors shall be sized and located to allow periodic maintenance and inspections. Provide access panels and doors in the following locations as shown on drawings

C. All outward swinging doors must be equipped with a door chain to limit door swing.

2.06 FANWALL TECHNOLOGY®

A. Manufacturers
   1. NAS, Nortek Air Solutions, including Governair, Huntair, Mammoth, Temtrol, Venmar, and Nortek Ventrol.
   2. Approved Equal
      a. Must be submitted per project specifications
      b. Must guarantee submitted AHU performance for flow, pressure, and acoustics at the perimeter boundary of the unit.
      c. Any corrective acoustical treatment, added airway tunnel lengths, increased electrical service, and any structural modifications necessary to meet specified and scheduled performance shall be provided at no additional cost to the owner to meet the specified performance criteria.

B. Fan Wheel HPF-A100
   1. Fans shall be aluminum airfoil wheel, Class III, direct drive arrangement and shall be individually housed. Fans shall be certified by AMCA for performance. Fan shall be housed in a "cell".
   2. Fan housing or "cell" shall be constructed of aluminum or stainless steel with perforated inner liner, melamine insulation, with either solid or perforated outer panels as required by application.

3. Fan/motor assembly shall be mounted within the housing on an adjustable slide rail base. Fan/motor assembly must be capable of either horizontal or vertical application.
4. Each fan/motor assembly shall be dynamically balanced to meet AMCA standard 204-96, for fan application class BV-5, to meet or exceed a rotational imbalance Grade G.55, producing a maximum rotational imbalance of 0.022 inches per second peak, filter in. "Filter in" measurement indicates that the specified balance grade must be achieved at the submitted design operating speed for the fan(s).
5. Fan and motor assemblies shall be designed for application in multiple fan arrays.

C. Motors
1. AC Motors:
   a. All motors shall be standard foot mounted type, TEFC or TEAO motors selected at the specified operating voltage, RPM, and efficiency as specified or as scheduled elsewhere.
   b. Motors shall meet the requirements of NEMA MG-1 Part 30 and 31, section 4.4.2.
   c. Motors shall be as manufactured by Baldor, Siemens, or Toshiba. Motors shall be available in 1/2 HP increments at nameplate HP ratings from 1.5 HP through 12 HP.
   d. All motors shall include permanently sealed bearings and shaft grounding means to protect the motor bearings from electrical discharge machining due to stray shaft current. Motors provided with hybrid ceramic bearings, when specified, do not require shaft grounding devices.
   e. Steel cased motors and/or ODP motors are not acceptable.
2. Electronically Commutated Permanent magnet motors (ECMi)
   a. All ECMi motors shall be UL listed with brushless permanent magnet motors.
   b. All bearings shall be permanently lubricated
   c. Motors shall have a design life of L10 100,000 hours
   d. Motors shall have a means of shaft isolation to prevent electrical arcing across bearings
   e. Motors shall be complete with electronic motor overload protection, locked rotor protection and thermal management
   f. Motors shall meet IP54 protection and thermal class THCL 155.
   g. Modbus communication option available
3. Ultra-Premium Efficient Motors (IE5+)
   a. Provide FANWALL Ultra-Premium Efficient Motors IE5+ that meet IE5 efficiency levels. Compared to NEMA Premium induction motors, these FANWALL Ultra-Premium Efficient Motors shall have tested data that shows a 5HP motor having 4.5% improved efficiency at nominal nameplate speed and load and over 20% improved efficiency at 40% turndown speed along a fan curve.

D. Multiple Fan Arrays
1. The fan array shall consist of multiple housed fans or "cells", spaced in the air way tunnel cross section to provide a uniform air flow and velocity profile across the entire air tunnel cross section and components contained therein.
2. Each fan and motor assembly shall be removable through a 24" wide, free area, access door located on the discharge side of the fan wall array without removing the fan wheel from the motor.
3. All fans in the multiple fan arrays shall be AMCA certified for performance per AMCA arrangement "A" testing configuration. The submitted fan performance shall be inclusive of system effects attributed to the fan mounting arrangement, fan enclosures, back draft dampers, and other fan appurtenances not considered when AMCA certified performance per AMCA arr. "A" is determined. Submitted AHU/fan performance that does not indicate allowances for system effects for the back flow prevention device(s), wheel enclosures, safety screens, bearing pedestals, belt guards, or the fan and motor enclosure in which each fan is mounted, will be returned to the contractor disapproved and will need to be

resubmitted with all of the requested information included for approval. Added system effects for acoustic attenuators, or other devices required to meet specified fan performance and sound levels must be indicated in the submitted fan selection data.

4. Fan system power requirements or sound power levels that fail to meet specified performance levels shall be corrected to meet specified performance levels at no additional cost to the owner. Any proposed corrections for power or sound deviations from specified values must be submitted to the engineer for approval prior to implementation of any proposed corrective procedure.
5. Submittals for units providing less than the scheduled quantity of fans and/or spacing of the fans for multiple fan arrays shall submit CFD modeling of the air flow profile for approval that indicates uniform velocity and flow across all internal components without increasing the length of the AHU unit or changing the aspect ratio of the unit casing as designed.
6. Manufacturers that do not manufacture their own fans for the specific purpose of use in multiple fan arrays, shall provide a letter guaranteeing submitted AHU performance for flow, pressure, and acoustics at the perimeter boundary of the unit signed by an officer of the OEM fan manufacturer being submitted. Any corrective acoustical treatment, added airway tunnel lengths, increased electrical service, and any structural modifications necessary to meet specified and scheduled performance shall be provided at no additional cost to the owner to meet the specified performance criteria. All proposed corrective actions, when required, must be submitted for approval and shall include a guarantee of performance, as listed above, at no additional cost to the owner.

E. Backdraft dampers:
1. Each fan applied in multiple fan applications shall be provided with an integral back flow prevention device that prohibits recirculation of air in the event a fan, or multiple fans, becomes disabled. The system effect for the submitted back flow prevention device shall be included in the calculation to determine the fan TSP for fan selection purposes, and shall be indicated as a separate line item SP loss in the submitted fan selection data. Manufacturers other than the basis of design being submitted must provide independent lab certification of fan testing that indicates the system effects attributed to the submitted back flow prevention device in the submitted close coupled mounting arrangement at the inlet of the fan. Fans submitted with discharge dampers will not be approved.
2. Back Draft Damper performance data that is based on an AMCA ducted inlet and ducted discharge mounting configuration will not be accepted. Submitted Back flow prevention device data must be reflective of close coupled mounting at the intake of the fan(s) per the project design documents. Motorized dampers or other motorized devices submitted for back flow prevention are not acceptable.
3. AHU Manufacturers that do not manufacture the fans being submitted must provide tested and certified performance data for fans as installed in the AHU unit including the back draft damper system effects introduced by close coupled back draft dampers at the fan inlet.

F. Control Panel
1. Each fan motor shall be individually wired to a motor control panel containing motor overloads and VFD(s). VFD configuration may be one of the following (please select)
   a. Single VFD without bypass
2. Each control panel shall have a single point electrical power connections. Therefore, units with supply and return fan wall would have two power connections.
3. Wire sizing shall be determined, and installed, in accordance with applicable NEC standards and local code requirements.

2.07 COILS

A. Heating Coils:
1. Steam distributing coils: AHRI Certified Performance

a. Piping connections: Same end of coil
b. Tube Material (outer tube): Round Seamless Copper
   1) 1 1/8” od. x 0.035” tube wall [25.57 mm x .889 mm]
   2) 1 1/8” od. x 0.049” tube wall [25.57 mm x 1.245 mm]
   3) Tube Material (inner tube): Round Seamless Copper
      (a) 5/8” od. x 0.035” tube wall [15.85 mm x .889 mm]
   4) Fin Type: Corrugated plate with full drawn collar for accurate spacing.
   5) Fin Thickness / material:
      (a) 0.010” [.254 mm] Aluminum or Copper
   6) Fin Spacing: FPI (fins per inch)
      (a) 5 thru 14 FPI
   7) Fin and Tube Joint: Tubes are mechanically expanded.
   8) Coil Headers:
      (a) Type L Seamless copper with 5% silver brazed joints
      (b) Red Brass Male npt connections (std)
      (c) Copper o.d. sweat connections
   9) Coil Casing:
      (a) Galvanized steel 16ga. or 14ga.
      (b) 304 Stainless steel 16ga. or 14ga.
      (c) 316 Stainless steel 16ga. or 14ga.
   10) Coatings:
      (a) ElectroFin® including UV protective layer
      (b) Heresite® P-413 including UV protective layer
   11) Leak testing:
      (a) Entire coil assembly submerged in water and filled with Nitrogen at 315 psig.
   12) Coil Working-Pressure Rating: 100 psig

B. Cooling Coils:
   1. Chilled Water coils: AHRI Certified Performance, Continuous circuit, Self-draining unless noted on performance output.
      a. Piping connections: Same end of coil
      b. Tube Material: Round Seamless Copper
         1) 5/8” od. x 0.020” tube wall [15.8 mm x .508 mm]
         2) 5/8” od. x 0.025” tube wall [15.8 mm x .635 mm]
         3) 5/8” od. x 0.035” tube wall [15.8 mm x .889 mm]
         4) 5/8” od. x 0.049” tube wall [15.8 mm x 1.245 mm]
         5) 1/2” od. x 0.017” tube wall [12.7 mm x .432 mm]
         6) 1/2” od. x 0.025” tube wall [12.7 mm x .635 mm]
      c. Fin Type: Corrugated plate with full drawn collar for accurate spacing.
      d. Fin Thickness / material / tube size:
         1) 0.008” [.203 mm] Aluminum on 5/8” tube
         2) 0.010” [.254 mm] Aluminum on 5/8” tube
         3) 0.006” [.152 mm] Aluminum on 1/2” tube
         4) 0.006” [.152 mm] Copper on 5/8” & 1/2” tube
         5) 0.008” [.203 mm] Copper on 5/8” tube
         6) 0.010” [.254 mm] Copper on 5/8” tube
      e. Fin Spacing: FPI (fins per inch) / tube size
         1) 6 thru 14 FPI on 5/8” tube
         2) 8 thru 14 FPI on 1/2” tube
      f. Fin and Tube Joint: Tubes are mechanically expanded.
      g. Coil Headers:

1) Type L Seamless copper with 5% silver brazed joints
2) Vent & Drain located at high and low point to provide gravity drain.
3) Red Brass Male npt connections (std)
4) Red Brass Grooved (Victaulic) connections
5) Copper o.d. sweat connections

h. Coil Casing:
1) Galvanized steel 16ga. or 14ga.
2) 304 Stainless steel 16ga. or 14ga.
3) 316 Stainless steel 16ga. or 14ga.

i. Coatings:
1) ElectroFin® including UV protective layer
2) Heresite® P-413 including UV protective layer

j. Leak testing:
1) Entire coil assembly submerged in water and filled with Nitrogen at 315 psig.

k. Coil Working-Pressure Rating: 250 psig at 300 deg F

2.08 MOISTURE ELIMINATOR SECTION:

A. The unit shall contain a moisture eliminator with 304 stainless steel mesh as manufactured by Mistop, Inc., or equal. All hardware is to be made of corrosion resistant materials. The eliminator section shall drain to cooling coil drain pan. Units shall have less than 0.1" S.P. at 600 FPM.

2.09 FILTERS, FILTER FRAMES, AND FILTER BANKS

A. Filters
1. The filter shall consist of a pleated media, media support grid, and enclosing frame. The media shall be non-woven cotton fabric and shall be designed to consistently increase efficiency throughout service life of filter with an initial Merv 13 rating. The media support shall be a welded wire grid with an effective open area of not less than 90%. The grid shall be bonded to the filter media to eliminate media oscillation and pull away. The enclosing frame shall be constructed of rigid, heavy duty, high wet strength beverage board. The frame shall be bonded to the filter pack. Standard sizes shall be 12" x 24" x 2" and 24" x 24" x 2". All filter holding frames must be caulked in between them to minimize bypass air through the frames. Filters shall be American Air Filter Perfect Pleat, or equal by Cam-Farr, Eco-Air or Airguard. Provide Dwyer Instruments Inc Series 2000 Magnehelic gauges across each filter bank.

B. Filter Frame Assemblies
1. Constructed of galvanized steel, specifically designed and sized to have matching mounting holes such that frames may be riveted together. Frame comes with pre-installed gasket so as to provide a surface onto which the filter will self-seal. Filter frames come with stiffeners which are installed between each column of filter frame. All filter holding frames are caulked in between them to minimize bypass air through the frames. Proper structural support (every 5 frames wide) is provided when reinforcement is required for attachment of frame assembly to existing AHU casing / building structure as well as complete safing and proper air seal.

2.10 DAMPERS

A. Low leakage aluminum dampers as made by TAMCO. Dampers are made of extruded aluminum airfoil blades with extruded EPDM blade gaskets and extruded TPE frame seals, 7/16'' aluminum hexagon shaft, aluminum linkage crankarm, aluminum pivot pin, acetal copolymer inner bearing and polycarbonate outer, and a 12-ga. aluminum frame.

B. Low leakage TAMCO two deck multi-zone dampers have extruded aluminum airfoil blades, extruded EPDM blades gaskets, extruded TPE frame seals, 7/16'' aluminum hexagon shaft, aluminum linkage crankarm, aluminum pivot pin, acetal copolymer (cecon) inner bearing and

polycarbonate outer bearing, and a 12-ga. aluminum frame. The cold/hot decks are on a common shaft driven by one operator. [Actuator are furnished and mounted by NORTEK VENTROL. Electric specified in Division 15 Section “HVAC Instrumentation and Controls.

2.11 ELECTRICAL

A. Control panel with main disconnect.

B. Motor Wiring
   1. Motor shall be wired to NEMA-1 enclosure located on the exterior of unit fan housing. Conduit shall be appropriately sized EMT with a 3 ft. section of Greenfield flex conduit at the motor to provide a vibration loop. EMT conduit used up to 100 HP, TEK wire used on 100 HP and up, when single point wiring is required.

C. AHU tag must bear the ETL label

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Bolt sections together with gaskets.

C. Isolate fan section with flexible duct connections.

D. Install flexible duct connections between fan inlet and discharge ductwork and air handling unit sections. Ensure that metal bands of connectors are parallel with minimum one inch flex between ductwork and fan while running.

E. Install assembled unit on vibration isolators. Install isolated fans with resilient mountings and flexible electrical leads. Install restraining snubbers as required. Refer to Section 23 05 48. Adjust snubbers to prevent tension in flexible connectors when fan is operating.

F. Make connections to coils with unions or flanges.

G. Hydronic Coils:
   1. Hydronic Coils: Connect water supply to leaving air side of coil (counterflow arrangement).
   2. Locate water supply at bottom of supply header and return water connection at top.
   3. Provide manual air vents at high points complete with stop valve.
   4. Ensure water coils are drainable and provide drain connection at low points.

H. Refrigerant Coils: Provide sight glass in liquid line within 12 inches of coil.

I. Insulate coil headers located outside air flow as specified for piping. Refer to Section 23 07 19.

3.02 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements

B. Air Handling Unit Casing Field Leak-Testing
   1. Perform field leakage testing on completely assembled modular AHU.
   2. Determine casing air leakage rate per AHRI Standard 1350 to demonstrate a leakage class of CL(24) maximum.
   3. Submit casing leakage reports to engineer with testing and balancing report.
   4. Final Acceptance Requirements:
      a. Use dial indicator gauges to demonstrate fan and motor are aligned.

3.03 SYSTEM STARTUP

A. Provide manufacturer's field representative to perform systems startup.

B. Prepare and start equipment and systems in accordance with manufacturers' instructions and recommendations.

C. Adjust for proper operation within manufacturer's published tolerances.

D. system to be commissioned by manufacturer field representative.

3.04 CLOSE OUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. See Section 01 79 00 - Demonstration and Training, for additional requirements.

C. Demonstrate proper operation of equipment to Owner's designated representative.

D. Demonstration: Demonstrate operation of system to Owner's personnel.
   1. Use operation and maintenance data as reference during demonstration.
   2. Briefly describe function, operation, and maintenance of each component.

E. Training: Train Owner's personnel on operation and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
   2. Provide minimum of one day of training.
   3. Instructor: Manufacturer's training personnel.
   4. Location: At project site.

3.05 MAINTENANCE

A. Provide service and maintenance of packaged air handling units for [2] years from Date of Substantial Completion.

B. Provide routine maintenance service with a three month interval as maximum time period between calls.

C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of four (4) filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.

D. After each service call, submit copy of service call work order or report that includes description of work performed.

3.06 SCHEDULES - SEE DRAWINGS

END OF SECTION

SECTION 26 29 13
ENCLOSED CONTROLLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Enclosed NEMA motor controllers for low-voltage (600 V and less) applications:
   1. Magnetic motor starters.
   2. Manual motor starters.

B. Overcurrent protective devices for motor controllers, including overload relays.

C. Motor control accessories:
   1. Auxiliary contacts.
   2. Pilot devices.
   3. Control and timing relays.
   4. Control power transformers.

D. Magnetic motor controllers.

E. Combination magnetic motor controllers and disconnects.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

C. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.

D. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.

E. NEMA ICS 6 - Industrial Control and Systems: Enclosures.

F. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum).

G. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems.

H. NFPA 70 - National Electrical Code.

I. UL 98 - Enclosed and Dead-Front Switches.

J. UL 60947-1 - Low-Voltage Switchgear and Controlgear - Part 1: General Rules.

K. UL 60947-4-1 - Low-Voltage Switchgear and Controlgear - Part 4-1: Contactors and Motor-starters - Electromechanical Contactors and Motor-starters.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances required by NFPA 70.
   2. Coordinate the work to provide motor controllers and associated overload relays suitable for use with the actual motors to be installed.
   3. Coordinate the work to provide motor controllers and associated wiring suitable for interface with control devices to be installed.
   4. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   5. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
   6. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.
   1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.

C. Shop Drawings: Indicate dimensions, voltage, controller sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
   1. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Field Quality Control Test Reports.

F. Project Record Documents: Record actual installed locations of motor controllers and final equipment settings.

G. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

H. Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.

I. Test Reports: Indicate field test and inspection procedures and test results.

J. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

K. Maintenance Data: Replacement parts list for controllers.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.

D. Products: Listed, classified, and labeled as suitable for the purpose intended.

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

A. Maintain field conditions within required service conditions during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. ABB/GE: www.electrification.us.abb.com/#sle.

B. Eaton Corporation; Cutler-Hammer Product: www.eaton.com/#sle.

C. General Electric Company: www.geindustrial.com/#sle.

D. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

E. Substitutions: See Section 01 60 00 - Product Requirements.

F. Source Limitations: Furnish enclosed motor controllers and associated components produced by a single manufacturer and obtained from a single supplier.

G. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ENCLOSED MOTOR CONTROLLERS

A. Provide enclosed motor controller assemblies consisting of all required components, control power transformers, instrumentation and control wiring, accessories, etc. as necessary for a complete operating system.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Description: Enclosed motor controllers complying with NEMA ICS 2, and listed and labeled as complying with UL 60947-1 and UL 60947-4-1; ratings, configurations and features as indicated on the drawings.

D. Service Conditions:
   1. Provide motor controllers and associated components suitable for operation under the following service conditions without derating:
      a. Altitude:
         1) Class 1 Km Equipment (devices utilizing power semiconductors, e.g. variable frequency controllers): Less than 3,300 feet.
         2) Class 2 Km Equipment (electromagnetic and manual devices): Less than 6,600 feet.
      b. Ambient Temperature: Between 32 degrees F and 104 degrees F.
   2. Provide motor controllers and associated components suitable for operation at indicated ratings under the service conditions at the installed location.

E. Short Circuit Current Rating:
   1. Provide motor controllers with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
   2. Listed series ratings are acceptable, except where not permitted by motor contribution according to NFPA 70.
   3. Label equipment utilizing series ratings as required by NFPA 70.

F. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.

G. Conductor Terminations: Suitable for use with the conductors to be installed.

H. Enclosures:
   1. Comply with NEMA ICS 6.
   2. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
      a. Indoor Clean, Dry Locations: Type 1 or Type 12.
      b. Outdoor Locations: Type 3R or Type 4.
   3. Finish: Manufacturer's standard unless otherwise indicated.

I. Magnetic Motor Starters: Combination or noncombination type as indicated.

1. Combination Magnetic Motor Starters: NEMA ICS 2, Class A combination motor controllers with magnetic contactor(s), externally operable disconnect and overload relay(s).
2. Noncombination Magnetic Motor Starters: NEMA ICS 2, Class A noncombination motor controllers with magnetic contactor(s) and overload relay(s).
3. Configuration: Full-voltage non-reversing unless otherwise inidcated.
4. Minimum Starter Size: NEMA Size 1.
5. Disconnects: Disconnect switch type.
   a. Disconnect Switches: Fusible type unless otherwise indicated.
   b. Provide externally operable handle with means for locking in the OFF position. Provide safety interlock to prevent opening the cover with the disconnect in the ON position with capability of overriding interlock for testing purposes.
   c. Provide auxiliary interlock for disconnection of external control power sources where applicable.
6. Overload Relays: Bimetallic thermal type unless otherwise indicated.
7. Pilot Devices Required:
   a. Furnish local pilot devices for each unit as specified below unless otherwise indicated on drawings.
   b. Single-Speed, Non-Reversing Starters:
      1) Selector Switches: HAND/OFF/AUTO.
      2) Indicating Lights: Red ON.

J. Manual Motor Starters:
1. Description: NEMA ICS 2, Class A manually-operated motor controllers with overload relay(s).
2. Configuration: Non-reversing unless otherwise inidcated.
3. Fractional-Horsepower Manual Motor Starters:
   a. Furnish with toggle operator.
   b. Overload Relays: Bimetallic or melting alloy thermal type.
   c. Provide means for locking operator in the OFF position.
   d. Furnish Red ON indicating light visible on enclosure.
4. Integral-Horsepower Manual Motor Starters:
   a. Furnish with toggle or pushbutton operator.
   b. Overload Relays: Bimetallic or melting alloy thermal type.
   c. Provide means for locking operator in the OFF position.
   d. Furnish Red ON indicating light where not within sight of equipment.
   e. Provide auxiliary contact where indicated; normally open (NO) or normally closed (NC) as indicated or as required.

2.03 OVERCURRENT PROTECTIVE DEVICES

A. Overload Relays:
1. Provide overload relays and, where applicable, associated current elements/heaters, selected according to actual installed motor nameplate data, in accordance with manufacturer's recommendations and NFPA 70; include consideration for motor service factor and ambient temperature correction, where applicable.
2. Inverse-Time Trip Class Rating: Class 20 unless otherwise indicated or required.
3. Trip-free operation.
4. Visible trip indication.
5. Resettable.
   a. Employ manual reset unless otherwise indicated.
   b. Do not employ automatic reset with two-wire control.
6. Bimetallic Thermal Overload Relays:
   a. Interchangeable current elements/heaters.

b. Adjustable trip; plus/minus 10 percent of nominal, minimum.
c. Trip test function.

7. Melting Alloy Thermal Overload Relays:
   a. Interchangeable current elements/heaters.

B. Fusible Disconnect Switches:
1. Description: Quick-make, quick-break, dead-front fusible switch units complying with NEMA KS 1, and listed and labeled as complying with UL 98; ratings, configurations, and features as indicated on the drawings.
2. Fuse Clips: As required to accept indicated fuses.
   a. Where NEMA Class R fuses are installed, provide rejection feature to prevent installation of fuses other than Class R.
3. Provide externally operable handle with means for locking in the OFF position. Provide means for locking switch cover in the closed position. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

2.04 MOTOR CONTROL ACCESSORIES

A. Auxiliary Contacts:
1. Comply with NEMA ICS 5.
2. Provide number and type of contacts indicated or required to perform necessary functions, including holding (seal-in) circuit and interlocking, plus one normally open (NO) and one normally closed (NC) spare contact for each magnetic motor starter, minimum.

B. Pilot Devices:
1. Comply with NEMA ICS 5; heavy-duty type.
2. Pushbuttons: Unless otherwise indicated, provide momentary, non-illuminated type with flush button operator; normally open or normally closed as indicated or as required.
3. Selector Switches: Unless otherwise indicated, provide maintained, non-illuminated type with knob operator; number of switch positions as indicated or as required.
4. Indicating Lights: Push-to-test type unless otherwise indicated.
5. Provide LED lamp source for indicating lights and illuminated devices.

C. Control and Timing Relays:
1. Comply with NEMA ICS 5.
2. Provide number and type of relays indicated or required to perform necessary functions.

D. Control Power Transformers:
1. Size to accommodate burden of contactor coil(s) and all connected auxiliary devices, plus 25 VA spare capacity.
2. Include primary and secondary fuses.

2.05 AUTOMATIC CONTROLLERS

A. Magnetic Motor Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower.

B. Coil Operating Voltage: 120 volts, 60 Hertz.

C. Overload Relays: NEMA ICS 2; bimetal.

D. Enclosures: NEMA ICS 6, Type 1.

2.06 ACCESSORIES

A. Auxiliary Contacts: NEMA ICS 2, 2 normally open contacts in addition to seal-in contact.

B. Cover Mounted Pilot Devices: NEMA ICS 5, standard duty oiltight type.

C. Pilot Device Contacts: NEMA ICS 5, Form Z, rated A150.

D. Indicating Lights: Transformer, LED type.

E. Selector Switches: Rotary type.

F. Relays: NEMA ICS 2.

G. Control Power Transformers: 120 volt secondary, 50 VA minimum, in each motor starter. Provide fused primary, secondary, and bond unfused leg of secondary to enclosure.

2.07 DISCONNECTS

A. Combination Controllers: Combine motor controllers with disconnects in common enclosure. Obtain IEC Class 2 coordinated component protection.

B. Fusible Switch Assemblies: NEMA KS 1, enclosed knife switch with externally operable handle. Fuse clips: Designed to accommodate Class R fuses.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that ratings of enclosed motor controllers are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive enclosed motor controllers.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install enclosed controllers where indicated, in accordance with manufacturer's instructions.

B. Install securely, in a neat and workmanlike manner, as specified in NECA 1.

C. Provide supports in accordance with Section 26 05 29.

D. Install enclosed motor controllers plumb and level.

E. Provide grounding and bonding in accordance with Section 26 05 26.

F. Install all field-installed devices, components, and accessories.

G. Height: 5 ft to operating handle.

H. Provide fuses for fusible switches; refer to Section 26 28 13 for product requirements.

I. Select and install overload heater elements in motor controllers to match installed motor characteristics.

J. Identify enclosed controllers in accordance with Section 26 05 53.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 45 00.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Motor Starters: Perform inspections and tests listed in NETA ATS, Section 7.16.1.1. Tests listed as optional are not required.

D. Fusible Switches: Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.

E. Correct deficiencies and replace damaged or defective enclosed motor controllers or associated components.

F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

G. Perform inspections and tests listed in NETA ATS, Section 7.16.1.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from motor controller enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

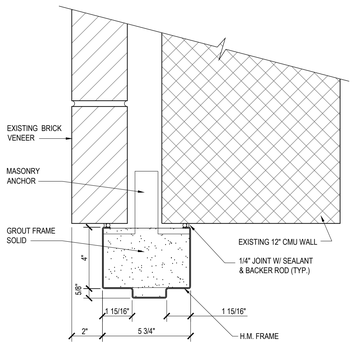
3.06 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

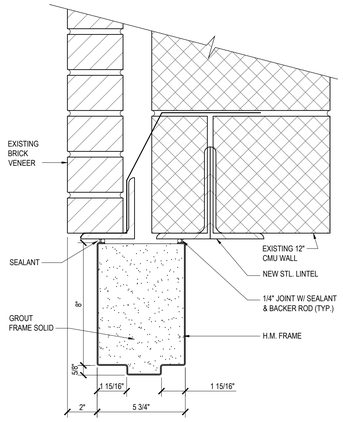
3.07 PROTECTION

A. Protect installed enclosed motor controllers from subsequent construction operations.

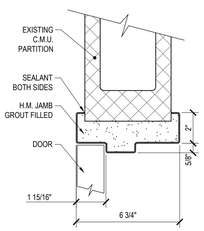
END OF SECTION



JAMB DETAIL J1



HEAD DETAIL H1



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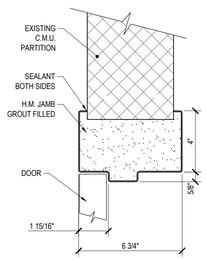

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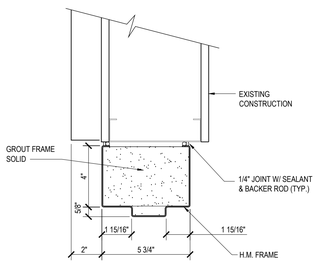

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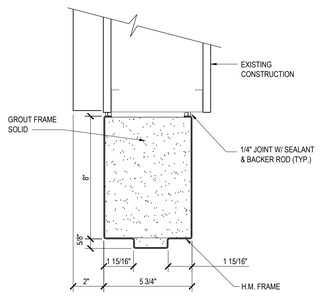
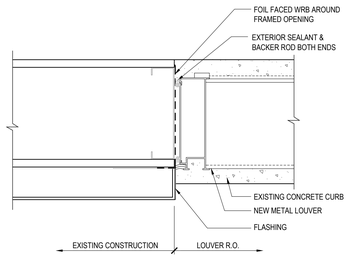


HEAD DETAIL H3

1 A-601 HEAD & JAMB DETAILS
SCALE: 3" = 1'-0"



2 A-601 LOUVER JAMB DETAIL
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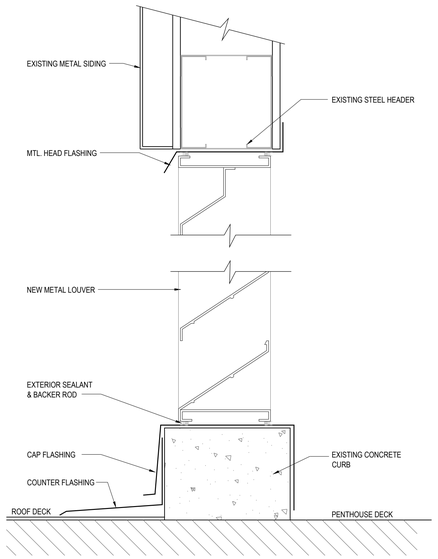

3 A-601 LOUVER SECTION DETAIL
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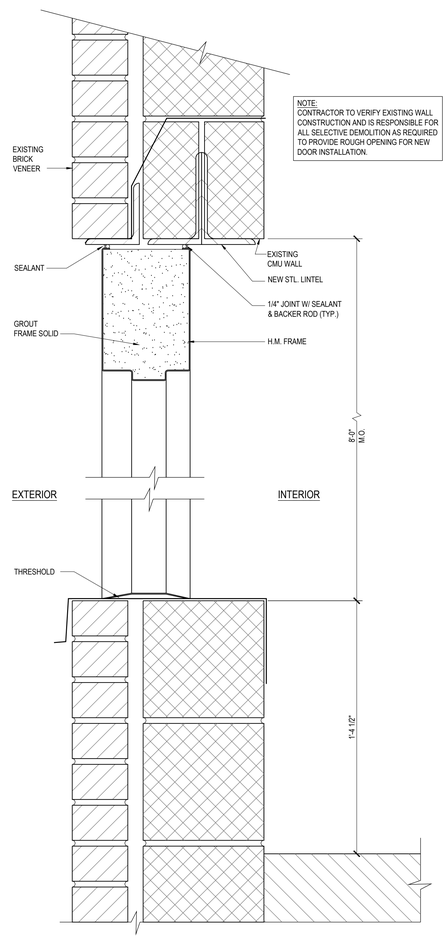


5 A-601 WALL SECTION AT FAN ROOM
SCALE: 3" = 1'-0"

DOOR SCHEDULE

MARK	DOOR W	DOOR HT	DOOR THK	DOOR MATL	DOOR TYPE	DOOR GLZ	FRAME MATL	FRAME TYPE	FRAME HEAD	FRAME JAMB	FIRE RTG	HDWR	REMARKS
B01	3'-0"	7'-0"	1 3/4"	HM	B	N/A	HM	F1	H2	J2	60-MIN.	2	
B02	(2) 3'-0"	7'-0"	1 3/4"	HM	A	N/A	HM	F1	H2	J2	60-MIN.	3	
B03	(2) 3'-0"	7'-0"	1 3/4"	HM	A	N/A	HM	F1	H2	J2	60-MIN.	3	
10	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
11	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
12A	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H3	J3	-	1	
12B	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H3	J3	-	1	
13	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
14A	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
14B	(2) 4'-0"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	
D104	(2) 3'-6"	8'-0"	1 3/4"	HM	A	N/A	HM	F1	H1	J1	-	1	

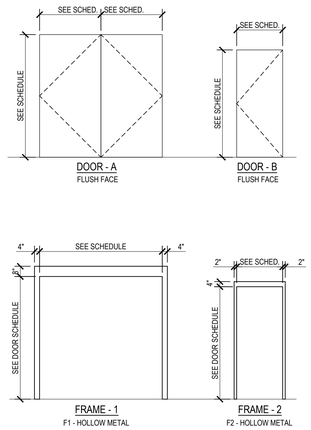
HARDWARE SETS

HARDWARE SET 1 - EXTERIOR, DOUBLE DOOR, HOLLOW METAL
- 6 HINGES
- 2 STORE ROOM LOCK SETS W/ INSIDE HARDWARE ONLY
- 1 KEYED REMOVABLE MULLION
- 2 RAIN DRIP EDGE
- 2 THRESHOLD
- 2 GASKETING
- 2 SWEEP

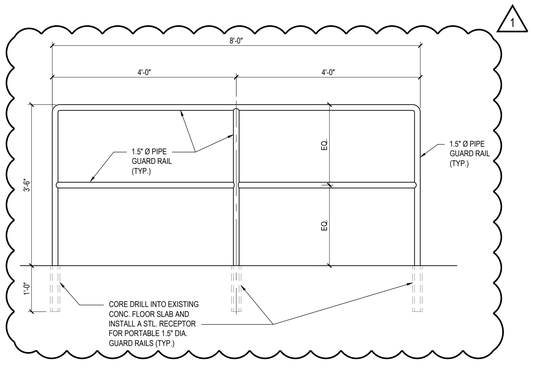
HARDWARE SET 2: INTERIOR, SINGLE DOOR, HOLLOW METAL
- 3 HINGES
- 1 LOCKSET
- 1 CLOSER
- 1 KICK PLATE
- 1 WALL STOP
- 1 GASKETING SET
- 1 AUTO DOOR BOTTOM

HARDWARE SET 3 - INTERIOR, DOUBLE DOOR, HOLLOW METAL - 60 MIN LABEL
- 6 HINGES
- 2 EXIT DEVICES
- 2 CLOSERS
- 2 KICK PLATES
- 2 WALL STOPS
- 2 GASKETING

DOOR AND FRAME TYPES



4 A-601 DOOR SCHEDULE
SCALE: 1/4" = 1'-0"



6 A-601 PIPE GUARD RAIL DETAIL
SCALE: 3/4" = 1'-0"

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CONSULTANT

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SIGNATURE:
DATE OF SIGNATURE:
DATE OF REGISTRATION EXPIRATION:

ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE

DOOR SCHEDULE & DETAILS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
KH	DM	22106

SHEET NO.

A-601

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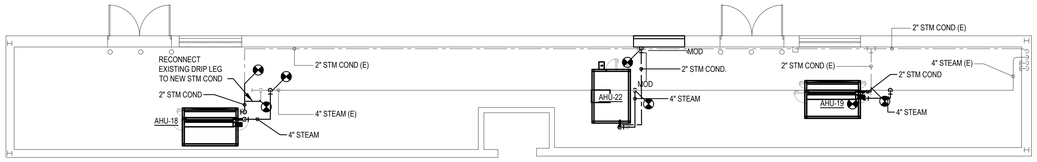
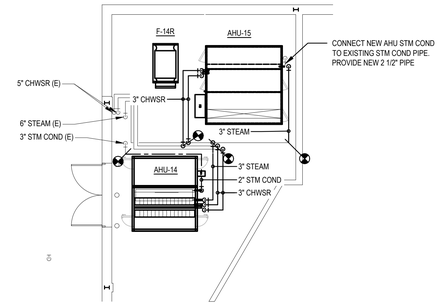
10/12/2023 8:51 AM



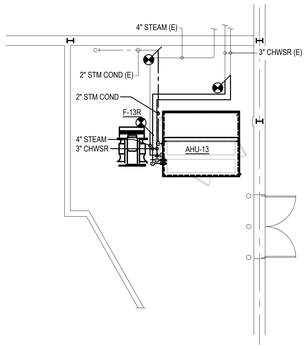
1 M-201 FAN ROOM #13 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



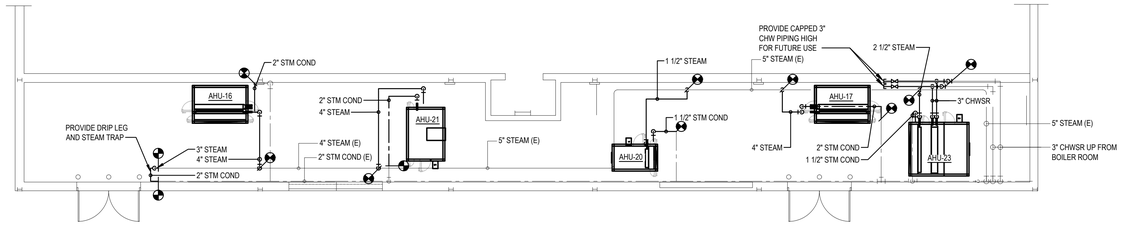
3 M-201 FAN ROOM #10 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



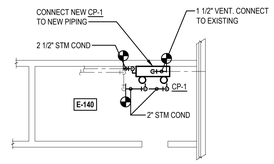
4 M-201 FAN ROOM #11 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



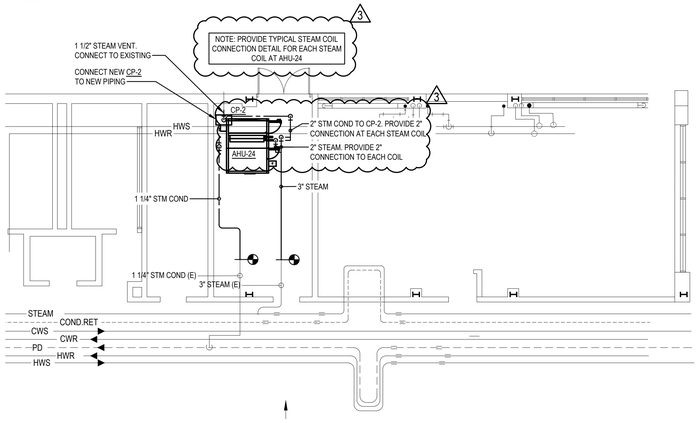
2 M-201 FAN ROOM #14 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



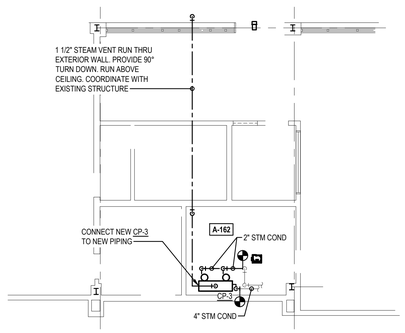
6 M-201 ROOM E140 MECH NEW PLAN

SCALE: 1/8" = 1'-0"



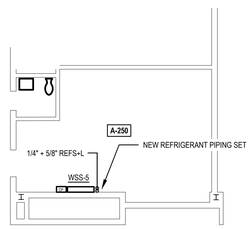
5 M-201 ROOM D104 PIPING NEW WORK PLAN

SCALE: 1/8" = 1'-0"



7 M-201 ROOM A162 MECH PLAN

SCALE: 1/8" = 1'-0"



8 M-201 ROOM A250 PIPING DEMO PLAN

SCALE: 1/8" = 1'-0"

PIPING NEW WORK NOTES:

1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE ALL PIPING INSULATION IN FAN ROOMS 10, 11, 13 & 14. DEMOLISH AND REPLACE ALL PIPING INSULATION IN ROOM D104. PROVIDE NEW INSULATION PER SPECIFICATIONS.
3. DEMOLISH AND REPLACE ALL ISOLATION VALVES AND COOLING CONDENSATE PIPING IN FAN ROOMS 10, 11, 13 & 14. ALL NEW COOLING CONDENSATE PIPING SHALL BE 1 1/4" PVC. PIPE TO NEAREST FLOOR DRAIN
4. PROVIDE NEW CONTROL VALVE DETAILS FOR ALL NEW COILS AS SHOWN ON M-600 3
5. PROVIDE NEW CONTROL VALVES FOR ALL NEW COILS

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23
2	ADDENDUM #2	9/27/23
3	ADDENDUM #6	10/13/23

SHEET TITLE

INTERIOR PIPING NEW WORK PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-201

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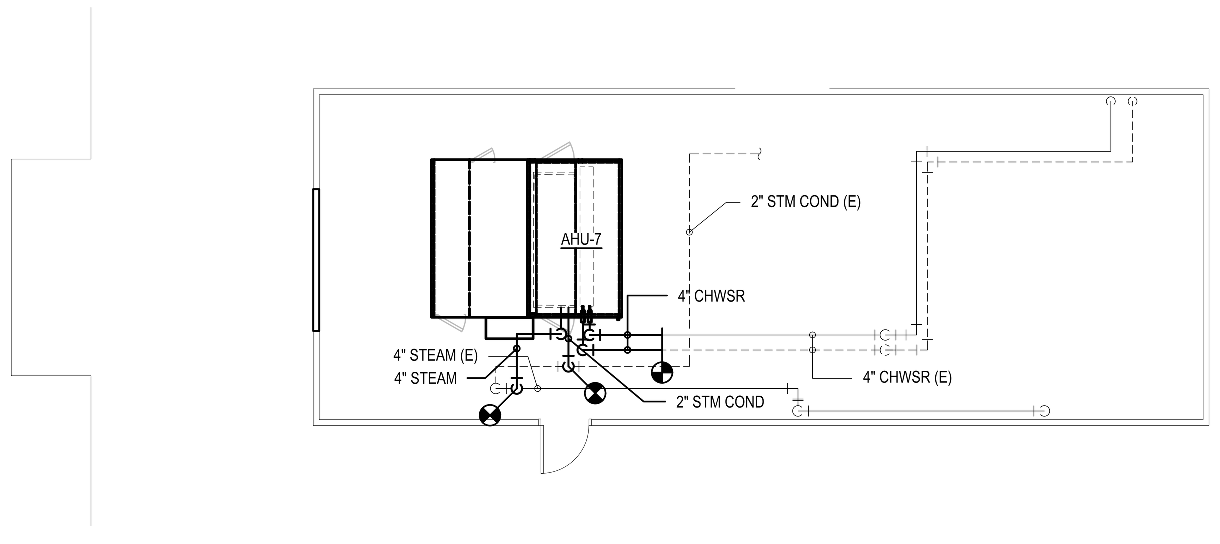
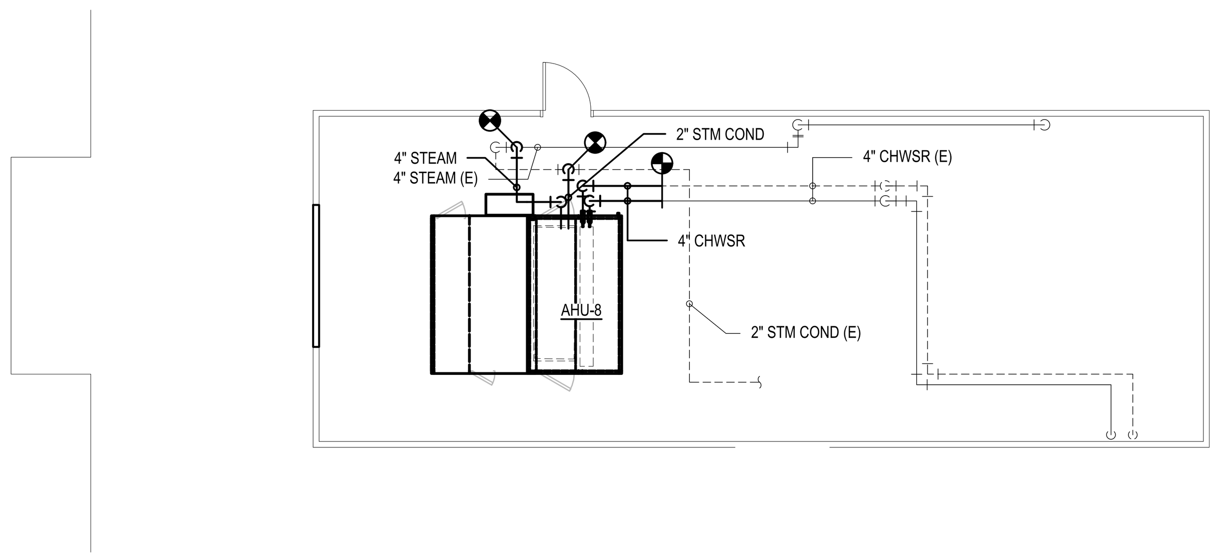
10/12/2023 2:13 PM



PENTHOUSE #7 PIPING NEW WORK PLAN

1 / M-202

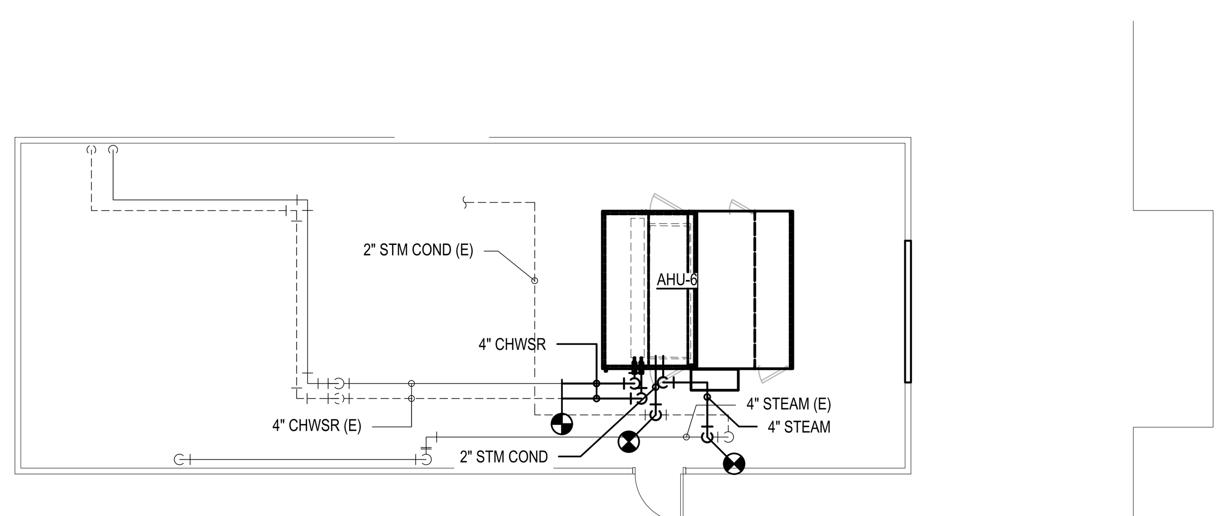
SCALE: 1/8" = 1'-0"



PENTHOUSE #8 PIPING NEW WORK PLAN

2 / M-202

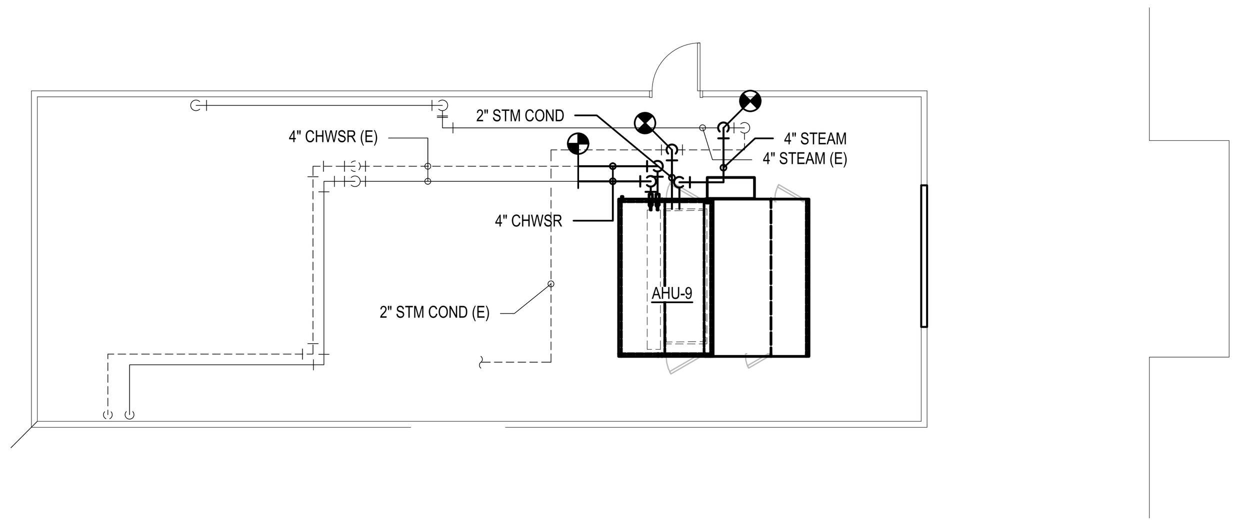
SCALE: 1/8" = 1'-0"



PENTHOUSE #6 PIPING NEW WORK PLAN

3 / M-202

SCALE: 1/8" = 1'-0"



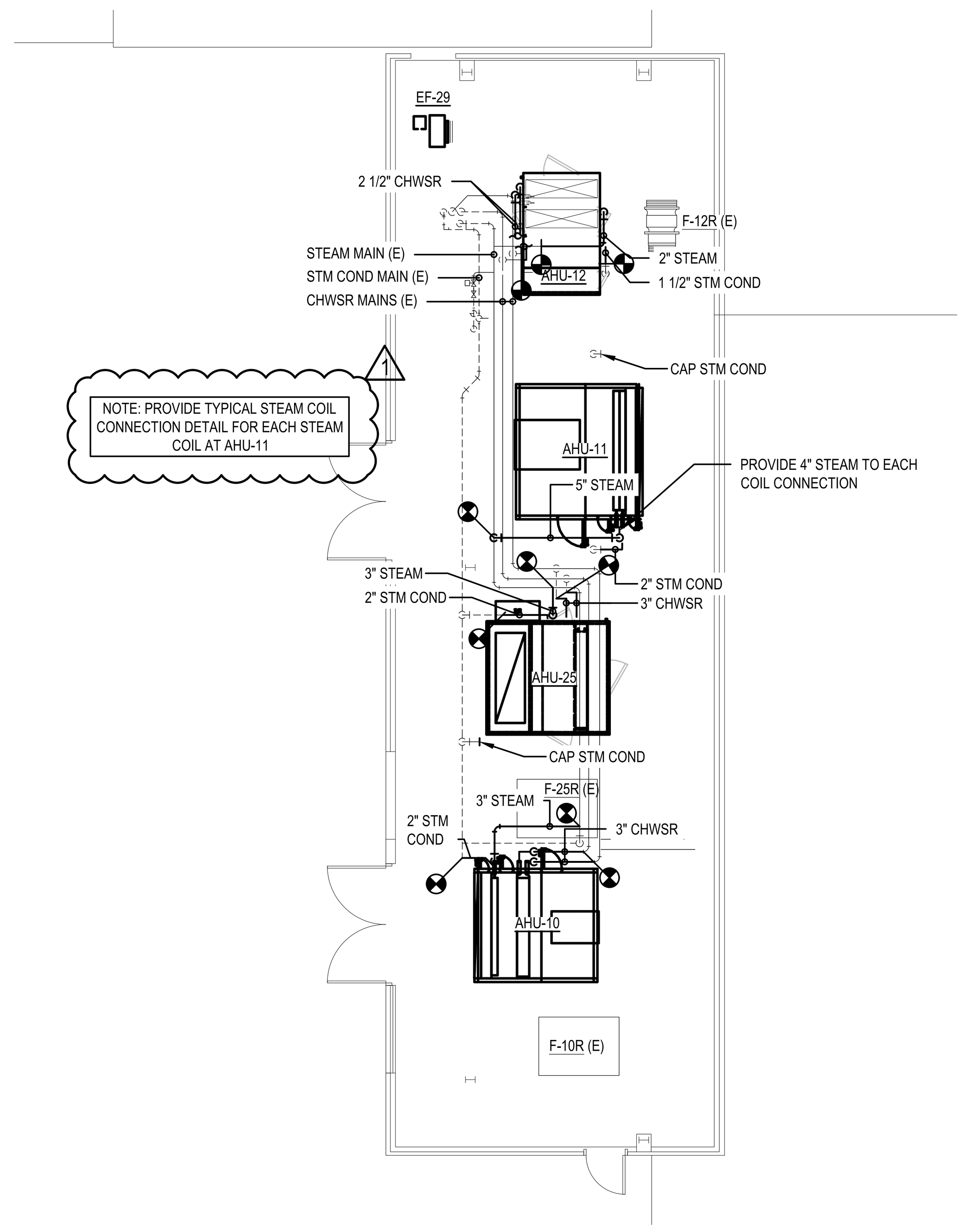
PENTHOUSE #9 PIPING NEW WORK PLAN

4 / M-202

SCALE: 1/8" = 1'-0"

PIPING NEW WORK NOTES: (1)

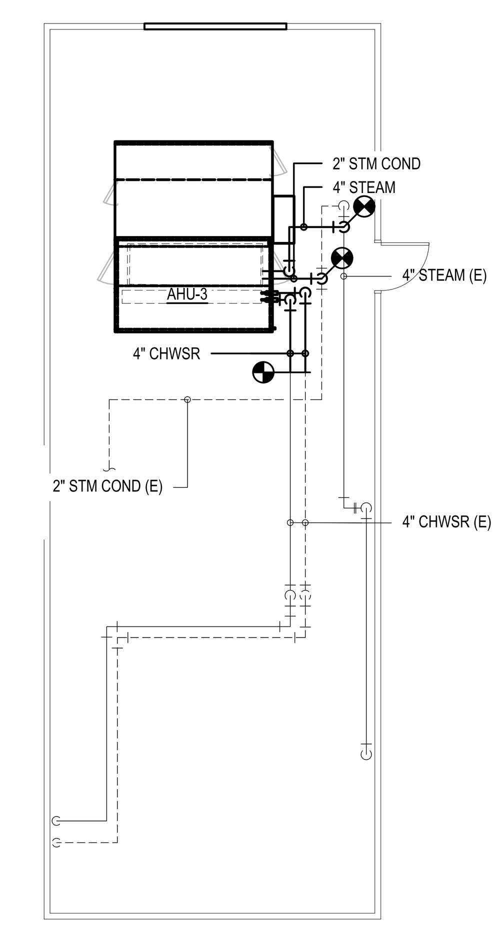
1. SEE M-001 FOR LOCATION OF PENTHOUSES
2. DEMOLISH AND REPLACE ALL PIPING INSULATION IN ALL PENTHOUSE MECHANICAL ROOMS SHOWN THIS DRAWING. PROVIDE INSULATION PER SPECIFICATIONS.
3. DEMOLISH AND REPLACE ALL ISOLATION VALVES AND COOLING CONDENSATE PIPING IN ALL PENTHOUSE MECHANICAL ROOMS SHOWN THIS DRAWING. ALL NEW COOLING CONDENSATE PIPING SHALL BE 1 1/4" PVC. PIPE TO NEAREST FLOOR DRAIN
4. ~~PROVIDE NEW CONTROL VALVE DETAILS FOR ALL NEW COILS AS SHOWN ON M-600~~ (1)
5. PROVIDE NEW CONTROL VALVES FOR ALL NEW COILS



PENTHOUSE #12 PIPING NEW WORK PLAN

10 / M-202

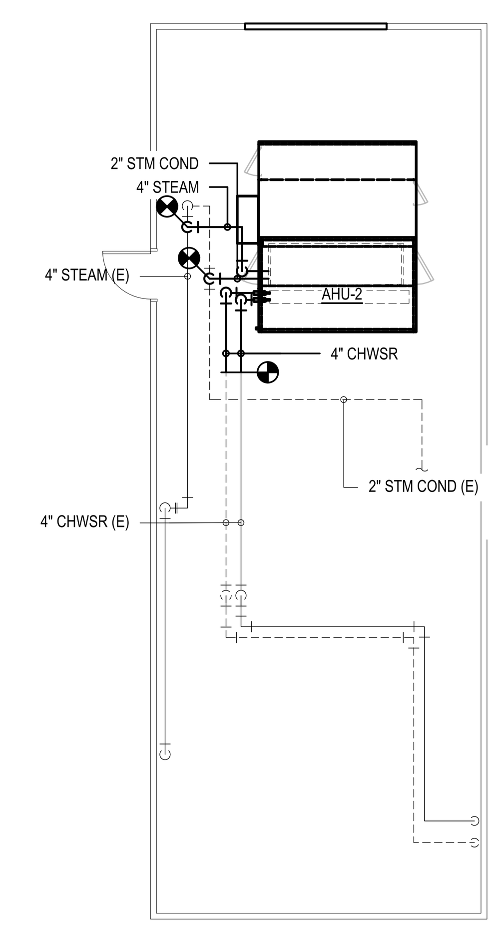
SCALE: 1/8" = 1'-0"



PENTHOUSE #3 PIPING NEW WORK PLAN

5 / M-202

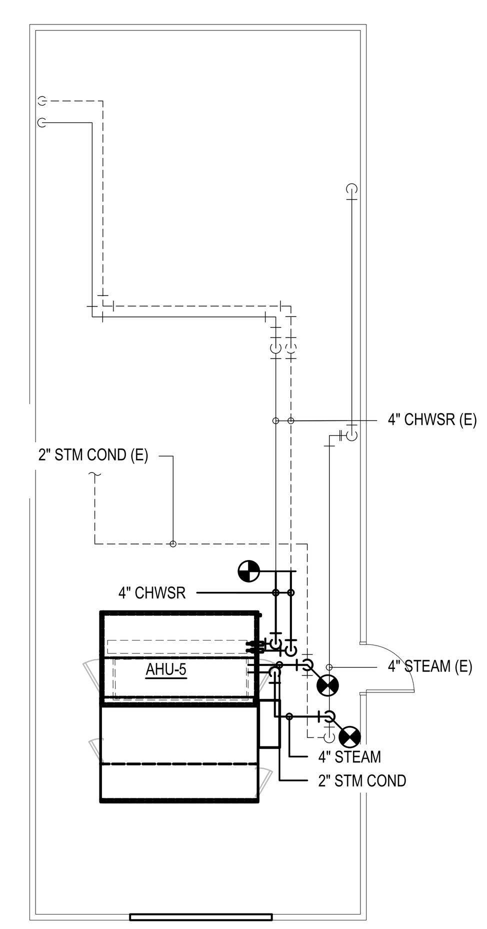
SCALE: 1/8" = 1'-0"



PENTHOUSE #2 PIPING NEW WORK PLAN

6 / M-202

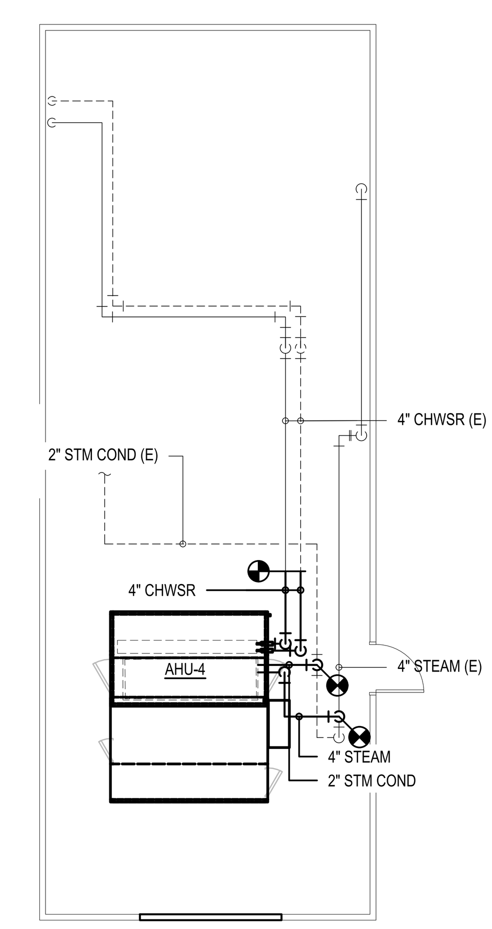
SCALE: 1/8" = 1'-0"



PENTHOUSE #5 PIPING NEW WORK PLAN

7 / M-202

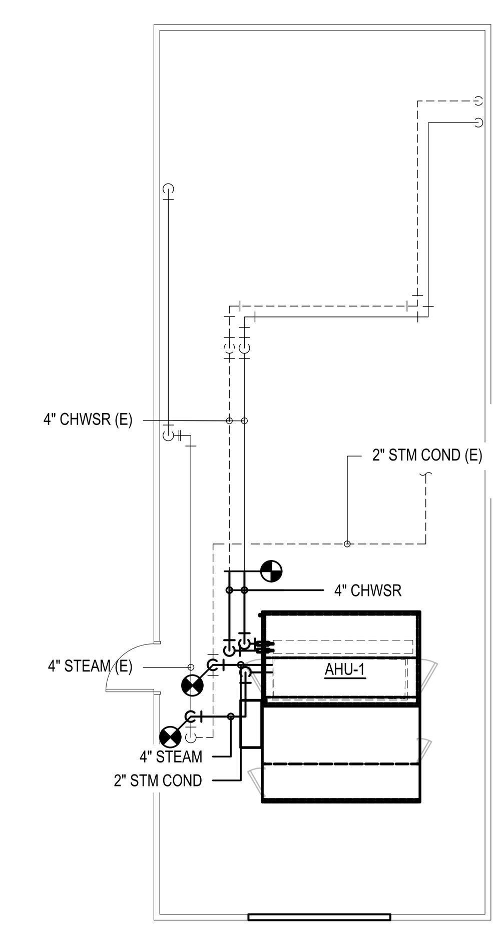
SCALE: 1/8" = 1'-0"



PENTHOUSE #4 PIPING NEW WORK PLAN

8 / M-202

SCALE: 1/8" = 1'-0"



PENTHOUSE #1 PIPING NEW WORK PLAN

9 / M-202

SCALE: 1/8" = 1'-0"

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10/12/2023 2:13 PM

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE

PENTHOUSE PIPING
NEW WORK PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	DTS	22106

SHEET NO.

M-202

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10/12/2023 2:13 PM

AH-1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14, 25: (Multizone Air Handling Unit)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode-(adj). The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will modulate to maintain a 55F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fans have tripped OFF on low limit whether the fans are running or not, the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within 1 Hour, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has been acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run subject to heating coil discharge freezestat status and supply and return air duct smoke detectors.

When the fans run, the outside air and relief/exhaust dampers will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) in unison to maintain a hot deck the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the average space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run subject to heating coil discharge freezestat status and supply and return air duct smoke detectors.

If the outdoor air dry bulb temperature is less than the economizer enable setpoint of 75°F (adj). during the cool-down mode, the AHU will operate in the economizing mode. If the outdoor air dry bulb temperature is more than the economizer enable setpoint during the cool down mode, the outside and relief/exhaust dampers will remain closed, with the return air damper open. The EMCS will modulate the cooling coil control valve(s) to maintain a cold deck supply air temperature setpoint 50°F (adj).

In the economizer mode, the EMCS will modulate the outside/return/exhaust air dampers to maintain a mixed air temperature setpoint of: 50°F (adj)

Mechanical cooling will be available if the chiller is enabled to run, and the system will operate with outside and relief/exhaust dampers closed and the return air damper open.

The system will continue to run in cool-down mode until the average space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run subject to heating coil discharge freezestat status and supply and return air duct smoke detectors.

Supply and return fans will continue to run, and the outside air damper will open to minimum position subject to economizer control and CO2 control as stated below.

The EMCS will reset the supply air static pressure setpoint in response to zone damper position to modulate supply air fan speed. Return air fan speed will modulate to run a pre-determined offset (set by balancer).

When one (adj) or more zone dampers are more than 90% (adj) open to the hot deck, supply fan VFD signal will be reset upward 5% over base speed setpoint of 70 (adj) every 10 minutes that multiple zones are open 90%. This will continue at a frequency of 10 minutes (adj) until no more than one (adj) damper is more than 90% (adj) open or supply fan VFD signal has reset upward to the system maximum setting (maximum setpoint be determined and documented during final balancing). The return fan speed will be modulated in proportion to the supply fan speed.

When one (adj) or more zone dampers are more than 90% (adj) open to the cold deck, the supply fan VFD signal) all be reset upward 5% over base speed setpoint of 70 (adj) every 10 minutes that multiple zones are open 90%. This will continue at a frequency of 10 minutes (adj) until no more than one (adj) damper is more than 90 percent (adj) open supply fan VFD signal has reset upward to the system maximum setting (maximum setpoint be determined and documented during final balancing). The return fan speed will be modulated in proportion to the supply fan speed.

When all but one (adj) zone dampers are less than 80% (adj) open to the hot or cold deck, the supply fan VFD signal will be reset downward, until at least two (adj) dampers are more than 80% open or supply fan VFD signal has reset to the system minimum setting (minimum setpoint to be determined and documented during final balancing).

When CO2 levels are greater than 1000ppm (adj), the outside air, relief air, and return air dampers will modulate to maintain CO2 levels at or below 1000ppm (adj). Mixed air temperature will be used as a low limit to override the CO2 control to maintain 50°F (adj). When CO2 override is initiated, CO2 control will be highest priority for dampers.

The economizer will be disabled when the outside air temperature is above 75°F (adj) and the chiller is running and when the heating control valve(s) are open. When the economizer is enabled, the highest space temperature will modulate the outside, return, and relief dampers to maintain the following reset schedule:

High Space Temperature	Mixed Air Temperature
75°F (adj)	55°F (adj)
65°F (adj)	65°F (adj)

Lowest space temperature* will reset the hot deck supply air by modulating the coil heating valve(s) in unison to maintain the following reset schedule:

Lowest Space Temperature	Hot Deck Supply Air Temperature
75°F (adj)	55°F (adj)
65°F (adj)	120°F (adj)

Chilled water cooling will be available for the cold deck when the chiller is enabled.

Highest space temperature* will reset the cold deck supply air temperature setpoint by modulating the cooling coil valve(s) to maintain the following reset schedule:

Highest Space Temperature	Cold Deck Supply Air Temperature
75°F (adj)	55°F (adj)
65°F (adj)	65°F (adj)

Notes: -Reset schedule above is not applicable for units without chilled water valve(s).
-* Average space temp limits apply to any space temperature between 40°F & 100°F. Any space temperature sensor reading below 40°F or above 100°F are removed from min/max averaging calculations in programming.

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run request, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when any space temperature drops below 60°F (adj) - 2°F deadband. When the lowest space temperature rises + 2°F (adj) above the NSB setpoint the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cool-down mode when average space temperature rises above 85°F (adj) +/- 2°F deadband. When the average space temperature drops - 2°F (adj) below the NSU setpoint, the system will return to the unoccupied mode of operation.

Alarms:

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature(s) has not met the applicable setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature and the heating valve(s) has been fully opened for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

Zone Damper Control:

The zone damper will modulate to maintain the zone space temperature setpoint. This is done by mixing hot deck and cold deck air into a single supply duct.

As the zone space temperature rises above the zone temperature setpoint, the zone damper will modulate to allow additional cool air from the cold deck to mix with air from the hot deck.

As the zone space temperature drops below the zone temperature setpoint, the zone damper will modulate to allow additional warm air from the hot deck to mix with air from the cold deck.

Alarms:

The EMCS will issue and alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit enabled. This time will be extended to 1 Hour (adj) right after a change of status from unoccupied to Occupied mode. In the unoccupied mode an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

The EMCS will issue an alarm at the OWS if the space CO2 level rises above 1100ppm (adj) for more than 10 minutes (adj). This alarm will automatically reset when the level returns to 1100ppm (adj).

Air Handling Unit AH-10 Control: (Multi-Purpose Room)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode-(adj). The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating control valve(s) will modulate to maintain a 55°F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fans have tripped OFF on low limit whether running or not, the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has ben acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run at full speed subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain a supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run at full speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If the outdoor air dry bulb temperature is less than the economizer enable setpoint of 75°F (adj) during the cool-down mode, the AHU will operate in the economizing mode. If the outdoor air dry bulb temperature is more than the economizer enable setpoint during the cool-down mode, the outside and relief/exhaust dampers will remain closed, with the return air damper open. The EMCS will modulate the cooling coil control valve(s) to maintain a cold-deck supply air temperature setpoint of: 50°F(adj).

In the economizer mode, the EMCS will modulate the outside/return/exhaust air dampers to maintain a mixed air temperature setpoint of: 50°F (adj).

Mechanical cooling will be available if the chiller is enabled to run, and the system will operate with outside and relief/exhaust dampers closed and the return air damper open.

The system will continue to run in cool-down mode until the space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and run subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

Supply air return fans will continue to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled.

The EMCS will reset the supply air or VFD speed signal setpoint is response to space temperature deviation from setpoint in order to modulate supply air fan speed. Return air fan speed will track supply air fan speed at pre-determined offset (set by balancer).

The economizer cycle will be disabled when the heating control valve(s) is active (not closed).

When CO2 levels are greater than 1000ppm (adj), the outside air, relief air, and return air dampers will modulate to maintain CO2 levels at or below 1000ppm (adj). Mixed air temperature will be used as a low limit to override the CO2 control to maintain 50°F (adj). When CO2 override is initiated, CO2 control will be highest priority for dampers.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint, and the economizer mode supply air setpoint will be the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating or cooling valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

Unoccupied Mode:

Unoccupied mode will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up (setback) mode when space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises +2°F (adj) above the NSB setpoint the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cool-down (setup) mode when space temperature rises above 85°F (adj) +2°F deadband. When the space temperature drops -2°F (adj) below the NSU setpoint, the system will return to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

The EMCS will issue an alarm at the OWS if the space CO2 level rises above 1100ppm (adj) for more than 10 minutes (adj). This alarm will automatically reset the level return to 1100ppm (adj).

Air Handling Unit AH-11 Control: (Pool)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm. All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating control valve(s) will modulate to maintain a 55°F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fans have tripped OFF on low limit whether running or not, the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has been acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cooldown Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If the outdoor air dry bulb is less than the economizer enable setpoint of 75°F (adj) during the cool-down mode, the AHU will operate in the economizing mode during the morning cool-down mode. If the outdoor air bulb is more than the economizer enable setpoint, the unit will remain off. The EMCS will modulate the outside air and return air dampers to maintain a supply air temperature setpoint of: 55°F (adj).

The system will continue to run in cool-down mode until space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode will be indicated on the AHU graphics screen of the Operator Workstation.

Supply fan will be enabled to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled. The exhaust fans will also start at minimum.

The economizer cycle will be disabled when the heating control valve(s) are active (not closed).

As the outside air damper opens the exhaust fan VFD will slowly increase in speed to maintain building pressurization setpoint as sensed by the building pressure sensor in relation to outside air pressure. Initial setpoint will be positive 0.05" W.C. (adjustable) with final setpoint determined by the balancing contractor.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint.

The vestibule space temperature sensor will reset supply air temperature by modulating the heating valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when the space temperature drops below 65°F (adj) -2°F deadband. When the space temperature drops 2°F (adj) below the NSB setpoint and a 1 hour (adj) minimum runtime has been met, the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cooldown mode when space temperature rises above 85°F +2°F deadband. When the space temperature drops 2°F (adj) below the NSU setpoint, the system will return to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes(adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

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Air Handling Unit AH-15 Control: (Cafeteria)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will modulate to maintain 55°F mixed air temperature, unless the unit has tripped on freezestat. If the fan has tripped off on freezestat whether the fan is running or not, the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on freezestat, the freezestat alarm will require a manual reset prior to restarting. If the freezestat has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F supply air temperature.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run at full speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If the outdoor air dry bulb is less than the economizer enable setpoint during the cool-down mode, the AHU will operate in the economizing mode. If the outdoor air dry bulb is less than the economizer enable setpoint, and cooling is off, the unit will remain off.

The EMCS will modulate the outside air and return air dampers to maintain a supply air temperature setpoint of: 55°F(adj).

When cooling system is enabled the EMCS will modulate the chilled water valve(s) to maintain a supply air temperature setpoint of: 55°F (adj).

The system will continue to run in cool-down mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

The system will be enabled to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled.

The economizer cycle will be disabled when the heating control valve(s) is active (not closed).

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be 2°F. The occupied heating setpoint will be 1°F below the occupied setpoint, and the cooling setpoint will be 1°F above the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating valve(s), and chilled water valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F) and outside air enthalpy economizer switchover. The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

Unoccupied Mode:

Unoccupied mode will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises 2°F (adj) above the NSB setpoint the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cooldown mode when space temperature rises above 85°F (adj) +2°F deadband. When the space temperature drops 2°F (adj) below the NSU setpoint the system will return to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes(adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE

SEQUENCE OF OPERATIONS

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-700

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10/12/2023 2:13 PM

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Air Handling Unit AH-16, 17, 18, 19 & 20 Control: (Gymnasium)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled. When the AHU is off, the heating valve(s) will modulate to maintain a 55°F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fan has tripped OFF on low limit whether the fan is running or not, the EMCS will command the heating valve(s)to 100 percent open for 5 minutes (adj), the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has been acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan(s) will start speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start subject to heating coil discharge low temperature thermostat and supply and return duct smoke detectors.

If space temperature is above the cool-down mode setpoint of 85°F (adj) +2°F deadband, the AHU will operate in the cool-down mode.

If the outdoor air dry bulb is less than the economizer enable setpoint 75°F (adj) during the cool down cycle, the AHU will operate in the economizing mode. If the outdoor air dry bulb is more than the economizer enable setpoint, the outside and relief/exhaust dampers will remain closed, with the return air damper open.

When cooling system is enabled the EMCS will modulate the chilled water valve(s) to maintain a supply air temperature setpoint of: 55°F (adj).

The system will continue to run in cool-down mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

Supply fan will continue to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled. The exhaust fan will also start at minimum.

The economizer cycle will be disabled when the heating control valve(s) are active (not closed).

As the outside air damper opens the exhaust fan VFD will slowly increase in speed to maintain building pressurization setpoint as sensed by the building pressure sensor in relation to outside air pressure. Initial setpoint will be positive 0.05" W.C. (adjustable) with final setpoint determined by the balancing contractor.

The EMCS will reset the supply air or VFD speed signal setpoint in response to space temperature deviation from setpoint in order to modulate supply air fan speed.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint, and the economizer mode supply air setpoint will be the Occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating or cooling valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

When CO2 levels are greater than 1100ppm (adj), the outside air, relief air, and return air dampers will modulate to maintain CO2 levels at or below 1000ppm (adj). Mixed air temperature will be used as a low limit to override the CO2 control to maintain 50°F (adj).

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when the space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises 2°F (adj) above the NSB setpoint, the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cool-down mode when space temperature rises above 85°F (adj) + 2°F deadband. When the space temperature drops 2°F (adj) below the NSU setpoint, the system will return to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

The EMCS will issue an alarm at the OWS if the space CO2 level rises above 1200ppm (adj) for more than 10 minutes (adj). This alarm will automatically reset when the level returns to 1100ppm (adj).

Air Handling Unit AH-21, 22 Control: (Locker Rooms)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm. All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 65°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will modulate to maintain 55°F mixed air temperature, unless the unit has tripped OFF on temperature low limit (TLL). If the fans have tripped off on low limit (whether the fans are running or not), the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within 1 hour, the EMCS will modulate the heating valve(s) to maintain 90°F mixed air temperature until the alarm has been acknowledged and the TLL manually reset.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply and return fans will start and subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fans run, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If space temperature is above the cool-down mode setpoint of 85°F (adj) +2°F deadband, the AHU will operate in the cool-down mode.

If the outdoor air dry bulb temperature is less than the economizer enable setpoint of 75°F (adj) during the cool-down mode, the AHU will operate in the economizing mode. If the outdoor air dry bulb temperature is more than the economizer enable setpoint during the cool-down mode, the outside and relief/exhaust dampers will remain closed, with the return air damper open.

The supply will continue to run in cool-down mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

Supply and return fan(s) will start and run subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

Supply and return fan(s) continue to run, and the outside air damper will open to minimum position, unless free cooling economizer is enabled.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run request, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises 2°F (adj) above the NSB setpoint and a 2 hour (adj) minimum runtime has been met, the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cooldown mode when space temperature rises above 85°F (adj) +2°F deadband. When the space temperature drops 2°F (adj) below the NSU setpoint, the system will remain to the unoccupied mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and the space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint temperature for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

Air Handling Unit AH-23 Control: (lobby)

The EMCS will allow HVAC equipment to be enabled, based on time of day and day of week including holidays. There will be provisions for control algorithms, manual and timed overrides that may enable equipment outside of the normal schedule.

The system will be indexed occupied/unoccupied through the ems OSS routine. The target occupancy times are Monday through Friday 6:30 am to 4:30 pm, All other times will be unoccupied mode. The prestart window for optimal start will be established through field evaluation of the building envelope. Initial setting will be 2 hours before occupied time.

Occupants may press the timed occupancy override button on wall sensor (for 5 seconds) after normal building hours to index the HVAC equipment to control to their normal occupied setpoints. When the space override button is depressed, the air handling unit will run in the occupied mode of operation for a minimum of 2 hours (adj). After the occupancy override, minimum runtime has been satisfied, the unit will return to operation according to the active schedule.

The EMCS will also enable airside equipment as indicated in the unoccupied mode.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will modulate to maintain 55F mixed air temperature, unless the unit has tripped on temperature low limit (TLL). If the fan has tripped off on low limit (whether running or not), the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air dampers will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F supply air temperature.

Warm-up Mode:

Warm-up mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run at full speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

When the fan runs, the outside air damper will remain closed and the return air damper will remain open. The EMCS will modulate the heating coil control valve(s) to maintain the supply air temperature setpoint of: 120°F (adj).

The system will continue to run in warm-up mode until the space temperature has reached the Occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Cool-down Mode:

Cool-down mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run at full speed subject to heating coil discharge freezestat and supply and return duct smoke detectors.

If the outdoor air dry bulb is less than the economizer enable setpoint during the cool down cycle, the AHU will operate in the economizing mode during the morning cool-down cycle. If the outdoor air dry bulb is more than the economizer enable setpoint, and cooling system is off, the unit will remain off.

The EMCS will modulate the outside air and return air dampers to maintain a supply air temperature setpoint of: 55°F (adj).

When cooling system is enabled the EMCS will modulate the chilled water valve(s) to maintain a supply air temperature setpoint of: 55°F (adj).

The system will continue to run in cool-down mode until the space temperature has reached the occupied setpoint. Upon reaching this setpoint the unit will return to its active schedule.

Occupied Mode:

Occupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

System supply fan will start and run subject to heating coil discharge freezestat and supply and return air duct smoke detectors.

Supply and return fan(s) will continue to run, and the outside air damper will initially open to minimum position, unless free cooling economizer is enabled.

The EMCS will reset the supply or VFD speed signal setpoint in response to space temperature deviation from setpoint in order to modulate supply air fan speed. Return air fan speed will modulate to run at pre-determined offset (set by balancer).

The economizer cycle will be disabled when the heating control valve(s) is active (not closed).

When CO2 levels are greater than 1000ppm (adj), the outside air, relief air, and return air dampers will modulate to maintain CO2 levels at or below 1000ppm (adj). Mixed air temperature will be used as a low limit to override the CO2 control to maintain 50°F (adj). When CO2 override is initiated, CO2 control will be highest priority for dampers.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating valve(s) or cooling valve(s) in sequence with outside/return air dampers through mixed air low limit (set at 50°F). The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

Unoccupied Mode:

Unoccupied mode, will be indicated on the AHU graphics screen of the Operator Workstation.

During an unoccupied period, which is free of run requests, the unit will remain off, the outside and relief/exhaust air dampers will be closed, and the heating control valve(s) will modulate to maintain a 55°F mixed air temperature setpoint (adj).

Night Set Back (NSB)

Unit will cycle in the warm-up mode when space temperature drops below 60°F (adj) -2°F deadband. When the space temperature rises 2°F (adj) above the NSB setpoint and a 1 hour (adj) minimum runtime has been met, the system will return to the unoccupied mode of operation.

Night Set Up (NSU)

Unit will cycle in the cooldown mode when space temperature rises above 85°F (adj). When the space temperature drops 2°F (adj) above the NSU setpoint, the system will return to the unoccupied period mode of operation.

Alarms:

The EMCS will issue an alarm at the OWS if the space temperature is not able to reach setpoint +/- 5°F (adj) within 30 minutes (adj) while the unit is enabled. This time will be extended to 1 hour (adj) right after a change of status from unoccupied to occupied mode. In the unoccupied mode, an alarm will occur if the space temperature drops below 55°F (adj), or rises above 90°F (adj) for 30 minutes (adj).

If the AHU has operated in the warm-up or cool-down mode for 60 (adj) minutes and space temperature has not met the space temperature setpoint, an alarm will be sent to the Operator Workstation.

If the supply air temperature is 5°F (adj) below the setpoint for 5 minutes (adj), the EMCS will issue an alarm to the Operator Workstation.

The EMCS will issue an alarm at the OWS if the space CO2 level rises above 1200ppm (adj) for more than 10 minutes (adj). This alarm will automatically reset when the level returns to 1100ppm (adj).

Air Handling Unit AH-24 Control: (Student Kitchen)

The student kitchen hood exhaust fan EF-30 will be locally started/stopped manually and is monitored for operation by the EMCS.

When the exhaust fan is running, the AH-24 system will be enabled, the outside air damper will open and the supply fan will run subject to heating coil discharge freezestat, outside air damper end switch status and supply duct smoke detector.

When the outdoor air temperature is above 60°F (adj), the heating valve(s) will be disabled.

When the AHU is off, the heating valve(s) will commanded fully closed, unless the unit has tripped on temperature low limit (TLL). If the fan has tripped off on low limit (whether running or not), the EMCS will command the heating valve(s) to 100 percent open for 5 (adj) minutes, the outside air damper will close and an alarm will be generated at the Operator Workstation. After tripping on low limit, the TLL alarm will require a manual reset at the TLL prior to restarting. If the TLL has not been reset within the time period the heating valve(s) have been commanded 100 percent open, the EMCS will modulate the heating valve(s) to maintain 90°F supply air temperature.

The occupied setpoint will have a deadband to calculate the heating and cooling setpoints, this deadband will be +/-2°F. The occupied heating setpoint will be 2°F below the occupied setpoint, and the cooling setpoint will be 2°F above the occupied setpoint.

The space sensor will reset supply air temperature by modulating the heating valve. The space temperature setpoint will be maintained by resetting the supply air temperature with the following calculation:

When space temperature is at space temperature setpoint the supply air setpoint will be the space temperature setpoint.

For every 1°F the space temperature is below space temperature setpoint the supply air setpoint will be reset up 10°F with a maximum SA setpoint of 120°F.

For every 1°F the space temperature is above space temperature setpoint the supply air setpoint will be reset down 10°F with a minimum SA setpoint of 55°F.

The supply air setpoint will have a deadband to calculate the heating and cooling supply air setpoints, this deadband will be 4°F. The heating supply air setpoint will be 2°F below the calculated setpoint, the cooling supply air setpoint will be 2°F above the calculated setpoint, and the economizer supply air setpoint will be the calculated setpoint.

When the unit is off, the outside air damper will close, the fan will de-energize and the heating valve(s) will be modulated by the coil entering temperature sensor to maintain 55°F.

There is no unoccupied setback/setup, cooldown or warmup modes of operation for this AHU.

Exhaust Fan Control: (EF-30)

Fan will be commanded on during Occupied mode and will remain off during unoccupied mode.

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PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE

SEQUENCE OF OPERATIONS

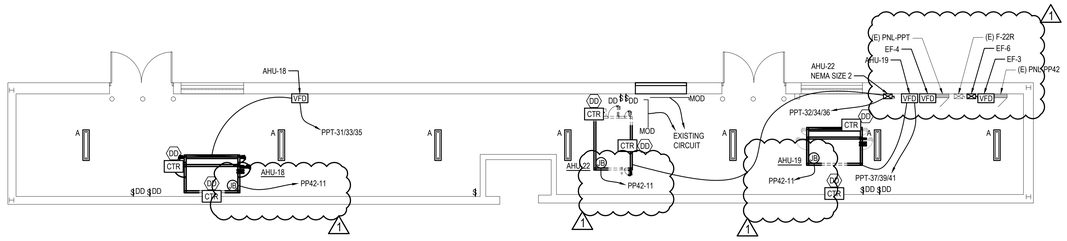
100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

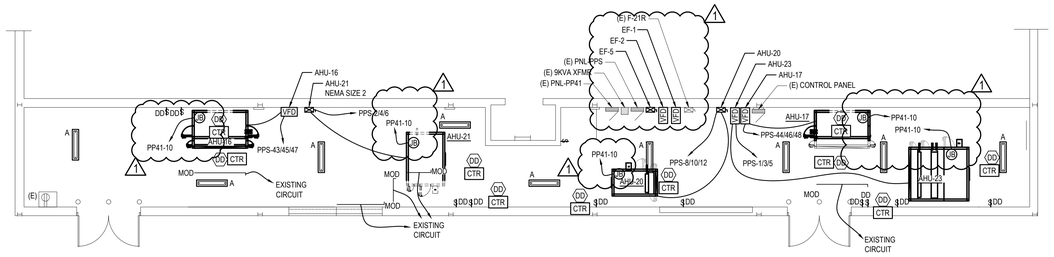
SHEET NO.

M-701



1 E-101 FAN ROOM #13 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

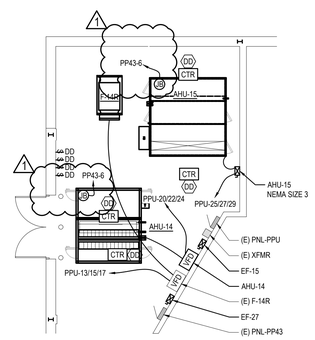


2 E-101 FAN ROOM #14 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

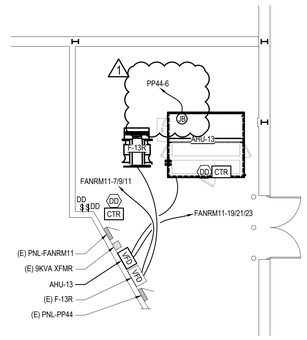
ELECTRICAL NEW WORK NOTE - FAN ROOM #13 AND #14:

1. CONNECT NEW LIGHTING FIXTURES AND LIGHT SWITCH TO THE EXISTING LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.



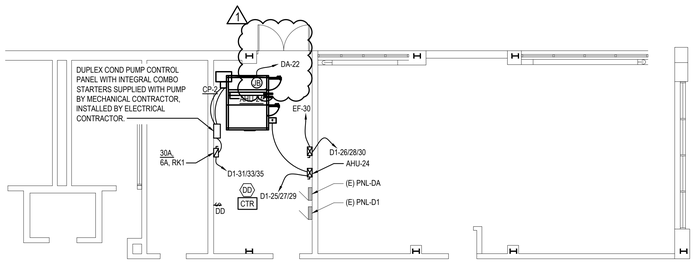
3 E-101 FAN ROOM #10 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



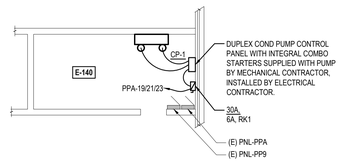
4 E-101 FAN ROOM #11 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



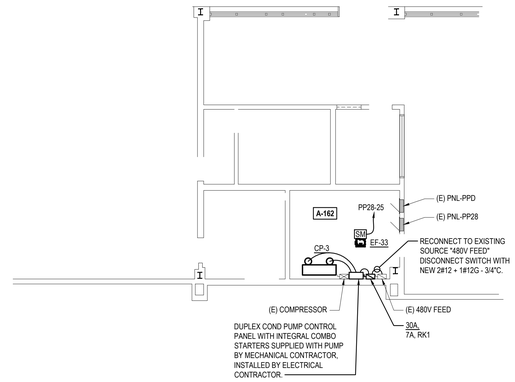
5 E-101 ROOM D104 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



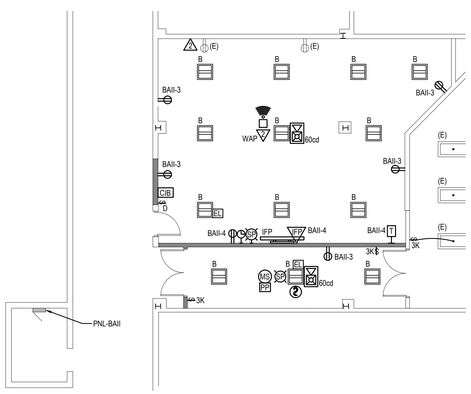
6 E-101 ROOM E140 ELEC NEW PLAN

SCALE: 1/8" = 1'-0"



7 E-101 ROOM A162 ELEC DEMO PLAN

SCALE: 1/8" = 1'-0"

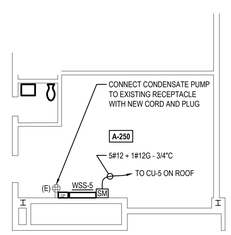


8 E-101 MUSIC SUITE ELEC NEW PLAN

SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTES - MUSIC SUITE:

1. CONNECT NEW LIGHTING FIXTURES TO THE NEW LIGHT SWITCHES AND MOTION SENSOR / POWER PACKS SHOWN. CONNECT TO THE EXISTING LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.
2. IN THE EXISTING MUSIC ROOM, CONNECT THE NEW LIGHT SWITCH TO THE EXISTING LIGHT FIXTURES / LIGHTING CIRCUIT WITH NEW 2#12 + 1#12G - 3/4"C.
3. WHERE EMERGENCY LIGHTING CONTROL UNIT IS SHOWN, CONNECT TO A LOCAL EMERGENCY LIGHTING CIRCUIT. CONTRACTOR TO FIELD VERIFY THE LOCATION OF THE EXISTING EMERGENCY LIGHTING CIRCUIT.
4. WHERE CALL BUTTON IS INDICATED, PROVIDE A NEW CALL BUTTON AND CALL SPEAKER MATCHING EXISTING AND CONNECT TO THE SCHOOL'S EXISTING CALL BUTTON SYSTEM. COORDINATE SYSTEM TYPE AND REQUIREMENTS WITH OWNER. PROVIDE NEW WIRE AND CONDUIT AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. CONFIRM PROPER OPERATION AND MAKE ALL MODIFICATIONS AND REPAIRS TO ENSURE PROPER OPERATION.
5. PROVIDE NEW RECEPTACLES, WIRE, AND CONDUIT AND CONNECT TO THE PANEL INDICATED.
6. PROVIDE NEW TELECOMMUNICATION DEVICES WITH NEW CABLING AND CONDUIT.
7. PROVIDE NEW FIRE ALARM DEVICES WITH NEW WIRE AND CONDUIT.
8. PROVIDE A NEW SPEAKER / CLOCK COMBINATION UNIT MATCHING EXISTING. PROVIDE NEW CABLING, WIRE, AND CONDUIT TO CONNECT TO THE EXISTING SYSTEMS. CONFIRM PROPER OPERATION AND MAKE ALL MODIFICATIONS AND REPAIRS TO ENSURE PROPER OPERATION.



9 E-101 ROOM A250 ELEC NEW PLAN

SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTES:

1. UNLESS NOTED OTHERWISE, FOR ALL NEW AHU'S, PROVIDE NEW VFD CABLE FROM EXISTING VFD TO NEW AHU. SEE PANEL SCHEDULES FOR MORE INFORMATION. PROVIDE NEW WIRE AND CONDUIT EXISTING VFD TO SOURCE PANEL. SEE ELECTRICAL GENERAL NOTE #31 ON SHEET E-000 FOR VFD CABLE REQUIREMENTS.
2. PROVIDE NEW STARTERS FOR ALL NEW CONDENSATE PUMPS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
3. WHERE SHOWN, PROVIDE NEW FRACTIONAL HORSEPOWER MOTOR STARTERS FOR ALL NEW EXHAUST FANS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
4. WHERE SHOWN, FOR ALL EXHAUST FANS, PROVIDE A NEW DISCONNECT SWITCHES AT THE UNITS AND NEW COMBO STARTERS IN THE PENTHOUSES. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
5. CONNECT NEW MODs TO THE EXISTING SOURCE WITH NEW 2#12 + 1#12G - 3/4"C.

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PROJECT

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WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #3	9/27/23
2	ADDENDUM #6	10/13/23

SHEET TITLE

INTERIOR ELECTRICAL PLANS

100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

E-101

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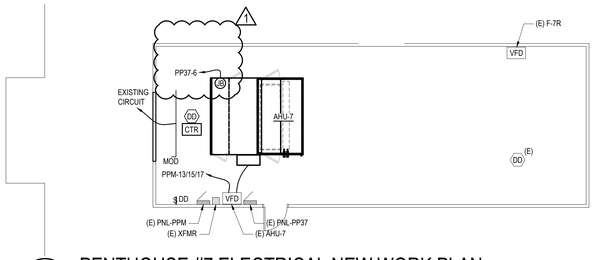
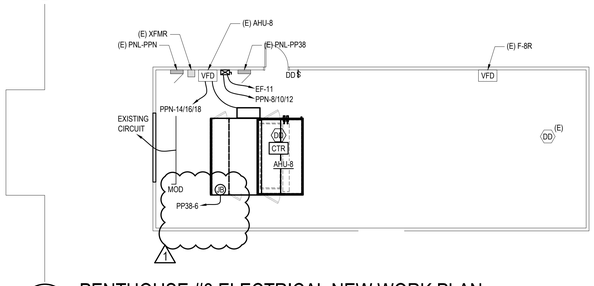


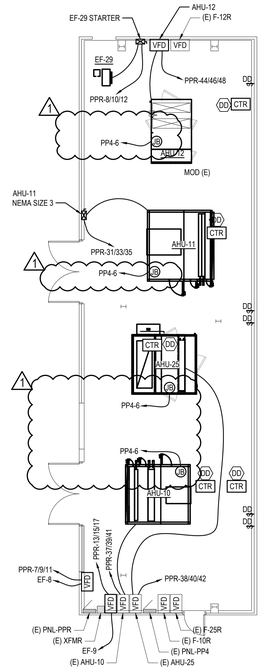
1 E-102 PENTHOUSE #7 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



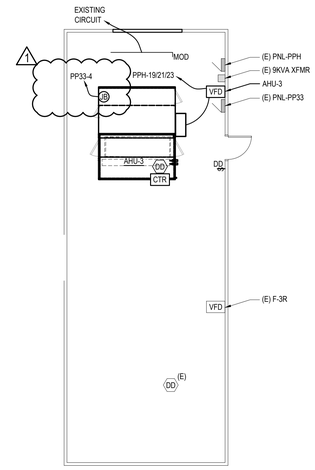
2 E-102 PENTHOUSE #8 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



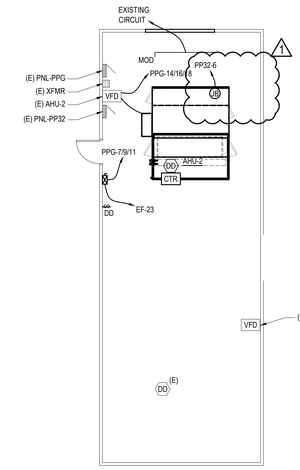
10 E-102 PENTHOUSE #12 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



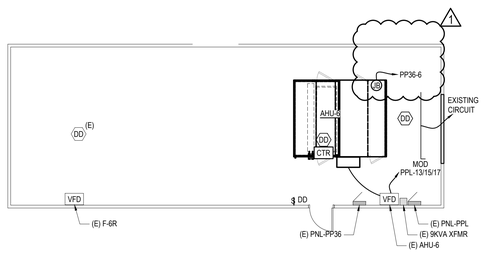
5 E-102 PENTHOUSE #3 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



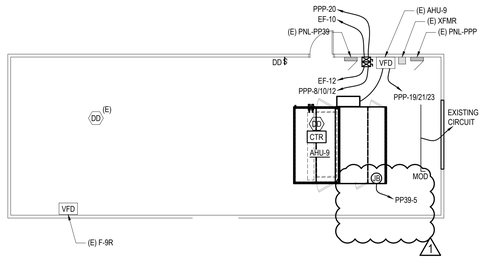
6 E-102 PENTHOUSE #2 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



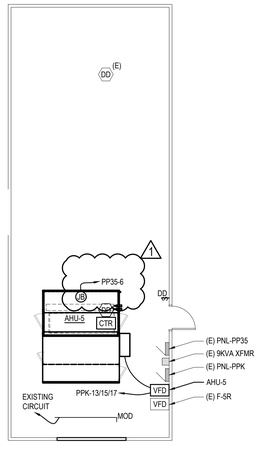
3 E-102 PENTHOUSE #6 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



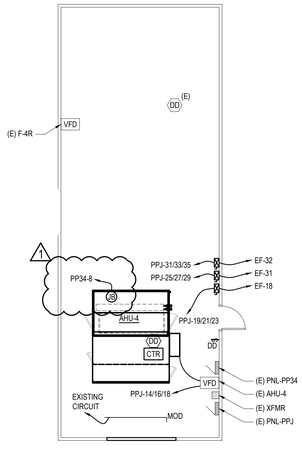
4 E-102 PENTHOUSE #9 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



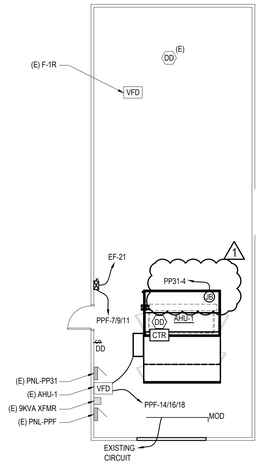
7 E-102 PENTHOUSE #5 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



8 E-102 PENTHOUSE #4 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"



9 E-102 PENTHOUSE #1 ELECTRICAL NEW WORK PLAN

SCALE: 1/8" = 1'-0"

ELECTRICAL NEW WORK NOTES:

1. UNLESS NOTED OTHERWISE, FOR ALL NEW AHU'S, PROVIDE NEW VFD CABLE FROM EXISTING VFD TO NEW AHU. SEE PANEL SCHEDULES FOR MORE INFORMATION. PROVIDE NEW WIRE AND CONDUIT EXISTING VFD TO SOURCE PANEL. SEE ELECTRICAL GENERAL NOTE #31 ON SHEET E-000 FOR VFD CABLE REQUIREMENTS.
2. PROVIDE NEW STARTERS FOR ALL NEW CONDENSATE PUMPS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
3. WHERE SHOWN, PROVIDE NEW FRACTIONAL HORSEPOWER MOTOR STARTERS FOR ALL NEW EXHAUST FANS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
4. WHERE SHOWN, FOR ALL EXHAUST FANS, PROVIDE A NEW DISCONNECT SWITCHES AT THE UNITS AND NEW COMBO STARTERS IN THE PENTHOUSES. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
5. CONNECT NEW MODs TO THE EXISTING SOURCE WITH NEW 2#12 + 1#12G - 3/4"C.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE

PENTHOUSE
ELECTRICAL PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

E-102

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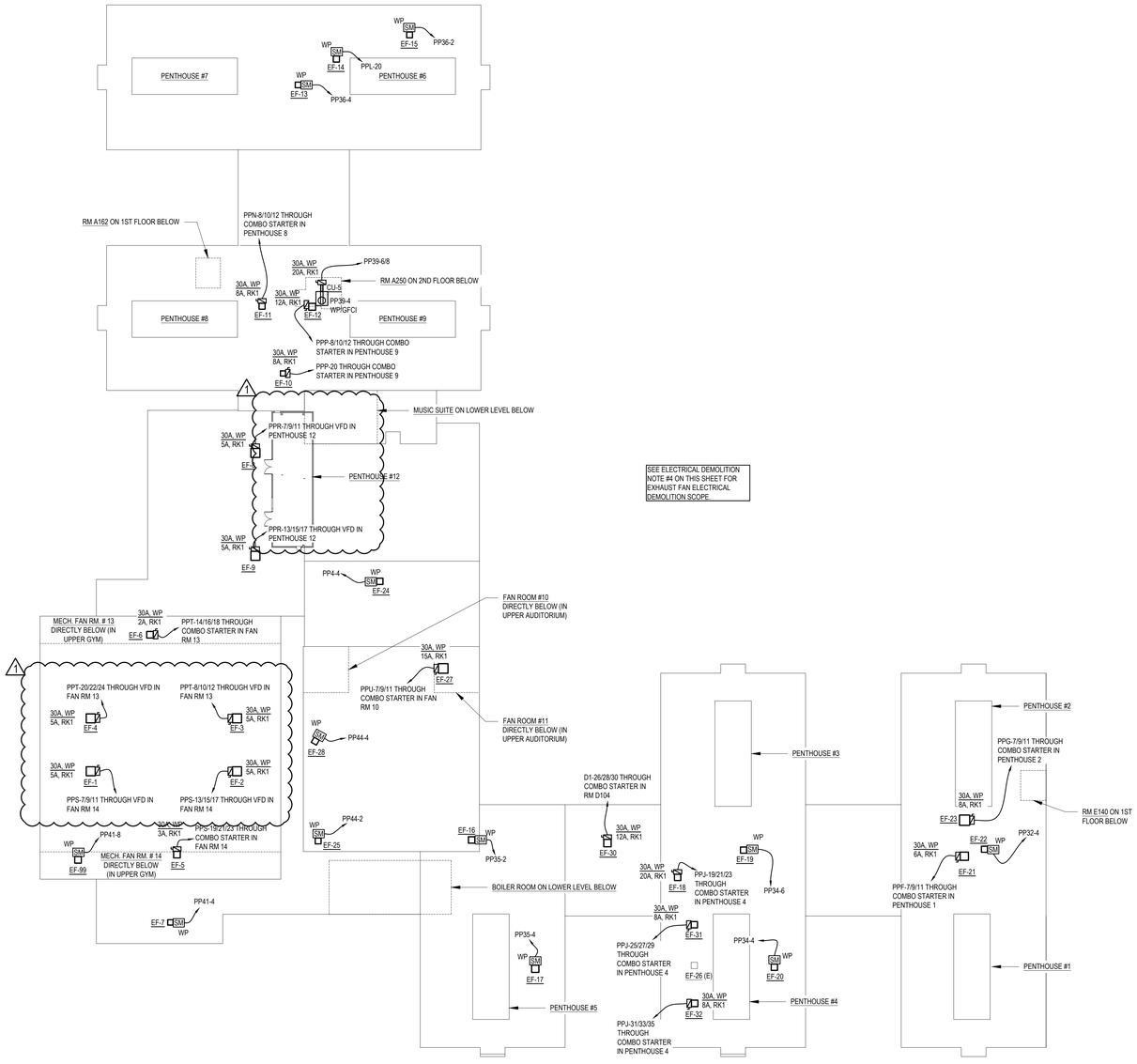
10/6/2023 3:46 PM



SEE ELECTRICAL DEMOLITION NOTE #4 ON THIS SHEET FOR EXHAUST FAN ELECTRICAL DEMOLITION SCOPE.

1 E-103 ROOF EXHAUST FAN ELECTRICAL PLAN

SCALE: 1/32" = 1'-0"

ELECTRICAL DEMOLITION NOTES:

1. ANYWHERE EXISTING WIRE AND/OR CONDUIT ARE NOTED TO BE REMOVED COMPLETELY BACK TO SOURCE;
   1.1. REMOVE WIRE COMPLETELY BACK TO SOURCE ELECTRICAL PANEL.
   1.2. WHERE CONDUIT IS CONNECTED TO A UNIT BEING REPLACED AND THE NEW CONDUIT SPECIFIED ON THE ELECTRICAL PANEL SCHEDULE IS EQUAL IN SIZE TO THE EXISTING CONDUIT, THE EXISTING CONDUIT MAY BE REUSED FOR THE INSTALLATION OF NEW WIRE. DEMOLISH EXISTING CONDUIT TO THE EXTENT REQUIRED TO FACILITATE ARCHITECTURAL AND MECHANICAL WORK. NEW CONDUIT EXTENSIONS SHALL BE PROVIDED TO CONNECT TO NEW UNITS (AND SOURCE ELECTRICAL PANELS WHERE APPLICABLE). SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
2. UNLESS NOTED OTHERWISE, FROM ALL DEMO AHUs, DISCONNECT AND REMOVE STARTERS, DISCONNECT SWITCHES, CONTROLLERS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE PANEL. EXISTING VFDs TO REMAIN FOR REUSE.
3. EXISTING CIRCUIT BREAKERS TO REMAIN FOR REUSE WITH REPLACEMENT MECHANICAL EQUIPMENT.
4. UNLESS NOTED OTHERWISE, ALL NEW EXHAUST FANS SHOWN ARE REPLACEMENT EXHAUST FANS. DISCONNECT AND REMOVE STARTERS, DISCONNECT SWITCHES, WIRE, AND CONDUIT FROM EXISTING EXHAUST FANS COMPLETELY BACK TO SOURCE. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL STARTERS FOR DEMO EXHAUST FANS FOR REPLACEMENT.
5. FROM WALL MOUNTED DUCTLESS SPLIT AND CONDENSER (CU-5), DISCONNECT AND REMOVE DISCONNECT SWITCHES, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE. DISCONNECT AND REMOVE RECEPTACLE FROM CONDENSER (CU-5) WITH WIRE AND CONDUIT COMPLETELY BACK TO SOURCE.
6. DISCONNECT AND REMOVE WIRE AND CONDUIT FROM ALL DEMO MODs COMPLETELY BACK TO SOURCE. RETAIN CIRCUIT FOR RECONNECTION TO REPLACEMENT MODs.
7. UNLESS NOTED OTHERWISE, DISCONNECT AND REMOVE DUCT DETECTORS, WIRE, AND CONDUIT COMPLETELY BACK TO SOURCE FOR REPLACEMENT.

ELECTRICAL NEW WORK NOTES:

1. UNLESS NOTED OTHERWISE, FOR ALL NEW AHU'S, PROVIDE NEW VFD CABLE FROM EXISTING VFD TO NEW AHU. SEE PANEL SCHEDULES FOR MORE INFORMATION. PROVIDE NEW WIRE AND CONDUIT EXISTING VFD TO SOURCE PANEL. SEE ELECTRICAL GENERAL NOTE #31 ON SHEET E-000 FOR VFD CABLE REQUIREMENTS.
2. PROVIDE NEW STARTERS FOR ALL NEW CONDENSATE PUMPS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
3. WHERE SHOWN, PROVIDE NEW FRACTIONAL HORSEPOWER MOTOR STARTERS FOR ALL NEW EXHAUST FANS. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
4. WHERE SHOWN, FOR ALL EXHAUST FANS, PROVIDE A NEW DISCONNECT SWITCHES AT THE UNITS AND NEW COMBO STARTERS IN THE PENTHOUSES. CONNECT TO EXISTING SOURCES WITH NEW WIRE AND CONDUIT. SEE PANEL SCHEDULES FOR MORE INFORMATION.
5. CONNECT NEW MODs TO THE EXISTING SOURCE WITH NEW 2#12 + 1#12G - 3/4"C.

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WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE

ROOF ELECTRICAL PLAN

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.

E-103

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10/16/2023 3:46 PM

EXISTING PANEL

PANEL: PP31
LOCATION: PENTHOUSE 1
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	0.23	-	*
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPF
LOCATION: PENTHOUSE 1
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	0.94	-	-	EF-21	3	15	7	8	20	3	EXISTING LOAD - AHU-1R	-	-	-	
	-	0.94	-				9	10				-	-	-	
	-	-	0.94				11	12				-	-	-	
	-	-	-	EXISTING LOAD	3	20	13	14	60	3	AHU-1	9.47	-	-	**
	-	-	-				15	16				-	9.47	-	
	-	-	-				17	18				-	-	9.47	
	-	-	-	SPACE	-	-	19	20	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP32
LOCATION: PENTHOUSE 2
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-22	-	1.18	-	*
	-	-	-	SPACE	-	-	5	6	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	-	0.23	**
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#8 + 1#8G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPG
LOCATION: PENTHOUSE 2
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	1.33	-	-	EF-23	3	15	7	8	20	3	EXISTING LOAD - AHU-2R	-	-	-	
	-	1.33	-				9	10				-	-	-	
	-	-	1.33				11	12				-	-	-	
	-	-	-	EXISTING LOAD	3	20	13	14	60	3	AHU-2	10.6	-	-	**
	-	-	-				15	16				-	10.6	-	
	-	-	-				17	18				-	-	10.6	
	-	-	-	SPACE	-	-	19	20	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP33
LOCATION: PENTHOUSE 3
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	0.23	-	*
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPH
LOCATION: PENTHOUSE 3
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-3R	3	15	7	8	20	3	EXISTING LOAD	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
	-	-	-	SPARE	3	90	13	14	-	-	SPACE	-	-	-	
	-	-	-				15	16	-	-	SPACE	-	-	-	
	-	-	-				17	18	-	-	SPACE	-	-	-	
*	14.1	-	-	AHU-3	3	80	19	20	-	-	SPACE	-	-	-	
	-	14.1	-				21	22	-	-	SPACE	-	-	-	
	-	-	14.1				23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 3#4 + 1#8G - 1"C.

EXISTING PANEL

PANEL: PPJ
LOCATION: PENTHOUSE 4
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - EF-26	3	15	7	8	20	3	EXISTING LOAD - AHU-4R	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
	-	-	-	EXISTING LOAD	3	20	13	14	60	3	AHU-4	10.6	-	-	**
	-	-	-				15	16				-	10.6	-	
	-	-	-				17	18				-	-	10.6	
*	0.44	-	-	EF-18	3	15	19	20	-	-	SPACE	-	-	-	
	-	0.44	-				21	22	-	-	SPACE	-	-	-	
	-	-	0.44				23	24	-	-	SPACE	-	-	-	
***	1.33	-	-	EF-31	3	20	25	26	-	-	SPACE	-	-	-	
	-	1.33	-				27	28	-	-	SPACE	-	-	-	
	-	-	1.33				29	30	-	-	SPACE	-	-	-	
***	1.33	-	-	EF-32	3	20	31	32	-	-	SPACE	-	-	-	
	-	1.33	-				33	34	-	-	SPACE	-	-	-	
	-	-	1.33				35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PP34
LOCATION: PENTHOUSE 4
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-20	-	0.70	-	*
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EF-19	-	-	0.70	**
	-	-	-	SPACE	-	-	7	8	20	1	AHU INTEGRAL RECEPT & LIGHTING	0.23	-	-	*
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PPK
LOCATION: PENTHOUSE 5
BUS: 100A
MAIN: MLO
VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-5R	3	15	7	8	20	3	EXISTING LOAD	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
	-	-	-	SPARE	3	60	13	14	-	-	SPACE	-	-	-	
	-	-	-				15	16	-	-	SPACE	-	-	-	
	-	-	-				17	18	-	-	SPACE	-	-	-	
*	12.2	-	-	AHU-5	3	70	19	20	-	-	SPACE	-	-	-	
	-	12.2	-				21	22	-	-	SPACE	-	-	-	
	-	-	12.2				23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 3#4 + 1#8G - 1"C.

EXISTING PANEL

PANEL: PP35
LOCATION: PENTHOUSE 5
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EF-16	1.18	-	-	**
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-17	-	1.18	-	*
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	-	0.23	***
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#10 + 1#10G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#8 + 1#8G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPL
LOCATION: PENTHOUSE 6
BUS: 100A
MAIN: MLO
VOLTAGE: 480Y/277V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-6R	3	15	7	8	20	3	EXISTING LOAD	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
*	10.6	-	-	AHU-6	3	60	13	14	15	3	SPARE	-	-	-	
	-	10.6	-				15	16				-	-	-	
	-	-	10.6				17	18				-	-	-	
	-	-	-	SPACE	-	-	19	20	20	1	EF-14	0.89	-	-	**
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PP36
LOCATION: PENTHOUSE 6
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EF-15	0.70	-	-	*
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-13	-	1.18	-	**
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	-	0.23	***
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#10 + 1#10G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPM
LOCATION: PENTHOUSE 7
BUS: 100A
MAIN: MLO
VOLTAGE: 480Y/277V, 3PH, 4W
ENCLOSURE: ___
A.I.C.: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-7R	3	15	7	8	20	3	EXISTING LOAD	-	-	-	
	-	-	-				9	10				-	-	-	
	-	-	-				11	12				-	-	-	
*	10.6	-	-	AHU-7	3	60	13	14	-	-	SPACE	-	-	-	
	-	10.6	-				15	16	-	-	SPACE	-	-	-	
	-	-	10.6				17	18	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	19	20	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP37
LOCATION: PENTHOUSE 7
BUS: 100A
MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C.: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	5	6	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	-	0.23	*
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

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ARCHITECT / ENGINEER SEAL

PROJECT
WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE
ELECTRICAL PANEL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.
E-600

10/6/2023 3:46 PM

EXISTING PANEL

PANEL: PPN — LOCATION: PENTHOUSE 8 — BUS: 100A — MAIN: MLO
VOLTAGE: 480V, 3PH, 3W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD - AHU-8R	3	15	7	8	15	3	EF-11	1.33	-	-	*
	-	-	-				9	10				-	1.33	-	
	-	-	-				11	12				-	-	1.33	
	-	-	-	EXISTING LOAD	3	20	13	14	60	3	AHU-8	-	-	-	
	-	-	-				15	16				-	-	-	
	-	-	-				17	18				-	-	-	
	-	-	-	SPACE	-	-	19	20	50	3	AHU-8	9.14	-	-	**
	-	-	-	SPACE	-	-	21	22				-	9.14	-	
	-	-	-	SPACE	-	-	23	24				-	-	9.14	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#8 + 1#10G - 3/4"C.

1

EXISTING PANEL

PANEL: PP38 — LOCATION: PENTHOUSE 8 — BUS: 100A — MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	~~4~~	~~20~~	~~1~~	~~EXISTING LOAD~~	-	-	-	
	-	-	-	SPACE	-	-	5	6	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	-	0.23	*
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

1

EXISTING PANEL

PANEL: PP39 — LOCATION: PENTHOUSE 9 — BUS: 100A — MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	RECEPT. - ROOF	-	0.18	-	*
*	-	-	0.23	AHU INTEGRAL RECEPT & LIGHTING	1	20	5	6	20	2	CU-1	-	-	1.30	**
	-	-	-	SPACE	-	-	7	8				1.30	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PPP — LOCATION: PENTHOUSE 9 — BUS: 100A — MAIN: MLO
VOLTAGE: 480V, 3PH, 3W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPARE	3	15	7	8	15	3	EF-12	2.11	-	-	*
	-	-	-				9	10				-	2.11	-	
	-	-	-				11	12				-	-	2.11	
	-	-	-	EXISTING LOAD - AHU-9R	3	20	13	14	20	3	EXISTING LOAD	-	-	-	
	-	-	-				15	16				-	-	-	
	-	-	-				17	18				-	-	-	
**	9.98	-	-	AHU-9	3	60	19	20	20	1	EF-10	1.39	-	-	***
	-	9.98	-				21	22	-	-	SPACE	-	-	-	
	-	-	9.98				23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#6 + 1#10G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PP4 — LOCATION: PENTHOUSE 12 — BUS: 100A — MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-24	-	0.70	-	*
	-	-	-	SPACE	-	-	5	6	20	1	AHUs INTEGRAL RECEPT & LIGHTING	-	-	0.92	**
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#10 + 1#10G - 3/4"C.

1

EXISTING PANEL

PANEL: PPR — LOCATION: PENTHOUSE 12 — BUS: 225A — MAIN: MLO
VOLTAGE: 480V, 3PH, 3W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	0.83	-	-	EF-8	3	15	7	8	15	3	EF-29	0.30	-	-	*
	-	0.83	-				9	10				-	0.30	-	
	-	-	0.83				11	12				-	-	0.30	
*	0.83	-	-	EF-9	3	15	13	14	15	3	EXISTING LOAD - AHU-12R	-	-	-	
	-	0.83	-				15	16				-	-	-	
	-	-	0.83				17	18				-	-	-	
	-	-	-	EXISTING LOAD - AHU-10R	3	15	19	20	-	-	SPARE	-	-	-	
	-	-	-				21	22				-	-	-	
	-	-	-				23	24				-	-	-	
	-	-	-	EXISTING LOAD - AHU-25R	3	15	25	26	20	3	EXISTING LOAD	-	-	-	
	-	-	-				27	28				-	-	-	
	-	-	-				29	30				-	-	-	
**	4.90	-	-	AHU-11	3	30	31	32	40	3	SPARE	-	-	-	
	-	4.90	-				33	34				-	-	-	
	-	-	4.90				35	36				-	-	-	
**	4.71	-	-	AHU-25	3	30	37	38	-	-	SPACE	-	-	-	
	-	4.71	-				39	40	-	-	SPACE	-	-	-	
	-	-	4.71				41	42	-	-	SPACE	-	-	-	
***	3.46	-	-	AHU-10	3	20	43	44	20	3	AHU-12	3.60	-	-	***
	-	3.46	-				45	46				-	3.60	-	
	-	-	3.46				47	48				-	-	3.60	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#10 + 1#10G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#12 + 1#12G - 3/4"C.
**** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP43 — LOCATION: FAN RM 10 — BUS: 100A — MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	~~4~~	~~20~~	~~1~~	~~EXISTING LOAD~~	-	-	-	
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	AHUs INTEGRAL RECEPT & LIGHTING	-	-	0.46	*
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

1

EXISTING PANEL

PANEL: PPU — LOCATION: FAN RM 10 — BUS: 100A — MAIN: MLO
VOLTAGE: 480V, 3PH, 3W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	2.11	-	-	EF-27	3	15	7	8	15	3	EXISTING LOAD	-	-	-	
	-	2.11	-				9	10				-	-	-	
	-	-	2.11				11	12				-	-	-	
*	0.94	-	-	F-14R	3	15	13	14	40	3	SPARE	-	-	-	
	-	0.94	-				15	16				-	-	-	
	-	-	0.94				17	18				-	-	-	
	-	-	-	SPARE	3	40	19	20	50	3	AHU-14	6.73	-	-	**
	-	-	-				21	22				-	6.73	-	
	-	-	-				23	24				-	-	6.73	
**	4.90	-	-	AHU-15	3	30	25	26	-	-	SPACE	-	-	-	
	-	4.90	-				27	28	-	-	SPACE	-	-	-	
	-	-	4.90				29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: FANRM11 — LOCATION: FAN RM 11 — BUS: 100A — MAIN: MLO
VOLTAGE: 480V, 3PH, 3W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
*	1.33	-	-	F-13R	3	15	7	8	15	3	EXISTING LOAD	-	-	-	
	-	1.33	-				9	10				-	-	-	
	-	-	1.33				11	12				-	-	-	
	-	-	-	SPARE	3	40	13	14	-	-	SPACE	-	-	-	
	-	-	-				15	16	-	-	SPACE	-	-	-	
	-	-	-				17	18	-	-	SPACE	-	-	-	
**	9.70	-	-	AHU-13	3	60	19	20	-	-	SPACE	-	-	-	
	-	9.70	-				21	22	-	-	SPACE	-	-	-	
	-	-	9.70				23	24	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	33	34	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	35	36	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#6 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP44 — LOCATION: FAN RM 11 — BUS: 100A — MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	-	1	2	20	1	EF-25	0.23	-	-	*
	-	-	-	EXISTING LOAD	1	-	3	4	20	1	EF-28	-	0.29	-	*
	-	-	-	EXISTING LOAD	1	-	5	6	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	-	0.23	*
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C.

1

EXISTING PANEL

PANEL: PPT — LOCATION: FAN RM 13 — BUS: ___ — MAIN: ___
VOLTAGE: 480V, 3PH, 3W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	SPARE	3	15	7	8	15	3	EF-3	0.83	-	-	*
	-	-	-				9	10				-	0.83	-	
	-	-	-				11	12				-	-	0.83	
	-	-	-	SPARE	3	15	13	14	15	3	EF-6	0.30	-	-	*
	-	-	-				15	16				-	0.30	-	
	-	-	-				17	18				-	-	0.30	
	-	-	-	EXISTING LOAD - AHU-22R	3	15	19	20	15	3	EF-4	0.83	-	-	*
	-	-	-				21	22				-	0.83	-	
	-	-	-				23	24				-	-	0.83	
	-	-	-	SPARE	3	20	25	26	20	3	EXISTING LOAD	-	-	-	
	-	-	-				27	28				-	-	-	
	-	-	-				29	30				-	-	-	
***	4.90	-	-	AHU-18	3	30	31	32	25	3	AHU-22	3.46	-	-	**
	-	4.90	-				33	34				-	3.46	-	
	-	-	4.90				35	36				-	-	3.46	
***	4.90	-	-	AHU-19	3	30	37	38	-	-	SPACE	-	-	-	
	-	4.90	-				39	40	-	-	SPACE	-	-	-	
	-	-	4.90				41	42	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	43	44	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	45	46	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	47	48	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#12 + 1#12G - 3/4"C.
*** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#10 + 1#10G - 3/4"C.

EXISTING PANEL

PANEL: PP42 — LOCATION: FAN RM 13 — BUS: 100A — MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	3	30	5	6	20	-	EXISTING LOAD	-	-	-	
	-	-	-				7	8	-	-	SPACE	-	-	-	
	-	-	-				9	10	-	-	SPACE	-	-	-	
*	-	-	0.69	AHUs INTEGRAL RECEPT & LIGHTING	1	20	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#10 + 1#10G - 3/4"C.

1

EXISTING PANEL

PANEL: PP41 — LOCATION: FAN RM 14 — BUS: 100A — MAIN: MLO
VOLTAGE: 208Y/120V, 3PH, 4W — ENCLOSURE: NEMA-1 — A.I.C.: ___ — RATINGS: ___ — MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EF-7 & EXISTING RECEPT	-	0.88	-	*
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	7	8	20	1	EF-99	1.18	-	-	**
	-	-	-	SPACE	-	-	9	10	20	1	AHUs INTEGRAL RECEPT & LIGHTING	-	1.15	-	**
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 2#12 + 1#12G - 3/4"C. RECONNECT CIRCUIT TO EXISTING RECEPTACLE WITH NEW 2#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#10 + 1#10G - 3/4"C.

1

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ARCHITECT / ENGINEER SEAL

PROJECT
WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE
ELECTRICAL PANEL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.
E-601

10/6/2023 3:46 PM

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10/6/2023 3:46 PM

EXISTING PANEL

PANEL: PPS
LOCATION: FAN RM 14
BUS: 225A
MAIN: MLO

VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
**	3.46	-	-	AHU-23	3	25	1	2	25	3	AHU-21	3.46	-	-	**
	-	3.46	-				3	4				-	3.46	-	
	-	-	3.46				5	6				-	-	3.46	
*	0.83	-	-	EXISTING LOAD - EF-1	3	15	7	8	15	3	AHU-20	0.64	-	-	*
	-	0.83	-				9	10				-	0.64	-	
	-	-	0.83				11	12				-	-	0.64	
*	0.83	-	-	EXISTING LOAD - EF-2	3	15	13	14	15	3	EXISTING LOAD - AHU-21R	-	-	-	
	-	0.83	-				15	16				-	-	-	
	-	-	0.83				17	18				-	-	-	
*	1.33	-	-	EXISTING LOAD - EF-5	3	15	19	20	15	3	SPARE	-	-	-	
	-	1.33	-				21	22				-	-	-	
	-	-	1.33				23	24				-	-	-	
	-	-	-	EXISTING LOAD	3	15	25	26	20	3	SPARE	-	-	-	
	-	-	-				27	28				-	-	-	
	-	-	-				29	30				-	-	-	
	-	-	-	SPARE	3	20	31	32	20	3	SPARE	-	-	-	
	-	-	-				33	34				-	-	-	
	-	-	-				35	36				-	-	-	
	-	-	-	EXISTING LOAD	3	20	37	38	20	3	EXISTING LOAD	-	-	-	
	-	-	-				39	40				-	-	-	
	-	-	-				41	42				-	-	-	
**	4.90	-	-	AHU-16	3	30	43	44	30	3	AHU-17	4.90	-	-	**
	-	4.90	-				45	46				-	4.90	-	
	-	-	4.90				47	48				-	-	4.90	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#10 + 1#10G - 3/4"C.

1

EXISTING PANEL

PANEL: DA
LOCATION: MECH D104
BUS: 100A
MAIN: MLO

VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	7	8	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	9	10	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	11	12	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	13	14	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	-	15	16	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	17	18	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	19	20	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	21	22	20	1	AHU INTEGRAL RECEPT & LIGHTING	-	0.23	-	*
	-	-	-	SPACE	-	-	23	24	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	25	26	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	31	32	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD	2	20	33	34	20	2	EXISTING LOAD	-	-	-	
	-	-	-				35	36				-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: D1
LOCATION: MECH D104
BUS: 225A
MAIN: MLO

VOLTAGE: 480Y/277V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD	1	20	7	8	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	9	10	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	11	12	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	13	14	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	15	16	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	17	18	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	19	20	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	21	22	-	-	SPACE	-	-	-	
	-	-	-	SPACE	-	-	23	24	-	-	SPACE	-	-	-	
**	2.66	-	-	AHU-24	3	20	25	26	15	3	EF-30	2.11	-	-	*
	-	2.66	-				27	28				-	2.11	-	
	-	-	2.66				29	30				-	-	2.11	
*	0.89	-	-	CP-2	3	15	31	32	15	3	SPARE	-	-	-	
	-	0.89	-				33	34				-	-	-	
	-	-	0.89				35	36				-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 3#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PP28
LOCATION: RM A162
BUS: 100A
MAIN: MLO

VOLTAGE: 208Y/120V, 3PH, 4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NLAB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	7	8	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	9	10	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	11	12	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	13	14	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	15	16	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	17	18	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	19	20	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	21	22	20	1	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	1	20	23	24	40	1	EXISTING LOAD	-	-	-
*	0.03	-	-	EF-33	1	20	25	26	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	27	28	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	29	30	-	-	SPACE	-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: PPA
LOCATION: RM E140
BUS: 225A
MAIN: MLO

VOLTAGE: 480V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - NHB

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
	-	-	-	SPACE	-	-	1	2	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	3	4	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	5	6	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	7	8	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	9	10	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	11	12	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	13	14	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	15	16	-	-	SPACE	-	-	-
	-	-	-	SPACE	-	-	17	18	-	-	SPACE	-	-	-
*	0.89	-	-	CP-1	3	15	19	20	-	-	SPACE	-	-	-
	-	0.89	-				21	22	-	-	SPACE	-	-	-
	-	-	0.89				23	24	100	3	EXISTING LOAD	-	-	-
	-	-	-	EXISTING LOAD	2	100	25	26				-	-	-
	-	-	-				27	28				-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* REUSE EXISTING CIRCUIT BREAKER AND PROVIDE NEW 3#12 + 1#12G - 3/4"C.

EXISTING PANEL

PANEL: BAII
LOCATION: ELEC. RM. B115
BUS: ___
MAIN: MLO

VOLTAGE: 208/120V, 3PH, 3W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___
MFR: GE - LOAD CENTER

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-	
*	-	0.90	-	RECEPTS - NEW CLASSROOM	1	20	3	4	20	1	RECEPTS - NEW CLASSROOM	-	0.90	-	*
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	7	8	60	3	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	9	10				-	-	-	
	-	-	-	EXISTING LOAD	1	20	11	12				-	-	-	
	-	-	-	SPACE	-	-	13	14	60	3	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	15	16				-	-	-	
	-	-	-	SPACE	-	-	17	18				-	-	-	
	-	-	-	SPACE	-	-	19	20	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	21	22	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	23	24	20	1	EXISTING LOAD	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND 2#12 + 1#12G - 3/4"C.

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CONSULTANT

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ARCHITECT / ENGINEER SEAL

PROJECT
WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #6	10/13/23

SHEET TITLE
ELECTRICAL PANEL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
JD	JD	22106

SHEET NO.
E-602

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING

OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #7

October 17, 2023

RFP 7815 HVAC Replacement Crosby High School/Wallace Middle Schools

All proposals of the above captioned project are hereby notified that the Contract Documents for the above referenced project are amended as noted in this Addendum No. 7. This Addendum shall be part of the Contract Documents for the above referenced project as provided in the Request for Proposal.

Receipt of this Addendum shall be acknowledged in writing on the form included in Attachment C of the RFP. Failure to do so may subject Proposer to Disqualification.

The Contract Documents are hereby amended as follow:

THE DUE DATE FOR PROPOSALS HAS BEEN CHANGED TO OCTOBER 25, 2023 AT 11:45AM.

<u>Changes to Drawings:</u>

Mechanical

1. Drawing M-500
   a. Revised notes in remarks for AHU-11 and AHU-24 to call for new detail 7/M-600
2. Drawing M-600
   a. Changed exhaust fan detail to number 9/M-600
   b. Revised 6/M-600 – Typical Steam Coil Connection Detail
   c. Added 7/M-600 – Typical Steam Coil Connection Detail – Where Noted

NOTE: Each Proposal over $50,000.00 submitted shall be accompanied by a Proposal Security (a Certified Check or Bid Bond) in the amount of ten (10) percent of the Total Proposal Price.

235 GRAND STREET • WATERBURY, CONNECTICUT 06702 • PHONE: (203) 574-6749 • FAX: (203) 597-3437

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: "THE ELECTRONIC DATA TRANSMITTED ('DATA') MAY BE ALTERED DURING TRANSIT AND TRANSLATION. * JAED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. * THE RECEIVER WILL COMPARE THE DATA WITH AVAILABLE HARD COPIES. * JAED CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. * THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PRODUCED. * THE RECEIVER SHALL MAKE NO CLAIM NOR INITIATE ANY ACTION IN LAW OR EQUITY AGAINST JAED CORPORATION WITH RESPECT TO ANY DEFECT ERROR OR OMISSION IN THE DATA. * THE RECEIVER AGREES TO THE FULLEST EXTENT PERMITTED BY LAW TO DEFEND, INDEMNIFY AND HOLD HARMLESS JAED CORPORATION FROM AND AGAINST ALL CLAIMS, DAMAGES, LIABILITIES AND COSTS (INCLUDING REASONABLE ATTORNEY'S FEES AND COSTS OF DEFENSE) ARISING OUT OF OR RESULTING FROM THE USE OF ELECTRONIC DATA.

10/17/2023 2:39 PM

AHU - #

AIR HANDLING UNIT SCHEDULE (CHILLED WATER COOLING, STEAM HEATING)

UNIT NUMBER	TYPE	AIRFLOW (CFM)	OA (CFM)	E.S.P (IN H20)	COOLING COIL								HEATING COIL					SUPPLY FAN HP	SUPPLY FAN QTY	ELEC	MFR	MODEL #	AREA SERVED	REMARKS
					EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	SENS MBH	TOTAL MBH	GPM	EWT/LWT	EAT (°F)	LAT (°F)	MBH	STEAM PRESSURE (PSI)	FLOW (LB/HR)							
AHU-1	DOUBLE-DECK MULTI ZONE	30,600	6600	1.5	80	67	54.6	54.3	855	1188	173	42/56	60	101	1352	5	1408	27	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-2	DOUBLE-DECK MULTI ZONE	31,350	6700	2.0	80	67	54.9	54.5	869	1200	173	42/56	60	100	1364	5	1505	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-3	DOUBLE-DECK MULTI ZONE	35,165	6500	1.75	80	67	54.6	54.4	985	1354	173	42/58	60	100	1510	5	1572	39	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-4	DOUBLE-DECK MULTI ZONE	31,950	6600	2.0	80	67	55.0	54.7	879	1210	173	42/56	60	100	1373	5	1429	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA E	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-5	DOUBLE-DECK MULTI ZONE	32,210	6500	2.25	80	67	55.1	54.7	884	1213	173	42/56	60	99	1377	5	1433	33	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA D	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-6	DOUBLE-DECK MULTI ZONE	32,020	8000	1.75	80	67	55.0	54.7	881	1210	173	42/56	60	100	1374	5	1430	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-7	DOUBLE-DECK MULTI ZONE	28,945	8300	2.5	80	67	54.1	53.8	825	1161	173	42/55	60	102	1327	5	1380	30	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-8	DOUBLE-DECK MULTI ZONE	27,350	8000	2.0	80	67	53.6	53.3	796	1133	173	42/55	60	104	1300	5	1353	24	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-9	DOUBLE-DECK MULTI ZONE	30,700	7600	2.0	80	67	54.7	54.3	857	1190	173	42/56	60	101	1354	5	1409	27	1	460/3/60	NORTEK	VENTROL CUSTOM	CLASSROOMS AREA A	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-10	SINGLE ZONE	12,000	TBD	0.75	80	67	55.4	53.8	319	476	72	42/55	60	117	745	5	753	10	1	460/3/60	JCI	XTI-51X93	MULTI-PURPOSE ROOM	
AHU-11	SINGLE ZONE	22,000	TBD	1.5	-	-	-	-	-	-	-	-	0	104	2466	5	2511	15	1	460/3/60	JCI	XTI-75X111	POOL	PROVIDE DUAL INLINE STEAM COILS. COIL PERFORMANCE LISTED IS TOTAL PERFORMANCE. PROVIDE "WHERE NOTED" STEAM CONTROL VALVE DETAIL FOR EACH COIL
AHU-12	DOUBLE-DECK MULTIZONE	6700	1575	2.0	80	67	55.0	54.6	185	255	39	42/55	60	103	309	5	321	9	1	460/3/60	NORTEK	VENTROL CUSTOM	MIDDLE SCHOOL MUSIC SUITE	PROVIDE STEAM COIL PULL AT REAR OF HOT DECK. PROVIDE STACKED COOLING COILS
AHU-13	DOUBLE-DECK MULTIZONE	18,000	TBD	2.0	80	67	54.4	53.8	507	724	108	42/55	60	100	789	5	821	27	1	460/3/60	NORTEK	VENTROL CUSTOM	AUDITORIUM	PROVIDE FILTER ACCESS AT REAR OF UNIT. PROVIDE REMOTE MOUNT ELECTRICAL PANEL
AHU-14	DOUBLE-DECK MULTIZONE	14,000	1950	2.0	80	67	55.2	54.1	376	543	84	42/55	60	92.5	491	5	498	20	1	460/3/60	JCI	XTI-54X102	HIGH SCHOOL MUSIC SUITE	
AHU-15	SINGLE ZONE	12,000	TBD	2.0	80	67	51.6	51.4	374	557	115	42/52	60	109	635	5	661	12	1	460/3/60	NORTEK	VENTROL CUSTOM	CAFETERIA	
AHU-16	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	NOTE: PROVIDE AHU-16 THRU 19 WITH BLANK SECTION FOR FUTURE COOLING COIL. FANS ARE SIZED TO ACCOUNT FOR P.D. THROUGH FUTURE COOLING COIL
AHU-17	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-18	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-19	SINGLE ZONE	10,000	1500	1.5	-	-	-	-	-	-	-	-	0	89	956	5	950	15	1	460/3/60	JCI	XTI-45X87	GYMNASIUM	
AHU-20	SINGLE ZONE	3000	TBD	0.75	-	-	-	-	-	-	-	-	50	103	171	5	176	1.5	1	460/3/60	JCI	XTI-39X42	GYM LOBBY	
AHU-21	SINGLE ZONE	8000	TBD	1.5	-	-	-	-	-	-	-	-	0	91	787	5	787	10	1	460/3/60	JCI	XTI-42X84	LOCKER ROOMS	
AHU-22	SINGLE ZONE	8000	TBD	1.5	-	-	-	-	-	-	-	-	0	91	787	5	787	10	1	460/3/60	JCI	XTI-42X84	LOCKER ROOMS	
AHU-23	SINGLE ZONE	8000	550	0.75	80	67	55.4	53.7	212	319	48	42/55	50	103	459	5	469	10	1	460/3/60	JCI	XTI-42X84	AUDITORIUM LOBBY	
AHU-24	SINGLE ZONE	7000	TBD	0.5	-	-	-	-	-	-	-	-	0	95	711	5	726	7.5	1	460/3/60	JCI	XTI-36X66	STUDENT KITCHEN	PROVIDE DUAL INLINE STEAM COILS. COIL PERFORMANCE LISTED IS TOTAL PERFORMANCE. PROVIDE "WHERE NOTED" STEAM CONTROL VALVE DETAIL FOR EACH COIL
AHU-25	DOUBLE-DECK MULTIZONE	10,000	2200	2.0	80	67	54.0	53.6	286	407	81	42/52	60	110	549	5	571	12	1	460/3/60	NORTEK	VENTROL CUSTOM	THEATRE	PROVIDE TOP RETURN CONNECTION AND FILTER BOX

NOTE: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL UNITS WITH G90 GALVANIZED STEEL DOUBLE WALL CONSTRUCTION, MIN. 2" FOAM INSULATION. PROVIDE ALL CUSTOM (NORTEK) UNITS WITH FANWALL FANS. PROVIDE ALL JCI UNITS WITH AIRFOIL FANS. PROVIDE AHU-1 THRU AHU-9 WITH STAINLESS STEEL COOLING SECTION. PROVIDE ALL FANS WITH VARIABLE FREQUENCY DRIVES (EXCEPT WHERE VFDS ARE TO BE REUSED; SEE ELECTRICAL DRAWINGS). VFDS TO CONFORM TO SPECIFICATION SECTION 26 29 23. VFDS TO BE INSTALLED BY ELECTRICAL CONTRACTOR. ALL UNITS SHALL BE SHIPPED KNOCKDOWN AT SHIPPING SPLITS TO FACILITATE PASSAGE THROUGH NEW DOORS OR LOUVER OPENINGS. CONTRACTOR IS RESPONSIBLE FOR FIELD-ASSEMBLING UNITS. CONTRACTOR TO CONFIRM PRIOR TO RELEASE OF EQUIPMENT IF CUSTOM (NORTEK) UNITS REQUIRE ADDITIONAL KNOCKDOWN AND FIELD ASSEMBLY. PROVIDE JCI UNITS WITH INTERNAL SPRING ISOLATORS WITH 2" DEFLECTION. INSTALL DUCT DETECTORS IN SUPPLY SECTION OF ALL MULTI-ZONE AIR HANDLING UNITS. MAXIMUM 1% AIR LEAKAGE AT +/- 1" OF INTERNAL STATIC PRESSURE. MAXIMUM L/240 PANEL DEFLECTION AT +/- 8" OF INTERNAL STATIC PRESSURE. PROVIDE DOUBLE WALL HINGED ACCESS DOORS WITH DOUBLE PANE VIEWING PORTS AND TEST PORTS. PROVIDE LED LIGHTING IN ALL ACCESS SECTIONS. PROVIDE GFCI CONVENIENCE OUTLET ON THE EXTERIOR OF THE SUPPLY FAN SECTION. ALL UNITS SHALL HAVE DUAL POINT POWER CONNECTION - 460V CONNECTION FOR FANS, 120V CONNECTION FOR CONVENIENCE OUTLET AND LED LIGHTING. PROVIDE MAGNEHELIC FILTER GAUGE. CHILLED WATER COIL SHALL HAVE 5/8" TUBES WITH 0.035" WALL THICKNESS. CHILLED WATER COIL CASING, COIL SUPPORTS, BULKHEAD AND DRAIN PAN SHALL BE STAINLESS STEEL CONSTRUCTION. PROVIDE FACTORY MOUNTED AEGIS SHAFT GROUNDING RING AND INVERTER DRIVE FOR SUPPLY FAN. REMOTE VFD TO BE PROVIDED BY ELECTRICAL CONTRACTOR AS SPECIFIED. CONTROLS SHALL BE FIELD FURNISHED AND INSTALLED BY THE CONTROLS CONTRACTOR.

NOTE: THE CONTRACTOR SHALL PERFORM PRE-DEMOLITION TESTING OF AIR FLOW, STEAM FLOW AND WATER FLOW AND STATIC PRESSURES FOR ALL AIR HANDLING UNITS. THE SYSTEM SHALL BE IN OCCUPIED MODE WITH THE AIR HANDLING UNITS COMMANDED TO 100% SETPOINT. TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS. PROVIDE REPORT TO ENGINEER FOR REVIEW PRIOR TO AIR HANDLING UNIT SUBMITTAL.

F - #

FAN SCHEDULE

UNIT NUMBER	LOCATION	CFM	ESP	DRIVE	ELECTRIC	POWER (HP)	MOUNT	MANUFACTURER	MODEL	REMARKS
F-13R	FAN RM #11	15,000	0.5	BELT	460/3/60	2	FLOOR	COOK	270TMX	
F-14R	FAN RM #10	11,000	0.5	BELT	460/3/60	2	FLOOR	COOK	270TMX	

NOTE: PROVIDE FANS AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL FANS WITH VARIABLE FREQUENCY DRIVES. VFDS TO CONFORM TO SPECIFICATION SECTION 26 29 23. VFDS TO BE INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECTRICAL PLANS. PROVIDE ALL FANS WITH FLEXIBLE CONNECTIONS AT INLET AND OUTLET AND HOUSED SPRING FLOOR ISOLATORS WITH MIN. 1" DEFLECTION.

EF - #

EXHAUST FAN SCHEDULE

UNIT NUMBER	LOCATION	TYPE	CFM	ESP	DRIVE	ELECTRIC	POWER (HP)	MOUNT	MANUFACTURER	MODEL	REMARKS
EF-1	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-2	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-3	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-4	ROOF	CENTRIFUGAL DNBLST	10,150	0.125	BELT	460/3/60	1 1/2	CURB	COOK	330C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-5	ROOF	CENTRIFUGAL DNBLAST	2650	0.375	DIRECT	460/3/60	3/4	CURB	COOK	150C17D VF2	
EF-6	ROOF	CENTRIFUGAL DNBLAST	2200	0.375	DIRECT	460/3/60	1/2	CURB	COOK	150C17D VF	
EF-7	ROOF	CENTRIFUGAL DNBLAST	1640	0.25	DIRECT	115/1/60	1/4	CURB	COOK	150C17D VF	
EF-8	ROOF	CENTRIFUGAL DNBLST	11,000	0.125	BELT	460/3/60	1 1/2	CURB	COOK	365C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-9	ROOF	CENTRIFUGAL DNBLST	11,000	0.125	BELT	460/3/60	1 1/2	CURB	COOK	365C8B	PROVIDE WITH ADJUSTABLE SHEAVES FOR BALANCING
EF-10	ROOF	CENTRIFUGAL DNBLAST	3400	0.25	DIRECT	277/1/60	3/4	CURB	COOK	165C17D VF	
EF-11	ROOF	CENTRIFUGAL DNBLAST	6100	0.25	DIRECT	460/3/60	3	CURB	COOK	195C17D VF2	
EF-12	ROOF	CENTRIFUGAL DNBLAST	7750	0.25	DIRECT	460/3/60	5	CURB	COOK	195C17D VF2	
EF-13	ROOF	CENTRIFUGAL DNBLAST	2450	0.25	DIRECT	115/1/60	1/2	CURB	COOK	150C17D VF	
EF-14	ROOF	CENTRIFUGAL DNBLAST	2500	0.25	DIRECT	277/1/60	1/2	CURB	COOK	150C17D VF	
EF-15	ROOF	CENTRIFUGAL DNBLAST	800	0.125	DIRECT	115/1/60	1/4	CURB	COOK	100C17DEC	
EF-16	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	
EF-17	ROOF	CENTRIFUGAL DNBLAST	1650	0.125	DIRECT	115/1/60	1/2	CURB	COOK	120C17DEC	
EF-18	ROOF	CENTRIFUGAL DNBLAST	3000	0.25	DIRECT	460/3/60	3/4	CURB	COOK	165C17D VF2	
EF-19	ROOF	CENTRIFUGAL DNBLAST	1350	0.25	DIRECT	115/1/60	1/4	CURB	COOK	120C17D VF	
EF-20	ROOF	CENTRIFUGAL DNBLAST	800	0.125	DIRECT	115/1/60	1/4	CURB	COOK	100C17DEC	
EF-21	ROOF	CENTRIFUGAL DNBLAST	5200	0.25	DIRECT	460/3/60	2	CURB	COOK	195C17D VF2	
EF-22	ROOF	CENTRIFUGAL DNBLAST	2000	0.125	DIRECT	115/1/60	1/2	CURB	COOK	135C17D VF	
EF-23	ROOF	CENTRIFUGAL DNBLAST	6200	0.25	DIRECT	460/3/60	3	CURB	COOK	195C17D VF2	
EF-24	ROOF	CENTRIFUGAL DNBLAST	1900	0.125	DIRECT	115/1/60	1/4	CURB	COOK	150C17D VF	
EF-25	ROOF	CENTRIFUGAL DNBLAST	850	0.125	DIRECT	115/1/60	1/8	CURB	COOK	135C17D VF	
EF-26	-	-	-	-	-	-	-	-	-	-	NOT USED
EF-27	ROOF	CENTRIFUGAL UPBLAST	8000	0.5	DIRECT	460/3/60	5	CURB	COOK	195R17D VF2	PROVIDE WITH NEW 16" ROOF CURB & HINGED BASE
EF-28	ROOF	CENTRIFUGAL DNBLAST	1200	0.25	DIRECT	115/1/60	1/6	CURB	COOK	120C17D VF	
EF-29	PENTHOUSE #12	CENTRIFUGAL BLOWER	2500	0.25	DIRECT	460/3/60	1/2	FLOOR	COOK	180CPS VF2	CONTRACTOR TO VERIFY FLOW ARRANGEMENT AND DIRECTION
EF-30	ROOF	CENTRIFUGAL UPBLAST	7500	0.5	DIRECT	460/3/60	5	ROOF	COOK	195R17D VF2	PROVIDE WITH NEW ROOF CURB & HINGED BASE
EF-31	ROOF	LABORATORY TUBULAR CENTRIFUGAL INLINE	1600	1.75	DIRECT	460/3/60	3	ROOF	COOK	150TCNHBLE08	PROVIDE WITH NEW ROOF CURB, PHENOLIC EPOXY COATING AND DISCHARGE NOZZLE. OVERALL HEIGHT 10'
EF-32	ROOF	LABORATORY TUBULAR CENTRIFUGAL INLINE	1600	1.75	DIRECT	460/3/60	3	ROOF	COOK	150TCNHBLE08	PROVIDE WITH NEW ROOF CURB, PHENOLIC EPOXY COATING AND DISCHARGE NOZZLE. OVERALL HEIGHT 10'
EF-33	A162	CEILING	100	0.25	DIRECT	115/1/60	0.25A	CEILING		GCVF-100	PROVIDE W/ WALL CAP & INTEGRATED BACKDRAFT DAMPER
EF-99	ROOF	CENTRIFUGAL DNBLAST	2700	0.5	DIRECT	115/1/60	3/4	CURB	COOK	150C17D VF	FIRING RANGE RELIEF. PROVIDE WITH EXTERNAL SPEED CONTROL FOR CONTROLS BY OTHERS

NOTES: PROVIDE FANS AS SCHEDULED OR APPROVED EQUAL. PROVIDE ALL FANS EXCEPT EF-1,2,3,4,8 & 9 WITH EC MOTORS. PROVIDE FANS EF-1,2,3,4,8 & 9 WITH STANDARD MOTORS. PROVIDE EC MOTOR UNITS WITH UNIT MOUNTED SPEED ADJUSTMENT FOR BALANCING. PROVIDE ALL UNITS WITH CURB CAP ADAPTER, ALUMINUM BIRD SCREEN, AND NEW BACKDRAFT DAMPER IN EXISTING CURB. PROVIDE TIE-IN TO EXISTING BAS FOR OCCUPANCY SCHEDULING AND STATUS MONITORING. CONTRACTOR TO VERIFY EXISTING CURB DIMENSIONS IN FIELD.

WSS - #
CU - #

WALL MOUNTED DUCTLESS FAN COIL SCHEDULE

UNIT NUMBER (INDOOR/OUTDOOR)	SYSTEM MCA / MOCP	OUTDOOR UNIT	ELEC	EER	SAMSUNG MODEL #	INDOOR UNIT	REMARKS
		COOLING CAP. (MBh)				SAMSUNG MODEL #	
WSS-1/CU-1	12.5 / 20	14.5	208-230/1/60	12.05	AR12TSFYBWKXCV	AR12TSFYBWKNCV	

NOTES: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. PROVIDE THERMOSTAT AND LITTLE GIANT VCMA-15 CONDENSATE PUMP (120V) PER UNIT. PROVIDE DIVERITECH CONDENSING UNIT SUPPORTS TO SUPPORT EACH CONDENSING UNIT. PROVIDE MIRO PIPE SUPPORTS TO SUPPORT REFRIGERANT PIPING AS REQUIRED. PROVIDE WITH LOW AMBIENT KIT FOR COOLING DOWN TO 0F.

CP - #

STEAM CONDENSATE PUMP SCHEDULE

UNIT NUMBER	MANUFACTURER	MODEL #	RPM	GPM	TDH (PSI)	MOTOR HP	RECEIVER SIZE (GAL)	ELEC	REMARKS
CP-1	B&G	153CC	3500	15	30	3/4	14	460/3/60	
CP-2	B&G	93CC	3500	9	30	3/4	14	460/3/60	
CP-3	B&G	303CC	3500	30	30	1	36	460/3/60	

NOTE: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. ALL UNITS SHALL BE DUPLEX TYPE. PROVIDE ALL UNITS WITH CONTROL PANELS INCLUDING MAGNETIC STARTERS, FUSED DISCONNECT SWITCH, 'AUTO-OFF-HAND' SELECTOR SWITCHES, ELECTRIC ALTERNATOR, TRANSFORMER, PILOT LIGHTS & AUDIBLE ALARM. PROVIDE ALL UNITS WITH BASKET TYPE INLET STRAINERS. PROVIDE WITH SINGLE-POINT POWER CONNECTION

D - #

DIFFUSER SCHEDULE

UNIT NUMBER	SIZE (FACE / NECK)	DESCRIPTION	MANUFACTURER	MODEL NUMBER	REMARKS
D-1	24"x24"/10"Ø	ALUMINUM SQUARE CONE DIFFUSER	KRUEGER	51450	
D-2	24"x24"/12"Ø	ALUMINUM SQUARE CONE DIFFUSER	KRUEGER	51450	

NOTE: PROVIDE EQUIPMENT BY KRUEGER OR APPROVED EQUAL. ALL DIFFUSERS SHALL HAVE FACE OPERABLE DAMPERS. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE.

R - #

RETURN GRILLE SCHEDULE

UNIT NUMBER	SIZE (FACE / NECK)	DESCRIPTION	MANUFACTURER	MODEL NUMBER	REMARKS
R-1	24"X24" / 12"X12"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	
R-2	24"X24" / 16"X16"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	
R-3	24"X24" / 22"X22"	ALUMINUM PERFORATED FACE RETURN GRILLE	KRUEGER	56490	

NOTE: PROVIDE EQUIPMENT BY KRUEGER OR APPROVED EQUAL. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE.

GV - #

GRAVITY VENT SCHEDULE

UNIT NUMBER	THROAT SIZE	MANUFACTURER	MODEL #	REMARKS
GV-1	44"X44"	COOK	GR	
GV-2	44"X44"	COOK	GR	
GV-3	45"X92"	COOK	GR	

NOTES: PROVIDE EQUIPMENT AS SCHEDULED OR APPROVED EQUAL. ALL GRAVITY VENTS SHALL BE ALUMINUM. PROVIDE ALL UNITS WITH COUNTERBALANCED BACKDRAFT DAMPERS AND BIRD SCREENS.

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23
2	ADDENDUM #6	10/13/23
3	ADDENDUM #7	10/17/23

SHEET TITLE

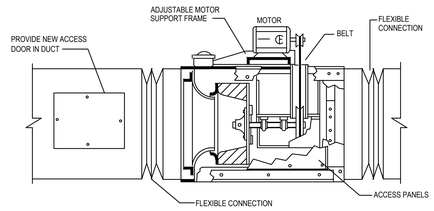
MECHANICAL SCHEDULES

100% CONSTRUCTION DOCUMENTS
08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-500

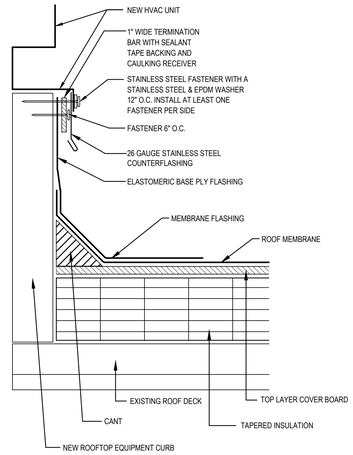


NOTES:

1. ACCESS DOOR SHALL BE HINGED-TYPE.

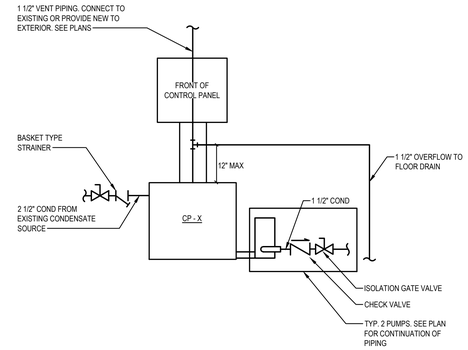
1 M-600 TYPICAL IN-LINE FAN DETAIL

SCALE: NTS



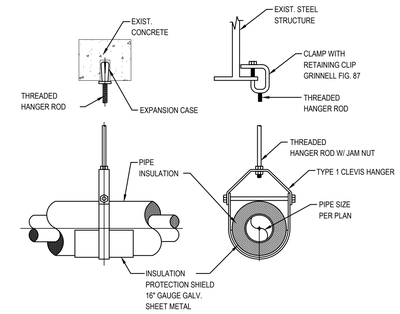
2 M-600 ROOF CURB FLASHING DETAIL

SCALE: NTS



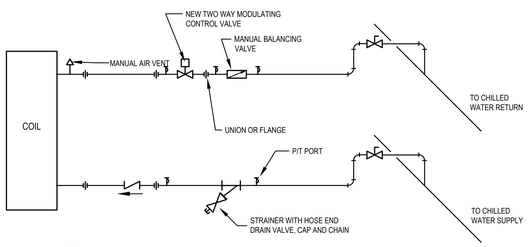
3 M-600 STEAM CONDENSATE PUMP DETAIL

SCALE: NTS



4 M-600 TYPICAL PIPE HANGER DETAIL

SCALE: NTS

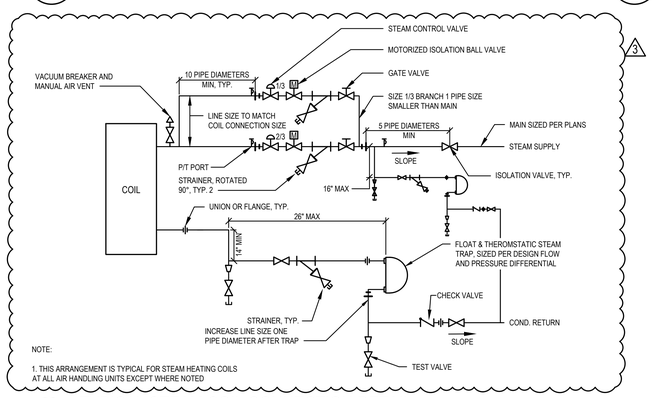


NOTE:

1. PROVIDE FLOW LIMITING DEVICE PER UNIT FLOW REQUIREMENTS AS SHOWN IN EQUIPMENT SCHEDULES.
2. THIS ARRANGEMENT IS TYPICAL FOR ALL CHILLED WATER COILS
3. PROVIDE COIL CONNECTIONS DESCRIBED ABOVE FOR AIR HANDLING UNITS AND ROOF TOP AIR HANDLING UNITS.

5 M-600 TYPICAL 2-WAY VALVE DETAIL FOR AHUS

SCALE: NTS

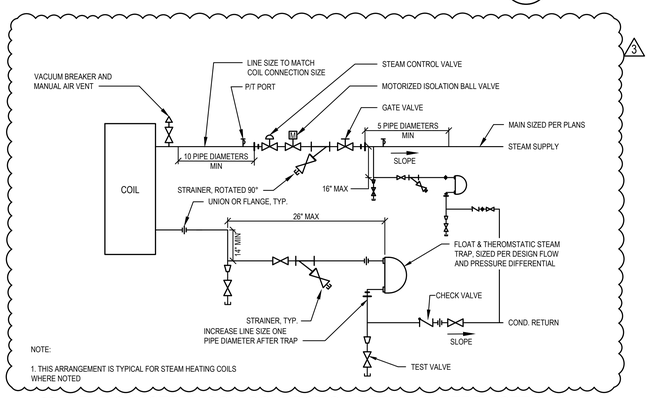


NOTE:

1. THIS ARRANGEMENT IS TYPICAL FOR STEAM HEATING COILS AT ALL AIR HANDLING UNITS EXCEPT WHERE NOTED

6 M-600 TYPICAL STEAM COIL CONNECTION DETAIL

SCALE: NTS

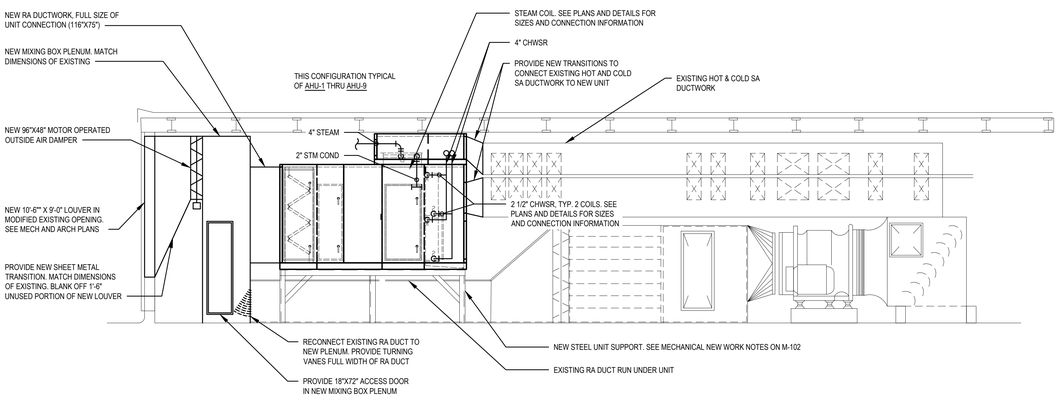


NOTE:

1. THIS ARRANGEMENT IS TYPICAL FOR STEAM HEATING COILS WHERE NOTED

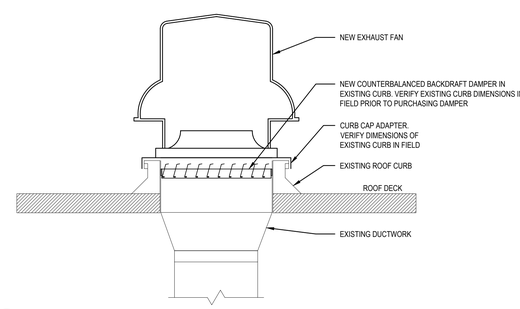
7 M-600 TYPICAL STEAM COIL CONNECTION DETAIL - WHERE NOTED

SCALE: NTS



8 M-600 PENTHOUSE 1 THRU 9 TYPICAL SECTION

SCALE: NTS



9 M-600 ROOF MOUNTED EXHAUST FAN DETAIL

SCALE: NTS

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ARCHITECT / ENGINEER SEAL

PROJECT

WATERBURY PUBLIC SCHOOLS
HVAC EQUIPMENT REPLACEMENT
AT THE
CROSBY HS/WALLACE MS COMPLEX
300 PIERPONT RD
WATERBURY, CT 06705

REVISIONS

MARK	DESCRIPTION	DATE
1	ADDENDUM #1	9/18/23
2	ADDENDUM #3	9/27/23
3	ADDENDUM #7	10/17/23

SHEET TITLE

MECHANICAL DETAILS

100% CONSTRUCTION DOCUMENTS

08/11/2023

DRAWN	CHK'D	PROJECT NO.
TMC	BMZ	22106

SHEET NO.

M-600

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: - THE ELECTRONIC DATA TRANSMITTED (DATA) MAY BE ALTERED DURING TRANSIT AND TRANSLATION. - JAED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. - THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS LOANED. GUARANTEES UNDER CONTRACTS AND CLAIMS AGAINST JAED CORPORATION WITH RESPECT TO ANY DEFECT CANNOT EXCEED ANY COSTS OF REPRODUCTION THEREOF OR EXPIRATION THEREOF.

10/17/2023 2:39 PM

#14

Waterbury Public Schools

Office of Competitive Grants

Louise Allen Brown, J.D., M.P.A., Grant Writer

November 28, 2023

Honorable Board of Education
City of Waterbury
236 Grand Street
Waterbury, CT 06702

Re: PEGPETIA Grant 2024– CT DEEP/PURA

Dear President Sweeney and Board of Education Commissioners:

The Connecticut Department of Energy and Environmental Protection (DEEP), Public Utilities Regulatory Authority (PURA), has announced a new round of Public Educational and Governmental Programming and Education Technology Investment Account (PEGPETIA) Grants. The proposals selected by DEEP for funding must address the State's educational technology goals.

The school district will seek grant funding to upgrade the fiber backbone at the Rotella Interdistrict Magnet School, Kennedy High School, State Street School, and Adult Education. While the district has upgraded the schools' network equipment to support 10GB+, it has not upgraded the fiber backbone at these schools. According to Will Zhuta, the district's Management, Information & Technology Supervisor, although installed network equipment at the schools could support faster speeds, the communications infrastructure cabling in place to support the equipment cannot. Upgrading cabling to support 10GB would facilitate realizing the full benefits of the upgraded network equipment. The new fiber optic cable will meet or exceed network upgrades for many years. With this investment, students will have access to a broader range of educational resources.

Based on estimates, the total amount of the grant application request will be approximately $53,200. No matching funds are required.

The grant application must be submitted within the application window which is open from October 2, 2023 to February 24, 2024. I respectfully request your permission to apply for this PEGPETIA grant.

Very truly yours,

Louise Allen Brown

Louise Allen Brown, Grant Writer

cc: Dr. Verna D. Ruffin
Nicholas Albini
Doreen Biolo
Will Zhuta

236 Grand Street, Rm 122, Waterbury, CT 06702 - phone 203-346-3506 - fax 203-597-3436

Public Educational and Governmental Programming and Education Technology Investment Account (PEGPETIA) Grant Program
CT Dept. of Energy & Environmental Protection, Public Utilities Regulatory Authority (PURA)
November 28, 2023
Louise Allen Brown

Grant Highlights

Program Purpose: The purpose of the PEGPETIA grant is "…to promote and improve public, educational and governmental (PEG) access programming in Connecticut….The PEGPETIA account is funded exclusively through a tax on the gross earnings of television and video service providers in Connecticut. The Authority was directed to make available fifty percent of the funds in the PEGPETIA account to local community antenna television and video advisory councils; the state-wide video advisory council; PEG programmers and PEG studio operators to subsidize capital and equipment costs related to producing and procuring PEG programming. The Authority was further directed to make the other fifty percent available to boards of education and other education entities for education technology initiatives…." [RFP]

Eligible Applicants: Eligible applicants for "education technology initiative grants" include "a. Board of Education; b. Public library; or c. Other education entity. [RFP]

Grant Amount: Applicants may request up to $150,000. (or larger for "large capital equipment investments or initiatives that will have a substantial impact on a broad segment of subscribers and/or students.")

Matching Funds: None required.

Application Window: October 2, 2023 to February 24, 2024 (Applications must be submitted within this window.)

Program Requirement:

Guidance issued by the CT PURA since the release of the grant RFP requires that applicants must indicate how their project satisfies one or more of the State education technology goals articulated in CGS Sec. 4d-80(c)(2) and the State Education Technology Goals (2017).

Proposed Project:

The Waterbury Public Schools proposed project addresses CGS Sec. 4d-80(c)(2)(B): "Wiring all school classrooms and connecting them to the Internet and to the state-wide high speed network through wired, wireless, or any other digital transmission technology providing high speed connectivity."

Specifically, Waterbury will upgrade the fiber optic backbone at Rotella Interdistrict Magnet School, Kennedy High School, State Street School, and Adult Education, to support 10GB. According to the WPS Supervisor of Management Information, & Technology (W. Zhuta), the proposed project will facilitate full utilization of network equipment already upgraded to support 10GB+. Users at the school will have a better experience through a better performing network. Investing in this upgrade will be critical in ensuring that the school district provides students with the best education experience and prepares them for success.

Budget: The budget for the proposal will approximate $52,000. No matching funds are required. See estimated project costs below:

From Proposal Cost Estimates*	**$53,200.**
Rotella Magnet School - Material and Labor: Install 950ft OM4 interlocking armor Fiber, Patch panels, LC MM 6 packs, 12 LC MM connectors, fire stop, misc. Work will be done after hours/nights -- $17,050. **JFK High School** Material and Labor: Install 900ft OM4 interlocking armor Fiber, Patch panels, LC MM 6 packs, 12 LC MM connectors, fire stop, misc. Work will be done after hours/night -- $11,950. **Adult Education** - Material and Labor: Install 300ft 3/4 EMT, 600ft OM4 MM non armored Riser fiber, 2 wall Patch panels, 3LC MM 6 packs, 24 LC MM connectors, misc. material. Work will be done after hours/nights -- $17,550. **State Street School** Material and Labor: Install 400ft OM4 In/outdoor Fiber, Patch panels, LC MM 6 packs, 12 LC MM connectors, fire stop, misc. Work will be done after hours/nights -- $6650.	
*City Bid Process will be followed upon grant award. Materials and Labor needed for the project will be finalized at the time the procurement process is initiated.	

#15a

WATERBURY PUBLIC SCHOOLS

ESSER/ARP Monthly Expenditure Report
Board of Education Workshop
December 7, 2023

ESSER I

Beginning Date March 2020
Ending Date September 2022

Total Grant : $9,394,519

Public Portion - $8,462,310
$8,462,310 YTD Exp/Enc
$ 0 YTD Balance

Non-Public Portion: $932,209
$932,209 YTD Exp/Enc
$ 0 YTD Balance

ESSER II

Beginning Date December 2020
Ending Date September 2023

Total Grant : $41,651,124

$41,651,124 YTD Exp/Enc
$ 0 YTD Balance

ARP ESSER III

Beginning Date May 2021
Ending Date September 2024

Total Grant : $89,691,176

$37,889,400 YTD Exp/Enc
$51,801,776 YTD Balance

Detail of Encumbrance/Expenditures

ESSER I

- Temporary Maintainers; Health Dept & Fire Dept Overtime for COVID Testing
- Chromebook Management Services; Licenses; Teachers Laptops; Students Chromebooks; Chromebook Charging Carts; Data Switches & Wireless Headphones
- HVAC & Ventilation Projects- Regan Boilers Replacement, & heating pumps, Carrington BMS Upgrades, HVAC Repairs at Reed, Maloney, Rotella, Gilmartin, Duggan, WAMS, Career, and West Side.
- Covid staff testing fees;
- Fire safety equipment
- Bilingual materials
- PPE/Health & Safety Supplies; Handwashing Stations

WATERBURY PUBLIC SCHOOLS

ESSER II

- GF Staff Retainage- Maintainers Staff, IT Staff and School Counselors.
- Summer School Programs; Summer Camps – YMCA, Boys & Girls & PAL
- Transportation for Summer School; Summer school program supplies
- Recruitment - UCONN Resident & Nex-Gen programs; College partnerships for recruitment
- Translation Services
- SEL Curriculum
- Technology Professional Development Training
- Portrait of Graduate Development and Assessment
- CTE Supplies and Wilby Greenhouse Renovation
- Food Service Deficit;
- Facility Study
- Administrative Costs - Contracted Project Manager Services; Contracted Legal Services
- Design Services – Auditorium Upgrades; Air Handler Units; Mechnical Upgrades & Rotella Boiler
- Summer school field trips
- Boiler replacement /Tinker school and Kingsbury
- School counselor Summer program
- New Mentors Summer training
- Design services –HVAC for Wilby, NEMS,WSMS,Crosby, Wallace, State St, Wilson
- Design services- Boiler replacement for Driggs, Maloney, Washington, Generali)
- Boiler replacement –Rotella
- SEL Curriculum
- Naviance
- Duct & Vent Cleaning (Carrington, Duggan,Gilmartin, Reed)
- Reboot pilot program
- Crosby Bypass piping
- Auditorium Upgrades (WAMS, WSMS, Rotella, Kennedy, Laurel Hill Complex & Bergin Complex)
- HVAC upgrades (Duggan, Gilmartin)
- Boiler replacement (Rotella)
- Summer program STEM kits
- Boilers replacement (Driggs, Generali, Maloney and Washington)
- Removal and replacement of 3 playscapes (Chase, Regan, Rotella)
- Summer day Camp (Waterbury Youth Service)
- Commissioning Services (Noresco)
- Summer Camp field trip
- Duct & Vent Cleaning (WAMS, Maloney, Rotella)
- Furniture (Moved from Esser III to II)
- ESS (substitutes)
- Moved HVAC expenses from ARP Esser III to Esser II

WATERBURY PUBLIC SCHOOLS

ARP ESSER III

- (2) PT Crisis Youth Intervention Clinicians;
- Accountant III
- Facility Operation Manager
- Extra Class Stipends for Teachers covering shortage areas (High Schools);
- Partners in Education (CT Center for School Change);
- Outside Counsel Legal Fees for ARP ESSER Contracts;
- Curriculum Update- Pear Deck & Legends of Learning;
- Instructional Supplies & Equipment (School Principals Needs)
- Resources to Support Curriculum(Home Learning);
- Equity Training Services
- State Street Playground Equipment
- HVAC Projects/Repairs- Maloney Chiller Replacement, Wilby AC, Crosby Cooling Tower, Wams, Kennedy Fan Replacement.
- Upgrade furniture, fixtures and equipment based on school needs.
- Digital platform to connect students with mentors.
- Amplify reading student license, mCLASS DIBELS
- Mechanical Upgrades at three schools (Crosby,Kennedy, Wilby)
- SAFE after school program/behavioral clinicals
- Nearpod, Kami, Rubicon subscription
- Summer programs-Boys & Girls club
- Workshop Athletic program
- Biliteracy Training program
- Enrichment programs in the Community (Palace Theater, Shakesperian, Mattatuck museum, Boys and Girls, YMCA)
- Design services for HVAC (Sprague, Regan, Tinker, Washington, Bucks Hill, Chase , International, Generali)
- Harvard Graduate school- training school turnaround leaders
- Linguistica International –translation services
- Cormier Consulting
- Varsity Tutors
- Removal and replacement of 6 playscapes (Bunker Hill, Driggs ,Sprague, Hopeville, Tinker, Washington)
- Radiator Covers
- Multi-tired system of supports for behavior (Branching Minds).
- Water cooled chiller for Wilby
- Design fees for VRF/DOA for 6 elementary schools
- Summer programs (PAL, YMCA,Seven Angels)
- Imagine learning (licenses for online learning)
- Furniture (Moved from Esser III to II)
- Quill (Middle & high school licenses)
- Moved HVAC expenses from ARP Esser III to Esser II
- Google workspace for Education
- Students Chromebooks
- Removal and replacement of playscape at Carrington
- Rubrik update
- Waterbury Bridge to Success

#15b

Waterbury Board of Education

FY2023-2024

October
Expenditure Report

ACCOUNT	CLASSIFICATION	FY 23 ORIGINAL BUDGET	FY 23 ADJUSTED BUDGET	OCTOBER EXPENDITURE	OCTOBER ENCUMBRANCE	CURRENT BALANCE	PROJECTED EXP.	PROJECTED DIFFERENCE
Salaries								
511101	Administrators	$9,717,780	$9,717,780	$2,933,094	$0	$6,784,686	$9,717,780	$0
511102	Teachers	$51,253,563	$51,253,563	$10,124,459	$0	$41,129,104	$51,253,563	$0
511104	Superintendent	$444,926	$444,926	$139,823	$0	$305,103	$444,926	$0
511106	Early Incentive Certifiied	$912,614	$912,614	$901,163	$0	$11,451	$912,614	$0
511107	Certified Coaches	$770,000	$770,000	$3,601	$0	$766,399	$770,000	$0
511108	School Psychologists	$1,244,266	$1,244,266	$100,820	$0	$1,143,446	$1,244,266	$0
511109	School Social Workers	$2,188,529	$2,188,529	$401,930	$0	$1,786,599	$2,188,529	$0
511110	Speech Pathologists	$2,375,493	$2,375,493	$479,252	$0	$1,896,241	$2,375,493	$0
511111	Assistant Superintendent	$165,000	$165,000	$53,308	$0	$111,692	$165,000	$0
511113	Extra Compensatory Stipend	$105,000	$105,000	$0	$0	$105,000	$105,000	$0
511201	Non-Certified Salaries	$2,704,766	$2,704,766	$389,634	$0	$2,315,132	$2,704,766	$0
511202	Clerical Wages	$1,205,011	$1,205,011	$288,044	$0	$916,967	$1,205,011	$0
511204	Crossing Guards	$361,867	$361,867	$75,091	$0	$286,776	$361,867	$0
511206	Educational	$450,000	$450,000	$74,726	$0	$375,274	$450,000	$0
511212	Substitute Teachers	$150,000	$150,000	$211,360	$76,031	($137,391)	$150,000	$0
511215	Cafeteria Aides	$80,000	$80,000	($11,073)	$0	$91,073	$80,000	$0
511217	Library Aides	$191,191	$191,191	$34,915	$0	$156,276	$191,191	$0
511219	School Clerical	$2,311,182	$2,311,182	$516,679	$0	$1,794,503	$2,311,182	$0
511220	Fiscal Administration	$693,869	$693,869	$154,358	$0	$539,511	$693,869	$0
511222	Transportation Coordinator	$204,822	$204,822	$57,508	$0	$147,314	$204,822	$0
511223	Office Aides	$180,000	$180,000	$29,595	$0	$150,405	$180,000	$0
511225	School Maintenance Non-Certified	$2,821,584	$2,821,584	$659,486	$0	$2,162,098	$2,821,584	$0
511226	Custodians Non-Certified	$5,858,425	$5,858,425	$1,382,429	$0	$4,475,996	$5,858,425	$0
511227	Overtime - Outside Activities	$200,000	$200,000	$52,883	$0	$147,117	$200,000	$0
511228	Paraprofessionals	$10,633,662	$10,633,662	$1,833,614	$0	$8,800,048	$10,633,662	$0
511229	Bus Duty	$265,000	$265,000	$1,250	$0	$263,750	$265,000	$0
511232	Attendance Counselors	$127,965	$127,965	$20,972	$0	$106,993	$127,965	$0
511233	ABA Behaviorial Therapist	$1,755,992	$1,755,992	$272,382	$0	$1,483,610	$1,755,992	$0
511234	Interpreters	$199,353	$199,353	$25,843	$0	$173,510	$199,353	$0
511238	Swing Space	$0	$0	$1,602	$0	($1,602)	$1,602	($1,602)
511236	Snow Removal	$0	$0	$0	$0	$0	$0	$0
511237	Swing Space	$0	$0	$0	$0	$0	$0	$0
511650	Overtime	$640,000	$640,000	$389,308	$0	$250,692	$640,000	$0
511653	Longevity	$7,990	$7,990	$300	$0	$7,690	$7,990	$0
511700	Extra Police Protection	$686,607	$686,607	$44,421	$0	$642,186	$686,607	$0
511800	Vacation and Sick Term Payout	$120,055	$120,055	$40,354	$0	$79,701	$120,055	$0
522501	Health Insurance-General	$9,000,000	$9,000,000	$0	$0	$9,000,000	$9,000,000	$0
529001	Car Allowance	$70,000	$70,000	$28,639	$0	$41,361	$70,000	$0
529003	Meal Allowances	$24,800	$24,800	$15,204	$2,445	$7,151	$24,800	$0
Subtotal Salaries		**$110,121,312**	**$110,121,312**	**$21,726,974**	**$78,476**	**$88,315,862**	**$110,122,914**	**($1,602)**

ACCOUNT	CLASSIFICATION	FY 23 ORIGINAL BUDGET	FY 23 ADJUSTED BUDGET	OCTOBER EXPENDITURE	OCTOBER ENCUMBRANCE	CURRENT BALANCE	PROJECTED EXP.	PROJECTED DIFFERENCE
Purchased Services								
533000	Professional Services	$2,000,000	$2,000,000	$732,367	$1,003,953	$263,680	$2,000,000	$0
533009	Evaluation	$5,000	$2,000	$0	$0	$2,000	$2,000	$0
533020	Consulting Services	$325,000	$322,000	$176,450	$37,267	$108,283	$322,000	$0
533100	Auditing	$59,500	$59,500	$0	$19,500	$40,000	$59,500	$0
539005	Sporting Officials	$25,000	$25,000	$236	$0	$24,764	$25,000	$0
539008	Messenger Service	$30,000	$30,000	$0	$0	$30,000	$30,000	$0
543000	General Repairs & Maintenance	$1,388,000	$1,388,000	$409,914	$468,121	$509,966	$1,388,000	$0
543011	Maintenance - Service Contracts	$800,000	$800,000	$200,257	$530,438	$69,305	$800,000	$0
544002	Building Rental	$568,956	$568,956	$204,357	$352,599	$12,000	$568,956	$0
545002	Water	$250,000	$250,000	$38,362	$0	$211,638	$250,000	$0
545006	Electricity	$3,129,855	$3,129,855	$703,075	$0	$2,426,780	$3,129,855	$0
545013	Security/Safety	$125,000	$125,000	$53,260	$40,823	$30,916	$125,000	$0
551000	Pupil Transportation	$17,993,591	$17,993,591	$3,354,210	$14,639,377	$4	$17,993,591	$0
553001	Postage	$45,000	$45,000	$12,594	$0	$32,406	$45,000	$0
553002	Telephone	$175,000	$175,000	$90,718	$25,087	$59,196	$175,000	$0
553005	Wide-area Network (SBC)	$93,600	$93,600	$418	$63,504	$29,678	$93,600	$0
556055	Tuition - Outside	$12,100,000	$12,100,000	$2,136,866	$6,934,427	$3,028,707	$12,100,000	$0
556056	Purchased Service - Outside	$3,000,000	$3,000,000	$421,516	$2,267,734	$310,750	$3,000,000	$0
557000	Tuition Reimbursement	$6,000	$6,000	$11,522	$0	($5,522)	$11,522	($5,522)
558000	Travel Expenses	$5,000	$5,000	$0	$0	$5,000	$5,000	$0
559001	Advertising	$32,500	$32,500	$990	$1,849	$29,661	$32,500	$0
559002	Printing & Binding	$15,000	$15,000	$144	$1,995	$12,862	$15,000	$0
559104	Insurance - Athletics	$26,000	$26,000	$19,851	$0	$6,149	$26,000	$0
Subtotal Purchased Services		**$42,198,002**	**$42,192,002**	**$8,567,108**	**$26,386,673**	**$7,238,221**	**$42,197,524**	**($5,522)**
Supplies/Materials								
561100	Instructional Supplies	$1,620,000	$1,620,000	$575,967	$190,975	$853,058	$1,620,000	$0
561200	Office Supplies	$75,590	$75,590	$19,836	$13,353	$42,402	$68,466	$7,124
561204	Emergency/Medical Supplies	$2,000	$2,000	$0	$0	$2,000	$2,000	$0
561210	Intake Center Supplies	$3,500	$3,500	$2,658	$522	$320	$3,500	$0
561211	Recruitment Supplies	$50,000	$50,000	$17,323	$11,495	$21,182	$50,000	$0
561212	Medicaid Supplies	$8,000	$8,000	$2,119	$582	$5,298	$8,000	$0
561501	Diesel	$185,092	$185,092	$29,700	$136,972	$18,420	$185,092	$0
561503	Gasoline	$249,360	$249,360	$51,137	$131,612	$66,611	$249,360	$0
561504	Heating Oil	$0	$0	$0	$0	$0	$0	$0
561505	Natural Gas	$1,666,000	$1,666,000	$212,986	$0	$1,453,014	$1,666,000	$0
561507	Janitorial Supplies	$275,000	$275,000	$123,966	$118,553	$32,480	$275,000	$0
561508	Electrical Supplies	$50,000	$50,000	$22,389	$20,988	$6,623	$50,000	$0
561509	Plumbing Supplies	$100,000	$100,000	$42,812	$40,113	$17,074	$100,000	$0
561510	Building & Ground Supplies	$220,000	$220,000	$92,071	$69,413	$58,515	$220,000	$0
561511	Propane	$406,094	$406,094	$143,925	$262,169	$0	$406,094	$0
567000	Clothing Supplies	$40,000	$40,000	$9,240	$23,080	$7,680	$40,000	$0
567001	Crossing Guard Uniforms	$2,000	$2,000	$1,990	$0	$10	$2,000	$0
569010	Recreational Supplies	$15,000	$15,000	$3,570	$1,641	$9,789	$15,000	$0
569029	Athletic Supplies	$130,000	$137,896	$44,525	$43,579	$49,792	$137,896	$0
Subtotal Supplies/Materials		**$5,097,636**	**$5,105,532**	**$1,396,215**	**$1,065,047**	**$2,644,269**	**$5,098,408**	**$7,124**

ACCOUNT	CLASSIFICATION	FY 23 ORIGINAL BUDGET	FY 23 ADJUSTED BUDGET	OCTOBER EXPENDITURE	OCTOBER ENCUMBRANCE	CURRENT BALANCE	PROJECTED EXP.	PROJECTED DIFFERENCE
Property								
575008	Furniture-Misc.	$15,000	$15,000	$1,100	$0	$13,900	$15,000	$0
575200	Office Equipment	$150,000	$150,000	$13,622	$1,500	$134,878	$150,000	$0
575408	Plant Equipment	$40,000	$40,000	$0	$21,934	$18,066	$40,000	$0
Subtotal Property		**$205,000**	**$205,000**	**$14,722**	**$23,434**	**$166,843**	**$205,000**	**$0**
Other/Miscellaneous								
589021	Mattatuck Museum	$13,000	$13,000	$0	$13,000	$0	$13,000	$0
589034	Board of Ed Commissioners	$20,700	$20,700	$7,000	$0	$13,700	$20,700	$0
589036	Emergency Fund	$9,350	$9,350	$0	$0	$9,350	$9,350	$0
589056	Waterbury Promise	$500,000	$500,000	$500,000	$0	$0	$500,000	$0
589201	Mileage	$10,000	$10,000	$1,366	$0	$8,634	$10,000	$0
589205	Coaches Reimbursements	$5,000	$5,000	$150	$0	$4,850	$5,000	$0
589900	Dues & Publications	$60,000	$66,000	$60,628	$359	$5,014	$66,000	$0
591002	Transfer to Sinking Fund	$0	$0	$0	$0	$0	$0	$0
591004	Athletic Revolving Fund	$135,000	$127,104	$3,958	$10,987	$112,159	$127,104	$0
Total Other/Miscellaneous		**$753,050**	**$751,154**	**$573,102**	**$24,346**	**$153,706**	**$751,154**	**$0**
GRAND TOTAL OPERATING BUDGET		**$158,375,000**	**$158,375,000**	**$32,278,121**	**$27,577,977**	**$98,518,903**	**$158,375,000**	**$0**
Other Additional Funding								
	Alliance Non-Reform/Reform	**$41,216,739**	**$41,216,739**	**$4,060,640**	**$0**	**$37,156,099**	**$41,216,739**	**$0**
	GF Surplus 15-16	$1,000,000	$1,000,000	$0	$0	$1,000,000	$1,000,000	$0
	GF Surplus 14-15	$1,000,000	$1,000,000	$0	$0	$1,000,000	$1,000,000	$0
	GF Surplus 16-17	$450,000	$450,000	$0	$0	$450,000	$450,000	$0
	Contingency Surplus	$675,000	$675,000	$0	$0	$675,000	$675,000	$0
	City Non Lapsing Account	$500,000	$500,000	$0	$0	$500,000	$500,000	$0
Total Additional Funding		**$44,841,739**	**$44,841,739**	**$4,060,640**	**$0**	**$40,781,099**	**$44,841,739**	**$0**
GRAND TOTAL ALL FUNDING		**$203,216,739**	**$203,216,739**	**$36,338,760**	**$27,577,977**	**$139,300,002**	**$203,216,739**	**$0**

#15c

CITY OF WATERBURY
DEPARTMENT OF EDUCATION

12/7/2023

Board of Education

Board of Education Commissioners:

With the approval of the Committee on Finance, the Superintendent of Schools recommends the following transfer for fiscal year 2023-2024 from Capital Improvement Budget:

FROM:

Accounting Unit	Account	Activity	Description	Amount
60180	547000	6018080099995	Capital Improvement - BOE Unallocated (Sinking Fund)	($3,000,000)

TO:

60180	547000		Education Capital Improvement - Bucks Hill VRF	$749,840
60180	547000		Education Capital Improvement - Chase VRF	$686,765
60180	547000		Education Capital Improvement - Generali VRF	$520,817
60180	547000		Education Capital Improvement - International VRF	$386,685
60180	547000		Education Capital Improvement - Regan VRF	$321,484
60180	547000		Education Capital Improvement - Washington VRF	$334,409

TOTAL **$3,000,000** **($3,000,000)**

Transfer to move funds from BOE Unallocated Sinking Fund for local share for CSDE HVAC Indoor Air Quality Grant for new projects Variable Refrigerant Flow (VRF) systems at elementary schools.

Respectfully Submitted,

Dr. Verna D. Ruffin
Superintendent of Schools

#17

COMMITTEE ON BUILDINGS AND SCHOOL FACILITIES

WORKSHOP: **Thursday, December 7, 2023**
BOARD MEETING: **Thursday, December 21, 2023**

TO THE BOARD OF EDUCATION
WATERBURY, CONNECTICUT

LADIES AND GENTLEMEN:

With the approval of the Committee on School Facilities and Grounds, the Superintendent of Schools recommends approval of the use of school facilities, at no charge, by the following school organizations and/or City departments:

GROUP	FACILITIES AND DATES/TIMES
L. Curley-Colon	Gilmartin gym: Dec. 14th and Dec. 19th 5:15 – 7:30 pm (School Concerts)
V. Demirali	Sprague café & gym: Thursday, Dec. 21st 4:30 – 7:30 pm (Winter Concert)
D. Bakewell	Maloney café: Tues., Nov. 28th 5:00 – 7:15 pm (PTO wreath making night) Maloney café: Saturday, Dec. 9th 7:30 am – 1:00 pm (PTO Visit from Santa)
Wtby.. Housing Authority C. Dorso	Duggan café: Thursday, Dec. 14th 5:15 – 6:30 pm (meeting with area residents)
T. Giorgio	Rotella/all areas: Monday, Nov. 27th 9:30am – 12:00pm (Open House & school tour) Rotella/all areas: Saturday, January 29th 10:00am – 2:00pm (Open House & school tour) Rotella/all areas: Wed, Jan. 24th 9:30am – 12:00pm & 5:00 – 7:30pm (Open House & school tour) Rotella all areas: Monday, Feb. 12th 9:30am – 12:00pm (Open House & school tour)
Dr. White	WAMS Library: Monday, Dec. 4th 3:30am – 5:00pm (meeting for social justice Educators group)
B. Nightingale	Wallace café: Thursday, May 23rd 5:00 – 6:30 pm (Advanced Art Showcase)
Silas Bronson Lib. M. Tierney	Wilby gym: Tues., Jan. 9th 5:00 – 7:30pm Career Academy gym: Tues., Jan. 16th 5:00 – 7:30pm Kennedy gym: Tues., Jan. 30th 5:00 – 7:30pm (will setup outside or area by gym to promote the library)

S. Carpentieri	Sprague gym: Saturday, Dec. 16th 7:30am – 12:00pm (PTO sponsored event with Santa)

Book

SCHOOL PERSONNEL USE ONLY

DATE: 11/14/2023

TO: SCHOOL BUSINESS OFFICE

FROM: Gilmartin

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Gilmartin

☐ Auditorium ☒ Gymnasium ☐ Swimming Pool ☐ Café/Rooms

DATES REQUESTED: 12/14/23 and 12/19/23

FROM: 5:15 am/pm TO: 7:30 am/pm

FOR THE FOLLOWING PURPOSES:

School Concerts

Laura Curley-Colon
APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

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Cancel Catholic Academy both dates

Book

SCHOOL PERSONNEL USE ONLY

DATE: 11/16/2023

TO: SCHOOL BUSINESS OFFICE

FROM: Vjollca Demirali-Parent Liaison

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Sprague

☐ Auditorium ☒ Gymnasium ☐ Swimming Pool ☒ Café/Rooms

DATES REQUESTED: 12/21/2023

FROM: 4:30pm am/pm TO: 7:30pm am/pm

FOR THE FOLLOWING PURPOSES:

Winter Concert

Vjollca Demirali
APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

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Why Bellevue
Cancel Basketball

ok

SCHOOL PERSONNEL USE ONLY

DATE: 11-8-13

TO: SCHOOL BUSINESS OFFICE

FROM: Maloney Magnet

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Maloney Magnet

☐ Auditorium ☐ Gymnasium ☐ Swimming Pool ☒ Cafe/Rooms

DATES REQUESTED: Nov. 28

FROM: 5:00 am/pm TO: 7:15 am/pm

FOR THE FOLLOWING PURPOSES:

PTO wreath making night

APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

Book

SCHOOL PERSONNEL USE ONLY

DATE: 11-7-23

TO: SCHOOL BUSINESS OFFICE

FROM: Diane Bakewell, Maloney

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Maloney Magnet

☐ Auditorium ☐ Gymnasium ☐ Swimming Pool ☒ Café/Rooms

DATES REQUESTED: Saturday, Dec. 9, 2023

FROM: 7:30 am/pm TO: 1:00 am/pm

FOR THE FOLLOWING PURPOSES:

PTO Santa Visit

Diane Bakewell
APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

Good

SCHOOL PERSONNEL USE ONLY

DATE: 11-17-23

TO: SCHOOL BUSINESS OFFICE

FROM: Wtby Housing Authority

THE UNDERSIGNED HEREBY MAKES APPLICATION FOR USE OF SCHOOL FACILITIES (AFTER REGULAR SCHOOL HOURS) AS FOLLOWS:

NAME OF SCHOOL REQUESTED: Duggan

☐ AUDITORIUM ☐ GYMNASIUM ☐ SWIMMING POOL ☑ CAFE/ROOMS

DATES REQUESTED: Thursday Dec 14, 2023

FROM 5:15 am/pm TO 6:30 am/pm

FOR THE FOLLOWING PURPOSES:

Meeting with arearesidents

Chris Darso
APPLICANT

SM

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at police and fire headquarters.

Book

SCHOOL PERSONNEL USE ONLY

DATE: 11/20/23

TO: SCHOOL BUSINESS OFFICE

FROM: Tracy Giorgio - Rotella School

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Rotella School.

☑ Auditorium ☑ Gymnasium ☐ Swimming Pool ☑ Café/Rooms

DATES REQUESTED: Nov 27th, 2023 monday

FROM: 930 am/pm TO: 12 am/pm

FOR THE FOLLOWING PURPOSES:

Open House + School Tour

APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

Book

SCHOOL PERSONNEL USE ONLY

DATE: 11/20/23

TO: SCHOOL BUSINESS OFFICE

FROM: Tracy Giorgio
Grant Facilitator at Rotella

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Rotella School

☑ Auditorium ☑ Gymnasium ☐ Swimming Pool ☑ Café/Rooms

DATES REQUESTED: Saturday January 20th 2024

FROM: 10:00 am/pm TO: 2:00 am/pm

FOR THE FOLLOWING PURPOSES:

Open House + School Tour

APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

C:\Users\tracy.giorgio\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\NIX369HC\SCHOOL reservation form.doc

Cancel EMAA

Book

SCHOOL PERSONNEL USE ONLY

DATE: 11/24/23

TO: SCHOOL BUSINESS OFFICE

FROM: Tracy Giorgio
Grant Facilitator - Rotella

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Rotella

☑ Auditorium ☑ Gymnasium ☐ Swimming Pool ☑ Café/Rooms

DATES REQUESTED: Wed. January 24th.

FROM: 930 am am/pm TO: 12:00 pm am/pm ✓

5:00 pm - + 7:30 pm ✓

FOR THE FOLLOWING PURPOSES:

Open House + Tour of School.

APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

C:\Users\tracy.giorgio\Documents\SCHOOL reservation form.doc

Cancel EMAH

Yoo

SCHOOL PERSONNEL USE ONLY

DATE: 11/20/23

TO: SCHOOL BUSINESS OFFICE

FROM: Tracy Giorgio
Grant Facilitator Rotella

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Rotella

☑ Auditorium ☑ Gymnasium ☐ Swimming Pool ☑ Café/Rooms

DATES REQUESTED: Mon. Feb 12th 2024

FROM: 930 am/pm TO: 12:00 am/pm

FOR THE FOLLOWING PURPOSES:

Open House + School Tour

APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

Book

SCHOOL PERSONNEL USE ONLY

DATE: 11. 14. 2023

TO: SCHOOL BUSINESS OFFICE

FROM: Dr. Lara White

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: WAMS

☐ Auditorium ☐ Gymnasium ☐ Swimming Pool ☐ Café/Rooms Library/Career Center

DATES REQUESTED: 12 - 4 - 23

FROM: 3:30 am/pm TO: 5:00 am/pm

FOR THE FOLLOWING PURPOSES:

Meeting for Social Justice Educators group.

APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

Book

11/17/2023

SCHOOL PERSONNEL USE ONLY

Requested DATE: May 23rd Thursday

TO: SCHOOL BUSINESS OFFICE

FROM: Brooke Nightingale

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Wallace Middle School

☐ Auditorium ☐ Gymnasium ☐ Swimming Pool ☒ Café/Rooms

DATES REQUESTED: May 23rd Thursday

FROM: 5PM am/pm TO: 6:30 am/pm

FOR THE FOLLOWING PURPOSES:

Advanced Art Showcase
Grades 7th - 8th
Artwork (Art) on display for families + students to view from the yearlong course.

Brooke Nightingale
APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

Book

SCHOOL PERSONNEL USE ONLY

DATE: November 25, 2023

TO: SCHOOL BUSINESS OFFICE

FROM: Silas Bronson Library

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: **WILBY**

☐ Auditorium ☒ Gymnasium ☐ Swimming Pool ☐ Café/Rooms

DATES REQUESTED: January 9, 2024

FROM: 5:00 pm TO: 7:30 pm

FOR THE FOLLOWING PURPOSES:

Set up outside or inside the gymnasium on game night (Boys Varsity Basketball vs. Holy Cross) to promote the library.

Michael Tierney
Librarian III

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

SCHOOL PERSONNEL USE ONLY

DATE: November 25, 2023

TO: SCHOOL BUSINESS OFFICE

FROM: Silas Bronson Library

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: **WATERBURY CAREER ACADEMY**

☐ Auditorium X Gymnasium ☐ Swimming Pool ☐ Café/Rooms

DATES REQUESTED: January 16, 2024

FROM: 5:00 pm TO: 7:30 pm

FOR THE FOLLOWING PURPOSES:

Set up outside or inside the gymnasium on game night (Boys Varsity Basketball vs. Holy Cross) to promote the library.

Michael Tierney
Librarian III

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

Book

SCHOOL PERSONNEL USE ONLY

DATE: November 25, 2023

TO: SCHOOL BUSINESS OFFICE

FROM: Silas Bronson Library

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: **KENNEDY**

☐ Auditorium **X** Gymnasium ☐ Swimming Pool ☐ Café/Rooms

DATES REQUESTED: January 30, 2024

FROM: 5:00 pm TO: 7:30 pm

FOR THE FOLLOWING PURPOSES:

Set up outside or inside the gymnasium on game night (Boys Varsity Basketball vs. Crosby) to promote the library.

Michael Tierney
Librarian III

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

book

SCHOOL PERSONNEL USE ONLY

DATE: Nov. 29, 2023

TO: SCHOOL BUSINESS OFFICE

FROM: S. Carpentieri

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Sprague

☐ Auditorium ☑ Gymnasium ☐ Swimming Pool ☐ Café/Rooms

DATES REQUESTED: Dec. 16, 2023

FROM: 7:30 (am/pm) TO: 12:00 (am/pm)

FOR THE FOLLOWING PURPOSES:

PTO event w/ Santa

S. Carpentieri
APPLICANT

Please note the following provisions:
When the public is invited to an activity, police and fire departments must be notified. These arrangements *must* be made in person at the police and fire headquarters.

#18

COMMITTEE ON BUILDINGS AND SCHOOL FACILITIES

WORKSHOP: **Thursday, December 7, 2023**
BOARD MEETING: **Thursday, December 21, 2023**

TO THE BOARD OF EDUCATION
WATERBURY, CONNECTICUT

LADIES AND GENTLEMEN:

With the approval of the **Committee on School Facilities and Grounds, the Superintendent of Schools recommends approval of the use of school facilities by groups and organizations, subject to fees and insurance as required.**

GROUP	FACILITIES AND DATES/TIMES
REQUESTING WAIVERS:	
Special Olympics D. Ford	Reed School gym & café: Saturday, March 23rd 7:30am – 5:00pm (basketball tournament) ($ 882.)
Grandville Academy M. Mosley	Reed café/kitchen: December, 2023 thru June, 2024 first Saturday each month 9am - 1pm (Educational Meetings for Grandville Academy) ($1,470.)
PAL Ofc. M. Macary	Reed gym: Sat.,, Dec. 2nd, 9th & Sun., Dec. 10th 9:00am – 5:00pm (basketball program) ($1,134.)
GROUPS NOT SUBJECT TO FEES OR WAIVER DUE TO TIME OF USE OR PREVIOUS WAIVER:	
Gilmartin Community Club: R. Barry	Gilmartin café: Tuesday, Jan. 23rd 7:00 – 9:00 pm (monthly meeting)
Wtby. Ballers T. Lott	Generali gym: 11/20-2/28/24 Mon. ,Wed. ,Fri. 5:30-8:30 pm (basketball program)
Hoops for Life D. Fryer	Reed gym: 11/20/23 – 2/7/24 Mon. & Wed. 5:30 -9:00pm West Side gym: 11/20/23 – 2/6/24 Tues. & Thurs 5:30 – 9:00 pm (basketball program)
CT. Girl Scouts D. Dzicek	West Side M/S parking lot: Saturday, March 16th 7:00am – 11:30am (Girl Scout Cookie Drop-Off in parking lot)

Waterbury UNICO P. Varanelli	Kennedy room: Wed., Dec. 13th 6:30-8:30 pm and then January to June, 2024 – the second Tuesday each month. (UNICO Board meetings)

MONIES COLLECTED TO DATE: **$ 13,694.00**

Book

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702 CONTRACT#
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

APPLICANT Derrick Ford NAME OF ORGANIZATION Special Olympics

ADDRESS 2666 State st Hamden CT 06517 TELEPHONE # 203-230-1201 x 272
(street) (city) (state) (zip code)

SCHOOL REQUESTED Reed Middle DATES 3-23-2024 ROOM(S) Gym and Cafe

OPENING TIME 7:30 am CLOSING TIME 5:00 pm PURPOSE Basketball Tournament

ADMISSION (if any) NONE CHARGE TO BE DEVOTED TO —

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS 150 CHILDREN

SIGNATURE OFAPPLICANT Derrick Ford DATE 11-16-2023

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION:

Same as above

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. DF (PLEASE INITIAL)

(2) ($882.)

SCHEDULE OF RATES: CUSTODIAL FEES: $42/HR plus 1 HR SERVICE

RENTAL FEES:

MISCELLANEOUS FEES:

SECURITY DEPOSIT $ INSURANCE COVERAGE YES NO

PLEASE READ THE FOLLOWING CAREFULLY

APPLICATION MUST BE RECEIVED AT LEAST THREE (3) WEEKS PRIOR TO THE ACTIVITY.

A COPY OF YOUR INSURANCE MUST ACCOMPANY YOUR APPLICATION (IF APPLICABLE)

IF SCHOOL IS CANCELLED FOR SNOW OR ANY OTHER REASON - ALL ACTIVITIES ARE CANCELLED ALSO.

THERE WILL BE NO ACTIVITIES DURING SCHOOL OPEN HOUSE.

CANCELLATIONS MUST BE MADE AT LEAST 48 HOURS IN ADVANCE OR YOU WILL BE CHARGED.

POLICE AND FIRE PROTECTION MUST BE ARRANGED AND/OR CANCELLED BY THE RENTER. PLEASE CALL EACH DEPARTMENT FOR INFORMATION. POLICE DEPT. 574-6963 FIRE DEPT. 597-3452

CALL THE SCHOOL CUSTODIAN AT LEAST ONE WEEK PRIOR TO YOUR ACTIVITY FOR ANY ARRANGEMENTS RE: PA SYSTEM, LIGHTING, ETC. (FOR WHICH THERE WILL BE AN EXTRA CHARGE).

KITCHEN FACILITIES CAN NOT BE USED BY GROUPS WITHOUT SUPERVISION - PLEASE CALL THE FOOD SERVICE DEPT. AT 574-8210 TO ARRANGE FOR A FOOD SERVICE PERSON (FOR WHICH THERE WILL BE AN EXTRA CHARGE)

PLEASE SEE REVERSE FOR ADDITIONAL RULES AND REGULATIONS.

IT IS AGREED THAT REGULATIONS ADOPTED BY THE BOARD OF EDUCATION FOR USE OF SCHOOL BUILDINGS WILL BE RIGIDLY ENFORCED.

APPROVAL DATE

SCHOOL BUSINESS OFFICE

CHECKS OR MONEY ORDERS FOR FEES SHOULD BE MADE OUT TO THE BOARD OF EDUCATION AND MAILED TO THE SCHOOL BUSINESS OFFICE. NO CASH WILL BE ACCEPTED.

White-Permittee Goldenrod-School Business Office Pink-Principal Blue-Custodian

USE OF SCHOOL FACILITIES
WAIVER REQUEST
(to be submitted with Use of Building Permit)

APPLICANT/ORGANIZATION: Special Olympics

Please check below specific item(s):

Building Usage Fees ☑ Custodial Fees ☑

SCHOOL/ROOMS REQUESTED: Reed Middle School

DATE(S): March 23, 2024 TIMES: 7:30AM - 5pm

DATE(S): TIMES:

DATE(S): TIMES:

DATE(S): TIMES:

DATE(S): TIMES:

DATE(S): TIMES:

11-16-2023
Date

Derrick [illegible]
Signature

OFFICE USE ONLY

List total cost of fees being requested to be waived:

$ Building Usage Fees

$ 882.00 Custodial Fees

$ Security Deposit

BOARD USE ONLY

The Board of Education approved/denied the above referenced waiver request(s) at their regular meeting of _____.

ATTEST: _____
Clerk, Board of Education

Book

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

CONTRACT#

APPLICANT Maurice Mosley NAME OF ORGANIZATION Granville Acad.

ADDRESS 66 Redcoat Rd TELEPHONE # 203-598-4101
(street) (city) (state) (zip code)

SCHOOL REQUESTED Reed DATES see ATTACHED ROOM(S) Cafe - Kitchen

OPENING TIME 9AM CLOSING TIME 1 pm PURPOSE Educational Meetings

ADMISSION (if any) CHARGE TO BE DEVOTED TO

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS 50 CHILDREN

SIGNATURE OFAPPLICANT DATE 11-9-23

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION:
(SAME)

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. M BM (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES: $42/HR plus 1 HR. service (1) ($1,470.)

RENTAL FEES:

MISCELLANEOUS FEES:

SECURITY DEPOSIT $ INSURANCE COVERAGE ✓ YES NO

PLEASE READ THE FOLLOWING CAREFULLY

APPLICATION MUST BE RECEIVED AT LEAST THREE (3) WEEKS PRIOR TO THE ACTIVITY.

A COPY OF YOUR INSURANCE MUST ACCOMPANY YOUR APPLICATION (IF APPLICABLE)

IF SCHOOL IS CANCELLED FOR SNOW OR ANY OTHER REASON - ALL ACTIVITIES ARE CANCELLED ALSO.

THERE WILL BE NO ACTIVITIES DURING SCHOOL OPEN HOUSE.

CANCELLATIONS MUST BE MADE AT LEAST 48 HOURS IN ADVANCE OR YOU WILL BE CHARGED.

POLICE AND FIRE PROTECTION MUST BE ARRANGED AND/OR CANCELLED BY THE RENTER. PLEASE CALL EACH DEPARTMENT FOR INFORMATION. POLICE DEPT. 574-6963 FIRE DEPT. 597-3452

CALL THE SCHOOL CUSTODIAN AT LEAST ONE WEEK PRIOR TO YOUR ACTIVITY FOR ANY ARRANGEMENTS RE: PA SYSTEM, LIGHTING, ETC. (FOR WHICH THERE WILL BE AN EXTRA CHARGE).

KITCHEN FACILITIES CAN NOT BE USED BY GROUPS WITHOUT SUPERVISION - PLEASE CALL THE FOOD SERVICE DEPT. AT 574-8210 TO ARRANGE FOR A FOOD SERVICE PERSON (FOR WHICH THERE WILL BE AN EXTRA CHARGE)

PLEASE SEE REVERSE FOR ADDITIONAL RULES AND REGULATIONS.

IT IS AGREED THAT REGULATIONS ADOPTED BY THE BOARD OF EDUCATION FOR USE OF SCHOOL BUILDINGS WILL BE RIGIDLY ENFORCED.

APPROVAL DATE

SCHOOL BUSINESS OFFICE

CHECKS OR MONEY ORDERS FOR FEES SHOULD BE MADE OUT TO THE BOARD OF EDUCATION AND MAILED TO THE SCHOOL BUSINESS OFFICE. NO CASH WILL BE ACCEPTED.

White-Permittee Goldenrod-School Business Office Pink-Principal Blue-Custodian

USE OF SCHOOL FACILITIES WAIVER REQUEST

(to be submitted with Building Permit)

APPLICANT/ORGANIZATION: Grandville Academy

Please check below specific item(s):

Building Usage Fees ☐ Custodial Fees ☑

SCHOOL/ROOMS REQUESTED: Reed Cafe

DATE(S): Dec 2	Saturday	TIMES:	9 AM - 1 pm
DATE(S): Jan 6	"	TIMES:	"
DATE(S): Feb 3	"	TIMES:	"
DATE(S): Mar. 2	"	TIMES:	"
DATE(S): April 6	"	TIMES:	"
DATE(S): May 4	"	TIMES:	"
June 1	"		"

11-9-23
Date

Signature

OFFICE USE ONLY

List total cost of fees being requested to be waived:

$	$ 1,470.00	$
Building Usage Fees	Custodial Fees	Security Deposit

BOARD USE ONLY

The Board of Education approved/denied the above referenced waiver request(s) at their regular meeting of _____.

ATTEST: _____
Clerk, Board of Education

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702 CONTRACT#
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

APPLICANT Michael Macary NAME OF ORGANIZATION Waterbury PAL

ADDRESS 64 Division St Waterbury CT TELEPHONE # (203) 585-3583
(street) (city) (state) (zip code)

SCHOOL REQUESTED Reed DATES Dec. 2, 9, 10 ROOM(S) Gym

OPENING TIME 9 AM CLOSING TIME 5 pm PURPOSE Basketball

ADMISSION (if any) _____ CHARGE TO BE DEVOTED TO _____

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS _____ CHILDREN _____

SIGNATURE OF APPLICANT [signature] DATE 11-27-23

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION: *
Michael Macary

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. MM (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES: _____

RENTAL FEES: _____

MISCELLANEOUS FEES: _____

SECURITY DEPOSIT $ _____ INSURANCE COVERAGE _____ YES _____ NO

PLEASE READ THE FOLLOWING CAREFULLY

APPLICATION MUST BE RECEIVED AT LEAST THREE (3) WEEKS PRIOR TO THE ACTIVITY.

2 Saturdays
1 Sunday

A COPY OF YOUR INSURANCE MUST ACCOMPANY YOUR APPLICATION (IF APPLICABLE)

IF SCHOOL IS CANCELLED FOR SNOW OR ANY OTHER REASON - ALL ACTIVITIES ARE CANCELLED ALSO.

THERE WILL BE NO ACTIVITIES DURING SCHOOL OPEN HOUSE.

CANCELLATIONS MUST BE MADE AT LEAST 48 HOURS IN ADVANCE OR YOU WILL BE CHARGED.

POLICE AND FIRE PROTECTION MUST BE ARRANGED AND/OR CANCELLED BY THE RENTER. PLEASE CALL EACH DEPARTMENT FOR INFORMATION. POLICE DEPT. 574-6963 FIRE DEPT. 597-3452

CALL THE SCHOOL CUSTODIAN AT LEAST ONE WEEK PRIOR TO YOUR ACTIVITY FOR ANY ARRANGEMENTS RE: PA SYSTEM, LIGHTING, ETC. (FOR WHICH THERE WILL BE AN EXTRA CHARGE).

KITCHEN FACILITIES CAN NOT BE USED BY GROUPS WITHOUT SUPERVISION - PLEASE CALL THE FOOD SERVICE DEPT. AT 574-8210 TO ARRANGE FOR A FOOD SERVICE PERSON (FOR WHICH THERE WILL BE AN EXTRA CHARGE)

PLEASE SEE REVERSE FOR ADDITIONAL RULES AND REGULATIONS.

IT IS AGREED THAT REGULATIONS ADOPTED BY THE BOARD OF EDUCATION FOR USE OF SCHOOL BUILDINGS WILL BE RIGIDLY ENFORCED.

APPROVAL DATE _____ _____
SCHOOL BUSINESS OFFICE

CHECKS OR MONEY ORDERS FOR FEES SHOULD BE MADE OUT TO THE BOARD OF EDUCATION AND MAILED TO THE SCHOOL BUSINESS OFFICE. NO CASH WILL BE ACCEPTED.

White Permittee Goldenrod School Business Office Pink Principal Blue Custodian

USE OF SCHOOL FACILITIES WAIVER REQUEST

(to be submitted with Use or Building Permit)

APPLICANT/ORGANIZATION: Waterbury PAL

Please check below specific item(s):

Building Usage Fees ☐ Custodial Fees ☐

SCHOOL/ROOMS REQUESTED: Reed

DATE(S): Dec. 2	TIMES: 9 Am - 5 pm
DATE(S): Dec, 9	TIMES: "
DATE(S): Dec. 10	TIMES: "
DATE(S):	TIMES:
DATE(S):	TIMES:
DATE(S):	TIMES:

11-27-23
Date

Signature #905

OFFICE USE ONLY

List total cost of fees being requested to be waived:

$	$ 1,134.00	$
Building Usage Fees	Custodial Fees	Security Deposit

BOARD USE ONLY

The Board of Education approved/denied the above referenced waiver request(s) at their regular meeting of _____.

ATTEST: _____
Clerk, Board of Education

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

CONTRACT# Gilmartin

APPLICANT Ruth Barry NAME OF ORGANIZATION Community Club

ADDRESS 109 Long Meadow Drive 06706 TELEPHONE # 755-1652
(street) (city) (state) (zip code)

SCHOOL REQUESTED Gilmartin DATES 1-23-24 ROOM(S) Cafe

OPENING TIME 7pm CLOSING TIME 9pm PURPOSE meeting

ADMISSION (if any) — CHARGE TO BE DEVOTED TO

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS 15-20 CHILDREN —

SIGNATURE OF APPLICANT Ruth Barry DATE 11-15-23

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION: *

SAME

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. RB (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES:

RENTAL FEES:

MISCELLANEOUS FEES:

SECURITY DEPOSIT $ INSURANCE COVERAGE YES NO

PLEASE READ THE FOLLOWING CAREFULLY

APPLICATION MUST BE RECEIVED AT LEAST THREE (3) WEEKS PRIOR TO THE ACTIVITY.

A COPY OF YOUR INSURANCE MUST ACCOMPANY YOUR APPLICATION (IF APPLICABLE)

F SCHOOL IS CANCELLED FOR SNOW OR ANY OTHER REASON - ALL ACTIVITIES ARE CANCELLED ALSO.

HERE WILL BE NO ACTIVITIES DURING SCHOOL OPEN HOUSE.

ANCELLATIONS MUST BE MADE AT LEAST 48 HOURS IN ADVANCE OR YOU WILL BE CHARGED.

OLICE AND FIRE PROTECTION MUST BE ARRANGED AND/OR CANCELLED BY THE RENTER. PLEASE CALL EACH EPARTMENT FOR INFORMATION. POLICE DEPT. 574-6963 FIRE DEPT. 597-3452

ALL THE SCHOOL CUSTODIAN AT LEAST ONE WEEK PRIOR TO YOUR ACTIVITY FOR ANY ARRANGEMENTS RE: A SYSTEM, LIGHTING, ETC. (FOR WHICH THERE WILL BE AN EXTRA CHARGE).

TCHEN FACILITIES CAN NOT BE USED BY GROUPS WITHOUT SUPERVISION - PLEASE CALL THE FOOD SERVICE EPT. AT 574-6210 TO ARRANGE FOR A FOOD SERVICE PERSON (FOR WHICH THERE WILL BE AN EXTRA CHARGE)

EASE SEE REVERSE FOR ADDITIONAL RULES AND REGULATIONS.

IS AGREED THAT REGULATIONS ADOPTED BY THE BOARD OF EDUCATION FOR USE OF SCHOOL BUILDINGS LL BE RIGIDLY ENFORCED.

PROVAL DATE

SCHOOL BUSINESS OFFICE

ECKS OR MONEY ORDERS FOR FEES SHOULD BE MADE OUT TO THE BOARD OF EDUCATION AND MAILED TO THE HOOL BUSINESS OFFICE. NO CASH WILL BE ACCEPTED.

White-Permittee Goldenrod-School Business Office Pink-Principal Blue-Custodian

Banks

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

CONTRACT#

APPLICANT Terence Lott NAME OF ORGANIZATION Waterbury Baller

ADDRESS 25 Grand Ave (street) Waterbury (city) CT (state) 06704 (zip code) TELEPHONE # 203-509-4757 203-805-1884

SCHOOL REQUESTED Generali DATES 11/20-2/28/24 ROOM(S) Gym

OPENING TIME 5:30 pm CLOSING TIME 8:30 pm PURPOSE Basketball Program

ADMISSION (if any) _____ CHARGE TO BE DEVOTED TO _____

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS _____ CHILDREN _____

SIGNATURE OF APPLICANT _____ DATE 11-15-23

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION:

Terence Lott Sr (203-509-4757), Terence Lott Jr (203-805-1884)

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. TL (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES: _____

RENTAL FEES: _____

MISCELLANEOUS FEES: _____

SECURITY DEPOSIT $ _____ INSURANCE COVERAGE ✓ YES _____ NO

PLEASE READ THE FOLLOWING CAREFULLY OK

APPLICATION MUST BE RECEIVED AT LEAST THREE (3) WEEKS PRIOR TO THE ACTIVITY.

A COPY OF YOUR INSURANCE MUST ACCOMPANY YOUR APPLICATION (IF APPLICABLE)

IF SCHOOL IS CANCELLED FOR SNOW OR ANY OTHER REASON - ALL ACTIVITIES ARE CANCELLED ALSO.

THERE WILL BE NO ACTIVITIES DURING SCHOOL OPEN HOUSE.

CANCELLATIONS MUST BE MADE AT LEAST 48 HOURS IN ADVANCE OR YOU WILL BE CHARGED.

POLICE AND FIRE PROTECTION MUST BE ARRANGED AND/OR CANCELLED BY THE RENTER. PLEASE CALL EACH DEPARTMENT FOR INFORMATION. POLICE DEPT. 574-6963 FIRE DEPT. 597-3452

CALL THE SCHOOL CUSTODIAN AT LEAST ONE WEEK PRIOR TO YOUR ACTIVITY FOR ANY ARRANGEMENTS RE: PA SYSTEM, LIGHTING, ETC. (FOR WHICH THERE WILL BE AN EXTRA CHARGE).

KITCHEN FACILITIES CAN NOT BE USED BY GROUPS WITHOUT SUPERVISION - PLEASE CALL THE FOOD SERVICE DEPT. AT 574-8210 TO ARRANGE FOR A FOOD SERVICE PERSON (FOR WHICH THERE WILL BE AN EXTRA CHARGE)

PLEASE SEE REVERSE FOR ADDITIONAL RULES AND REGULATIONS.

IT IS AGREED THAT REGULATIONS ADOPTED BY THE BOARD OF EDUCATION FOR USE OF SCHOOL BUILDINGS WILL BE RIGIDLY ENFORCED.

Monday
Wednesday
Friday

APPROVAL DATE _____ _____
SCHOOL BUSINESS OFFICE

CHECKS OR MONEY ORDERS FOR FEES SHOULD BE MADE OUT TO THE BOARD OF EDUCATION AND MAILED TO THE SCHOOL BUSINESS OFFICE. NO CASH WILL BE ACCEPTED.

White-Permittee Goldenrod-School Business Office Pink-Principal Blue-Custodian

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702 CONTRACT#
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

APPLICANT Deneen Fryer NAME OF ORGANIZATION Hoops4Life, Inc

ADDRESS 232 N. Elm St Wtby CT 06702 TELEPHONE # (203) 232-4578
(street) (city) (state) (zip code)

SCHOOL REQUESTED Johnathan Reed DATES Please See Attachment ROOM(S) Gym

OPENING TIME 5:30 p CLOSING TIME 9:00 pm PURPOSE Gym / dance practice

ADMISSION (if any) N/A CHARGE TO BE DEVOTED TO N/a

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS 20 CHILDREN 20

SIGNATURE OFAPPLICANT Deneen Fryer DATE 10-30-2023

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION:
Deneen Fryer (203) 232-4578 - Randy Brooks, (203) 437-2205 / Josh Turner (203) 565-9885

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. DF (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES:

RENTAL FEES:

MISCELLANEOUS FEES:

SECURITY DEPOSIT $ INSURANCE COVERAGE YES NO

PLEASE READ THE FOLLOWING CAREFULLY

APPLICATION MUST BE RECEIVED AT LEAST THREE (3) WEEKS PRIOR TO THE ACTIVITY.

A COPY OF YOUR INSURANCE MUST ACCOMPANY YOUR APPLICATION (IF APPLICABLE)

IF SCHOOL IS CANCELLED FOR SNOW OR ANY OTHER REASON - ALL ACTIVITIES ARE CANCELLED ALSO.

THERE WILL BE NO ACTIVITIES DURING SCHOOL OPEN HOUSE.

CANCELLATIONS MUST BE MADE AT LEAST 48 HOURS IN ADVANCE OR YOU WILL BE CHARGED.

POLICE AND FIRE PROTECTION MUST BE ARRANGED AND/OR CANCELLED BY THE RENTER. PLEASE CALL EACH DEPARTMENT FOR INFORMATION. POLICE DEPT. 574-6963 FIRE DEPT. 597-3452

CALL THE SCHOOL CUSTODIAN AT LEAST ONE WEEK PRIOR TO YOUR ACTIVITY FOR ANY ARRANGEMENTS RE: PA SYSTEM, LIGHTING, ETC. (FOR WHICH THERE WILL BE AN EXTRA CHARGE).

KITCHEN FACILITIES CAN NOT BE USED BY GROUPS WITHOUT SUPERVISION - PLEASE CALL THE FOOD SERVICE DEPT. AT 574-8210 TO ARRANGE FOR A FOOD SERVICE PERSON (FOR WHICH THERE WILL BE AN EXTRA CHARGE)

PLEASE SEE REVERSE FOR ADDITIONAL RULES AND REGULATIONS.

IT IS AGREED THAT REGULATIONS ADOPTED BY THE BOARD OF EDUCATION FOR USE OF SCHOOL BUILDINGS WILL BE RIGIDLY ENFORCED.

Mon. & Wed.

APPROVAL DATE

SCHOOL BUSINESS OFFICE

CHECKS OR MONEY ORDERS FOR FEES SHOULD BE MADE OUT TO THE BOARD OF EDUCATION AND MAILED TO THE SCHOOL BUSINESS OFFICE. NO CASH WILL BE ACCEPTED.

White-Permittee Goldenrod-School Business Office Pink-Principal Blue-Custodian

APPLICANT/ORGANIZATION: Hoops4Life, Inc.

Mon. Wed.

SCHOOL/ROOMS REQUESTED: Johnathan Reed

DATE(S): 11/20 ~~11/21~~ 11/22 11/27 ~~11/28~~ TIMES: 5:30p - 9p

DATE(S): 11/29 ~~11/30~~ ~~12/1~~ 12/4 ~~12/5~~ TIMES: 5:30p - 9p

DATE(S): 12/6 ~~12/7~~ 12/11 12/13 ~~12/14~~ TIMES: " "

DATE(S): 12/18 ~~12/19~~ ~~12/21~~ Jan 3 TIMES: " "

DATE(S): ~~1/4~~ 1/8 ~~1/9~~ 1/10 ~~1/11~~ ~~1/15~~ ~~1/16~~ TIMES: " "

DATE(S): 1/17 ~~1/18~~ 1/22 ~~1/23~~ 1/24 ~~1/26~~ 2/7 TIMES: " "

1/29 ~~1/30~~ 1/31 ~~2/1~~ 2/5 ~~2/6~~ 2/

OCT 30-2023

Date

Signature

Flyer

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702 CONTRACT#
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

APPLICANT DENEEN Flyer NAME OF ORGANIZATION Hoops4Life, Inc

ADDRESS 232 N. Elm St Wtby CT 06702 TELEPHONE #(203) 232-4578
(street) (city) (state) (zip code)

SCHOOL REQUESTED WSMS DATES Please See Attachment ROOM(S) Gym

OPENING TIME 5:30p CLOSING TIME 9:00pm PURPOSE Gym / dance practice

ADMISSION (if any) N/A CHARGE TO BE DEVOTED TO N/A

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS 20 CHILDREN 20

SIGNATURE OFAPPLICANT Deneen Flyer DATE 10-30-2023

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION:
DENEEN Fryer (203)232-4578 - Randy Brooks (203) 437-2205 / Josh Turner (203) 565-9885

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. DF (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES:

RENTAL FEES:

MISCELLANEOUS FEES:

SECURITY DEPOSIT $ INSURANCE COVERAGE YES NO

PLEASE READ THE FOLLOWING CAREFULLY

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CANCELLATIONS MUST BE MADE AT LEAST 48 HOURS IN ADVANCE OR YOU WILL BE CHARGED.

POLICE AND FIRE PROTECTION MUST BE ARRANGED AND/OR CANCELLED BY THE RENTER. PLEASE CALL EACH DEPARTMENT FOR INFORMATION. POLICE DEPT. 574-6963 FIRE DEPT. 597-3452

CALL THE SCHOOL CUSTODIAN AT LEAST ONE WEEK PRIOR TO YOUR ACTIVITY FOR ANY ARRANGEMENTS RE: PA SYSTEM, LIGHTING, ETC. (FOR WHICH THERE WILL BE AN EXTRA CHARGE).

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PLEASE SEE REVERSE FOR ADDITIONAL RULES AND REGULATIONS.

IT IS AGREED THAT REGULATIONS ADOPTED BY THE BOARD OF EDUCATION FOR USE OF SCHOOL BUILDINGS WILL BE RIGIDLY ENFORCED.

Tues. & Thurs.

APPROVAL DATE

SCHOOL BUSINESS OFFICE

CHECKS OR MONEY ORDERS FOR FEES SHOULD BE MADE OUT TO THE BOARD OF EDUCATION AND MAILED TO THE SCHOOL BUSINESS OFFICE. NO CASH WILL BE ACCEPTED.

White-Permittee Goldenrod-School Business Office Pink-Principal Blue-Custodian

APPLICANT/ORGANIZATION: Hoopsy Life, Inc.

Tues & Thurs

SCHOOL/ROOMS REQUESTED: WSMS

DATE(S): 11/21 11/28	TIMES: 5:30 – 9pm
DATE(S): 11/30 12/5	TIMES: " "
DATE(S): 12/7 12/13 12/14	TIMES: " "
DATE(S): 12/19 12/21 1/4 1/5	TIMES: " "
DATE(S): 1/11 1/16 1/18	TIMES: " "
DATE(S): 1/23 1/25 1/30	TIMES: " "
2/1 2/6	

Oct 30, 2023
Date

Signature

Book

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702 CONTRACT#
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

APPLICANT Devon Dzicek NAME OF ORGANIZATION Girl Scouts of CT

ADDRESS 340 Washington St, Hartford, CT 06106 TELEPHONE # 860-522-0163
(street) (city) (state) (zip code)

SCHOOL REQUESTED West Side Middle School DATES March 16, 2024 ROOM(S) Side Parking Lot

OPENING TIME 7AM CLOSING TIME 1130 AM PURPOSE Cookie Distribution

ADMISSION (if any) n/a CHARGE TO BE DEVOTED TO n/a

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS 45 CHILDREN 0

SIGNATURE OFAPPLICANT DATE 11/22/2023

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION:
Devon Dzicek, 20 Washington St, North Haven CT, 203-537-4607

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES:

RENTAL FEES:

MISCELLANEOUS FEES:

SECURITY DEPOSIT $ INSURANCE COVERAGE YES NO

PLEASE READ THE FOLLOWING CAREFULLY

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CANCELLATIONS MUST BE MADE AT LEAST 48 HOURS IN ADVANCE OR YOU WILL BE CHARGED.

POLICE AND FIRE PROTECTION MUST BE ARRANGED AND/OR CANCELLED BY THE RENTER. PLEASE CALL EACH DEPARTMENT FOR INFORMATION. POLICE DEPT. 574-6963 FIRE DEPT. 597-3452

CALL THE SCHOOL CUSTODIAN AT LEAST ONE WEEK PRIOR TO YOUR ACTIVITY FOR ANY ARRANGEMENTS RE: PA SYSTEM, LIGHTING, ETC. (FOR WHICH THERE WILL BE AN EXTRA CHARGE).

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APPROVAL DATE

SCHOOL BUSINESS OFFICE

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White-Permittee Goldenrod-School Business Office Pink-Principal Blue-Custodian

Book

DEPARTMENT OF EDUCATION - WATERBURY, CONNECTICUT
SCHOOL BUSINESS OFFICE
236 GRAND ST., WATERBURY, CT 06702 CONTRACT#
USE OF BUILDING PERMIT
TYPE OR USE PEN AND PRESS FIRMLY

APPLICANT Patricia Varanelli NAME OF ORGANIZATION Waterbury UNICO

ADDRESS 102 Ridgewood Dr Middlebury, CT 06762 TELEPHONE # (203) 574-8877
(street) (city) (state) (zip code)

SCHOOL REQUESTED Kennedy HS DATES See attached ROOM(S) Classroom

OPENING TIME 6:30 pm CLOSING TIME 8:30 pm PURPOSE UNICO Board Meeting

ADMISSION (if any) N/A CHARGE TO BE DEVOTED TO N/A

APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS 10-12 CHILDREN 0

SIGNATURE OF APPLICANT Patricia Varanelli DATE 11/28/23

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION:
Nicki Maiorano 95 Willow St Willow St Waterbury, CT 06710 (203) 695-2911

In the event that the Board of Education should need to resort to legal proceedings to collect any outstanding balances, the lessee is responsible for any and all attorney's fees, sheriff's fees and court costs associated with said proceedings. PAV (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES:

RENTAL FEES:

MISCELLANEOUS FEES:

SECURITY DEPOSIT $ INSURANCE COVERAGE ✓ YES NO

PLEASE READ THE FOLLOWING CAREFULLY

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APPROVAL DATE

SCHOOL BUSINESS OFFICE

CHECKS OR MONEY ORDERS FOR FEES SHOULD BE MADE OUT TO THE BOARD OF EDUCATION AND MAILED TO THE SCHOOL BUSINESS OFFICE. NO CASH WILL BE ACCEPTED.

White-Permittee Goldenrod-School Business Office Pink-Principal Blue-Custodian

Waterbury UNICO
2023 - 2024 Meeting Schedule

Tuesday 12/13/23
Tuesday 1/9/24
Tuesday 2/13/24
Tuesday 3/12/24
Tuesday 4/9/24
Tuesday 5/14/24
Tuesday 6/11/24

COMMUNICATIONS

November 7, 2023 through
December 5, 2023

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 1, 2023

Edward Mendes
238 Wall St., Apt. 1
Waterbury, CT 06704

Dear Mr. Mendes:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I (Req. #20240432) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, November 9, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 10, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 1, 2023 **REVISED**

Ana Mateo
39 Society Hill Rd.
Waterbury, CT 06704

Dear Ms. Mateo:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #2023249) at **$20.02 per hour**.

Your official start date in this position will be November 2, 2023.

Please contact Wendy Johns, Director of Pupil Services at (203) 346-3505 ext 11181 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
W. John, Director of Pupil Services
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 1, 2023 **REVISED**

Melanie Lopez
357 Wilson St.
Waterbury, CT 06708

Dear Ms. Lopez:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #2023843) at **$20.02 per hour.**

Your official start date in this position will be November 2, 2023.

Please contact Wendy Johns, Director of Pupil Services at (203) 346-3505 ext 11181 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
W. John, Director of Pupil Services
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 1, 2023 **REVISED**

Crystal Betancourt
26 Midfield Dr. Apt. 29
Waterbury, CT 06705

Dear Ms. Betancourt:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #2023745) at **$20.02 per hour.**

Your official start date in this position will be November 2, 2023.

Please contact Wendy Johns, Director of Pupil Services at (203) 346-3505 ext 11181 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
W. John, Director of Pupil Services
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 1, 2023 **REVISED**

Melissa Rodriguez
36 Society Hill
Waterbury, CT 06704

Dear Ms. Rodriguez:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #2023807) at **$20.02 per hour.**

Your official start date in this position will be November 2, 2023.

Please contact Wendy Johns, Director of Pupil Services at (203) 346-3505 ext 11181 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
W. John, Director of Pupil Services
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 6, 2023

Michelle Espinal
118 Sprucedale Dr.
Waterbury, CT 06706

Dear Ms. Espinal:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education for the position of Paraprofessional I (Req. #2023950) at $18.20 per hour. Please contact Wendy Johns, Director of Pupil Services at (203) 574-8019 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, November 9, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 10, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 6 months in duration. The department head will be responsible for executing your probationary evaluation no later than 6 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist
NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Wendy Johns, Director of Pupil Serv.
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 6, 2023

Guitana Godfrey
173 Mark Lane, #16
Waterbury, CT 06704

Dear Mr. Godfrey:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I (Req. #20240454) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, November 9, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 10, 2023 at your regular scheduled time.

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Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 6, 2023

Shannon Matthews
440 Meriden Rd., #411
Waterbury, CT 06705

Dear Ms. Matthews:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #2023711) at $20.02 per hour. Please contact Wendy Johns, Director of Pupil Services at (203) 574-8019 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, November 9, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 10, 2023 at your regular scheduled time.

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Your new probationary period in accordance with your applicable contract will be 6months in duration. The department head will be responsible for executing your probationary evaluation no later than 6 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist
NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Wendy Johns, Director of Pupil Serv.
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 6, 2023

Wallace Wiggins
25 Rosette St.
Waterbury, CT 06702

Dear Mr. Wiggins:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I @ Carrington Elementary School (Req. #20240464) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, November 9, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 10, 2023 at your regular scheduled time.

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Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 6, 2023

Ruben Vargas
43 Tree Hill Rd.
Waterbury, CT 06708

Dear Mr. Vargas:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I @ West Side Middle School (Req. #2024107) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, November 9, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 10, 2023 at your regular scheduled time.

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Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 8, 2023

Joao De Brito Gomes
26 Deer Run Lane, Apt. 25
Waterbury, CT 06705

Dear Mr. De Brito Gomes:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I (Req. #20240453) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, November 27, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 16, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 8, 2023

David Gomez
73 Jersesy St., Apt. A
Waterbury, CT 06706

Dear Mr. Gomez:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #202403) at $20.02 per hour. Please contact Wendy Johns, Director of Pupil Services at (203) 574-8019 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, November 9, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 10, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 6months in duration. The department head will be responsible for executing your probationary evaluation no later than 6 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist
NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Wendy Johns, Director of Pupil Serv.
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 8, 2023

Ronald Rinaldi
37 Lorenz Dr.
Wolcott, CT 06716

Dear Mr. Rinaldi:

Your name is being certified to the Department of Education for the position of Electrical Foreman (Req. #20240191) at $33.18 per hour.

Your official start date is November 16, 2023.

We have scheduled your orientation for Monday, November 27, 2023 at 11:00 am at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. This portion of the orientation will be on the CHRO Sexual Harassment video. You must attend this orientation session in order to work for the City. Please be prepared to remain for approximately 2 hours.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc: Board of Education
Dr. Ruffin, Supt. of Schools
Mike Konopka, School Inspector
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 9, 2023

Christopher Nicholson
22 Yale Ave.
Middlebury, CT 06762

Dear Mr. Nicholson:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I @ Reed Elementary School (Req. #20240434) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, December 7, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be December 8, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 9, 2023

Flavio Tenecela
274 Baldwin St., Apt. 3S
Waterbury, CT 06706

Dear Mr. Tenecela:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I @ Wallace Middle School (Req. #20240470) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, December 7, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 30, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 9, 2023

Erik Anderson, Jr.
606 Frost Rd.
Waterbury, CT 06705

Dear Mr. Anderson, Jr.:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education for the position of Electrician (Req. #20240465A) at $26.51 per hour. Please contact Michael Konopka, School Inspector at (203) 574-8000 ext. 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, December 7, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 30, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Mike Konopka, School Insp
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 9, 2023

Kevin Pratt
55 Hemlock Dr.
Southington, CT 06489

Dear Mr. Pratt:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education for the position of Electrician (Req. #20240465) at $26.51 per hour. Please contact Michael Konopka, School Inspector at (203) 574-8000 ext. 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, December 7, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 30, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Mike Konopka, School Insp
file

The City of Waterbury
Finance and Audit Review Commission
235 Grand Street, Waterbury, CT 06702

November 13, 2023

Honorable Board of Education:

We respectively submit the City of Waterbury Trade Accounts and Operations at 62 Harper Avenue Audit for your review and comments.

Paul Buzzelli, Chairman
Finance and Audit Review Commission

The City of Waterbury
Internal Audit Department
235 Grand Street, Waterbury, CT 06702

November 13, 2023

Finance and Audit Review Commission:

The Audit Department has completed the City of Waterbury Trade Accounts and Operations at 62 Harper Avenue Audit . Our objective was to determine if inventories of materials and supplies, job cost and inventory systems were adequately controlled, accounted for and reported in accordance with any applicable laws, policy and regulations.

We would like to thank the employees of the Waterbury Public Schools and the Finance Department for their cooperation during the process.

The accompanying report is provided for your information. Additional copies of the report will be provided upon your request. This report can also be found on the City of Waterbury's Internal Audit Webpage.

Sincerely,

Joseph Garvis, CPA, CGMA

cc: Honorable Neil O'Leary, Mayor
David Lepore, Advisor to the Mayor
Ali DeGirolamo, Mayoral Aide
Mike LeBlanc, Director of Finance
Dr. Verna D. Ruffin, Superintendent of Schools
Mike Konopka, School Inspector
Carrie Swain, Board of Education

Waterbury Public School System Audit of Trade Accounts and Operations at 62 Harper Avenue

City of Waterbury

July 31, 2023

Joseph J Garvis, CPA
Director of Internal Audit

Contents

Authorization	2
Objectives and Methodology	2
Background	2-3
Operations Overview	3
General	3
Findings and Recommendations	3-6

Exhibits

Management Response	A

I. Authorization

At the request of the Finance and Audit Review Commission (FARC) the Internal Audit Department (IAD) surveyed Management to identify potential audit projects and was requested to review the accounts and operations of Waterbury Public School System (WPSS) located at 62 Harper Avenue.

II. Objectives and Methodology

The objectives of our audit were to:

- Obtain an understanding of the job cost and inventory tracking processes and procedures used by Waterbury Public School System (WPSS) at Harper Avenue.
- Determine if written policy and procedures are adequate to address proper internal controls and compliance.
- Determine if inventories of materials and supplies are adequately safeguarded.
- Determine if job cost and inventory systems are adequate to ensure proper internal controls and compliance.
- Identify opportunities to improve efficiencies and controls in the processes being used.

To develop an understanding of relevant control structure policies and procedures, we examined department reports, analyzed data, observed operating procedures, analyzed historical results, and also had discussions with Management and staff.

A. Scope of procedures:

We tested workorder systems, observed inventories, reviewed documentation, reviewed, analyzed and summarized data in Lawson, reviewed and analyzed Asset Essentials data through 12/31/22, reviewed management oversight of the processes and interviewed WPSS employees.

III. Background Information

62 Harper Avenue (62HAV) is a two story storage warehouse containing approximately 44,000 square feet of space. Loading docks inside the facility contained pallets of materials and also other materials and supplies were in the loading dock area. The first floor other than the loading dock area stores various materials, supplies and equipment used for trade operations such as carpenters, masons, electricians, painters, plumbers, HVAC and locksmiths. During our walk throughs of the facility accompanied by operations personnel we determined various sections of the warehouse were either fenced off or in separate rooms for each of the trades operating there. Access to each room or fenced off area was being controlled with locking doors and required a key to enter.

At the time of our audit there were six freight storage containers located in the parking lot areas at 62HAV. During our walk through of the freight containers accompanied by operations personnel we observed there was a wide variety of materials stored in the containers and in some cases on and or near the containers.

Access to the containers was being controlled with locking doors and required a key to enter. There also was an area fenced off and locked in between two storage containers that was being used to store various materials and supplies.

IV. Overview of Operations

Systems used to manage Trades Operations

Asset Essentials software was being used to record work orders, various other manual processes were also in place in 62HAV operations

V. General

WPSS has areas that need attention related to organizational management of physical security and access controls, Asset Essentials software user permissions, inventory management, and accountability of job cost work order systems. At the time of our review documented policies and procedures were not in place. During the last 90 days approximately an actual inventory count was taken and recorded. Barcoding of materials and supplies was in process however WPSS informed us barcode scanners were not fully integrated with the Asset Essentials software. Overall the recommendations in this report will help identify misappropriation, increase accountability, and ensure that data in the inventory system is updated accurately and timely.

VI. Detail Findings

School Inspectors Inventory Policies and Procedures

At the time of our review there were no policies and procedures in place for the inventory of materials, equipment and supplies at 62HAV for trade operations. The most fundamental internal control for managing materials, equipment and supplies is maintaining adequate inventory records. WPSS had recently performed a physical inventory of the various trade areas, however, there was no documentation or records showing periodic actual inventory counts of the materials, supplies and equipment stored at 62HAV were performed prior to this inventory. As previously noted there were six freight storage containers located in the parking lot areas at 62HAV the containers and other items in the parking areas were not included in the inventory taken. Sequentially prenumbered inventory sheets were not used or maintained to document the inventory taken as a result it is not known if all items were inventoried and entered into Asset Essentials. Sequentially prenumbered input forms should be used and are generally considered to be a type of input control. Inventory count transactions entered into the Asset Essentials software system should be appropriately supported by documentation for example the detail inventory count sheets in this case.

Risk exists such that misappropriation, waste, fraud or abuse could occur and not be detected. Adequate inventory and equipment records are also necessary for insurance reporting and to assert claims.

Recommendations

1. Periodic actual inventory counts should be conducted to ensure materials and supplies are adequately tracked and recorded. All items that cannot be located during the count should be investigated timely.

2. We recommend that formal policies and procedures be written to document the process WPSS use regarding School Inspectors inventory operations.

Inventory Management

At the time of our review WPSS did not have a documented process in place to reconcile inventory records, purchases of materials and supplies and work order systems. This reconciliation is designed to identify unaccounted for inventory. If purchases, inventories and work order systems are not reconciled it is not known if all materials and supplies purchased by WPSS have been accounted for and agreed to inventory and work order systems.

Recommendations

3. We recommend WPSS put a documented process in place to reconcile inventory, purchases and work order systems. This reconciliation should be performed by someone who does not have both access to assets and responsibility for maintaining the accountability of those assets. The reconciliation should be done on an ongoing basis at periodic intervals determined by WPSS Management. If inventory is not accounted for the cause should be investigated and WPSS Management should take corrective action as needed to ensure it does not happen again.

Job Cost System, Workorder System

We developed an understanding of Work Order processes at 62HAV Facilities through reviews of documentation, data analytics, analytical procedures and by interviewing personnel. In general workorders can contain a great deal of basic information such as workorder number, work to be performed, location of work, total labor cost, total parts cost, equipment usage cost, total labor hours, total other hours, employee #, Employee Name, part #, Part Name, Location, Quantity, Unit, Usage Type, Description and other fields.

We performed tests of 428 workorders sampled which included at least seven (7) different trades operating at 62 HAV and found materials, labor hours and equipment fields were not always populated in the Asset Essentials (AE) system. We also noted it was not always clear in AE what trade was associated with a workorder and in other cases fields were left blank with no trade information. All of the conditions noted above create data that is incomplete in the Asset Essentials workorder system needed to track trades, material, labor and equipment used on a job and an increased risk of inadequate monitoring of work orders. Having complete work order data and documented workorder process is vital to ensure the reliability of information in the Asset Essentials system. Also as previously noted a fundamental internal control for managing materials, equipment

And supplies is maintaining adequate inventory records. The reconciliation of purchases, inventories and work orders is only possible if complete and accurate data is maintained for all workorders. Developing and implementing inventory processes, procedures and controls will improve inventory management and management oversight.

Recommendations

4. We recommend that formal procedures be written to document the procedures for WPSS to follow regarding workorder systems policies and procedures.
5. The policies and procedures developed should include the development and implementation of procedures for the detailed review of work orders.

Physical Security and Access Controls

62 Harper Avenue is a two story storage warehouse containing approximately 44,000 square feet of space. During our review we reviewed the system used and observed video surveillance was operating on the premises. WPSS informed us 62HAV is on a GRAND MASTER cylinder this key is only issued to occupants of 62HAV and Management. WPSS also informed us this key allows access to ALL WPS doors. WPSS provided us an active list of GRAND MASTER keys issued. However we are not aware of any documented WPSS written policy governing the issuance and control of keys to 62HAV. In general policy and procedures and related controls of a Departments operations should be clearly documented and reviewed and updated periodically.

Recommendations

6. We recommend WPSS establish documented written policy needed to manage the issuance, control and accounting for keys used to access Harper Avenue facilities.

Asset Essentials User Permissions and Segregation of Duties

In general Least Privilege is a security term used to describe the concept of limiting user access where only enough access is granted to authorized users necessary to accomplish assigned tasks. Limiting user access strengthens controls and can also serve to reduce risk should an attack occur from an outsider or malicious insider.

The Institute of Internal Auditors (IIA) states that the general premise of segregation of duties (SOD) is to prevent one person from having both access to assets and responsibility for maintaining the accountability of those assets. Adequate SOD and user access controls, reduce the risk that errors, or other types of irregularities could occur without being detected and corrected in a timely manner.

Recommendations

7. We recommend that WPSS perform a documented review of Asset Essentials user access rights to determine the appropriate level of access needed for each user to complete assigned tasks

8. We recommend that WPSS take action to ensure that duties are adequately segregated to prevent any one person from having both access to Inventories and assets at 62HAV and responsibility for maintaining the accountability of those assets.

Internal Control Activities

Our Audit concludes that WPSS does not always have effective controls in place to capture complete work order information in the Asset Essentials system. WPSS doesn't have policies, procedures and controls in place needed (1) to use when reconciling and accounting for materials and labor costs to ensure work order information is complete in the system and (2) to ensure that work orders are properly monitored in compliance with policies and procedures. WPSS has some oversight controls in place and has recently taken a physical inventory of the materials and supplies stored at 62HAV.

The issues noted in our report in need of strengthening or improvement increase the risk that misappropriation of materials, equipment or supplies waste, fraud or abuse could occur and go undetected.

Recommendations

9. We recommend that a review is done and action is taken to implement the recommendations included in this report.

10. We recommend that WPSS update their responses submitted to include due dates for corrective actions needed and assign an individual(s) to perform these tasks.

Exhibit A

Waterbury Public School System Management Response

the storekeeper performed an inventory count and categorization . all stock items were inputted into Asset essentials software . Individual labels were created based on software capabilities which is not a perfect tool to track inventory . labels were distributed throughout harper ave and shelves were labeled with associated products. Each trades foreman is responsible for tracking supplies on a daily basis by providing scorekeeper with inventory or materials used and storekeeper updates live inventory daily.
management is working on standardizing one system for 3 different tasks:work orders, inventory tracking(with scanning capability) and fleet management(including PMs for equipment)

the storekeeper performed an inventory count and categorization . all stock items were inputted into Asset essentials software . Individual labels were created based on software capabilities which is not a perfect tool to track inventory . labels were distributed throughout harper ave and shelves were labeled with associated products. Each trades foreman is responsible for tracking supplies on a daily basis by providing scorekeeper with inventory or materials used and storekeeper updates live inventory daily.
management is working on standardizing one system for 3 different tasks:work orders, inventory tracking(with scanning capability) and fleet management(including PMs for equipment)

Management is working with UConn to mirror their system of tracking inventories
also, Im working with Asset essential management to come up with solution that might be less time consuming(scanning capability)

Management is working with UConn to mirror their system of tracking inventories
also, I had contacted higher management of asset essential to help us and offer solution on better ways to input data

Systems chosen for WPS asset management have very poor customer service operating via zoom calls with very delayed response time. Big turnover in schools and lack of updates and training for new personnel leaves gaps in certain fields or improper WO inputting.. I will reiterate to all admins to communicate with Chun Dwyer as she is the contact person for all WO

62 Harper ave is on a GRAND MASTER cylinder. This key is only issued to occupants of Harper Ave and management. This key allows access to ALL WPS doors . STeve Ezzo is a key master and has an active list of GRAND MASTER keys issued . List has been updated to add and remove previous and current employees

I'm working on a solution to improve and implement a system that works for proper tracking
. Again,School dude is a poor representation of the WO system with non-existent client support which leaves us finding ways to work . 62 Harper ave doest offer a proper space to allow for one space inventory keeping and 24/7/365 remove human oversight from inventory tracking(after hours, emergency calls etc). management is installing a cages to limit individual entry points to material stored which still does not totally eliminate potential theft or material misuse.
WPS uses sustaining PO's for major retailers which gives us power to view individual invoices and correlate them with each task performed in schools which lessens potential theft

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 14, 2023

Newton Mitchell
895 Hamilton Ave., #3
Waterbury, CT 06706

Dear Mr. Mitchell:

Your name is being certified to the Department of Education for the position of Maintainer III (Req. #20240512) at $24.59 per hour.

Your official start date in this position will be November 16, 2023.

Please contact Mike Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 6 months in duration. The department head will be responsible for executing your probationary evaluation no later than 6 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Mike Konopka, School Inspector
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 14, 2023

Monica Ramos
147 Springbrook Rd., Apt. A1
Waterbury, CT 06706

Dear Ms. Ramos:

This is to inform you that you are being transferred to the position of Food Service Worker in the Department of Education – Food Service (Req #20240366). Your rate of pay will be $16.81 per hour.

Your start date in this new position will be November 16, 2023 and your new location will be Reed Elementary School.

I hope that you are happy in your new assignment.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc: Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Food Serv Director
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 14, 2023

Valery Montalvo Nazario
28 Albion St., 3rd Fl.
Waterbury, CT 06705

Dear Ms. Montalvo Nazario:

We are pleased to receive your acceptance of our offer of employment for the position of Food Service Worker for the Department of Education – Food Service (Requisition #20240366) at $16.81 per hour.

This is a part-time position working in the Waterbury School System 10 months a year during school hours up to 19 hours per week.

This position does not provide health insurance benefits. Please refer to the CSEA – LOCAL 2001 contract for other available fringe benefits by visiting our website at www.waterburyct.org.

We have scheduled your orientation for Monday, November 27, 2023 at 9:15 a.m. at the Board of Education Training Room located in the Chase Municipal Building, 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 16, 2023 at your regular scheduled time.

Please call Judith Booth at 203-574-8195 with any questions you may have in regards to this position.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork.

Please call us prior to the orientation session if you should have any questions regarding the process.

We look forward to working with you.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resource Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Food Serv. Director
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 14, 2023

Adriana Castillo
354 Long Hill Rd., Apt. 2C
Waterbury, CT 06704

Dear Ms. Castillo:

We are pleased to receive your acceptance of our offer of employment for the position of Food Service Worker for the Department of Education – Food Service (Requisition #20240366) at $16.81 per hour.

This is a part-time position working in the Waterbury School System 10 months a year during school hours up to 19 hours per week.

This position does not provide health insurance benefits. Please refer to the CSEA – LOCAL 2001 contract for other available fringe benefits by visiting our website at www.waterburyct.org.

We have scheduled your orientation for Monday, November 27, 2023 at 9:15 a.m. at the Board of Education Training Room located in the Chase Municipal Building, 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 16, 2023 at your regular scheduled time.

Please call Judith Booth at 203-574-8195 with any questions you may have in regards to this position.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork.

Please call us prior to the orientation session if you should have any questions regarding the process.

We look forward to working with you.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resource Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Food Serv. Director
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 14, 2023

Rhoda Williams
57 Sharon Rd., #10
Waterbury, CT 06705

Dear Ms. Williams:

We are pleased to receive your acceptance of our offer of employment for the position of Food Service Worker for the Department of Education – Food Service (Requisition #20240366) at $16.81 per hour.

This is a part-time position working in the Waterbury School System 10 months a year during school hours up to 19 hours per week.

This position does not provide health insurance benefits. Please refer to the CSEA – LOCAL 2001 contract for other available fringe benefits by visiting our website at www.waterburyct.org.

We have scheduled your orientation for Monday, November 27, 2023 at 9:15 a.m. at the Board of Education Training Room located in the Chase Municipal Building, 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 16, 2023 at your regular scheduled time.

Please call Judith Booth at 203-574-8195 with any questions you may have in regards to this position.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork.

Please call us prior to the orientation session if you should have any questions regarding the process.

We look forward to working with you.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resource Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Food Serv. Director
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 14, 2023

Nely Toledo Cabrera
6 vincent Place
Naugatuck, CT 06770

Dear Ms. Toledo Cabrera:

We are pleased to receive your acceptance of our offer of employment for the position of Food Service Worker for the Department of Education – Food Service (Requisition #20240366) at $16.81 per hour.

This is a part-time position working in the Waterbury School System 10 months a year during school hours up to 19 hours per week.

This position does not provide health insurance benefits. Please refer to the CSEA – LOCAL 2001 contract for other available fringe benefits by visiting our website at www.waterburyct.org.

We have scheduled your orientation for Monday, November 27, 2023 at 9:15 a.m. at the Board of Education Training Room located in the Chase Municipal Building, 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be November 16, 2023 at your regular scheduled time.

Please call Judith Booth at 203-574-8195 with any questions you may have in regards to this position.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork.

Please call us prior to the orientation session if you should have any questions regarding the process.

We look forward to working with you.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resource Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Food Serv. Director
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 21, 2023

Elena Proano-Bastidas
149 Chester Ave.
Waterbury, CT 06704

Dear Ms. Proano-Bastidas:

We are pleased to receive your acceptance of our offer of employment for the position of Food Service Worker for the Department of Education – Food Service (Requisition #20240366) at $16.81 per hour.

This is a part-time position working in the Waterbury School System 10 months a year during school hours up to 19 hours per week.

This position does not provide health insurance benefits. Please refer to the CSEA – LOCAL 2001 contract for other available fringe benefits by visiting our website at www.waterburyct.org.

We have scheduled your orientation for Thursday, December 7, 2023 at 9:15 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be December 8, 2023 at your regular scheduled time.

Please call Judith Booth at 203-574-8195 with any questions you may have in regards to this position.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork.

Please call us prior to the orientation session if you should have any questions regarding the process.

We look forward to working with you.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resource Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Food Serv. Director
file

GOOD JOBS LIAISON COMMITTEE
Thursday – November 30, 2023
Special Meeting at 6:00 P.M.
Cass Gilbert Room – 1st Floor, City Hall
235 Grand Street, Waterbury, CT 06702

AGENDA

Call to Order:

Pledge of Allegiance:

Roll Call:

Public Speaking:

Approval of Minutes (Regular Meeting – May 18, 2023)

New Business:

A. – Approval of meeting dates for 2024;

B. Administrator's Reports – 2nd Quarter
Joe Diorio – *Manager of Construction Services*
Northwest Regional Workforce Investment Board

Old Business:

Adjournment

Good Jobs Liaison Committee - Regular Meeting
Thursday – May 18, 2023 - 6:00pm
Cass Gilbert Room- City Hall – 235 Grand Street – Waterbury

MINUTES

1. Call to Order *The meeting was called to order at **6:01 P.M**. by Chair Sandra Martinez-McCarthy.*

2. Pledge/Silent Prayer *Observed*

3. Roll Call

Members Present:	*S. Martinez-McCarthy (Chair)*	*F. Hardy*
	G. Clay	*M. Iacoviello*
		M. Spring
Members Absent:	*IL Blake*	*E. Johnson*
	E. Brown	*V. Matthews*
Also Present:	*J. Diorio (NRWIB)*	
	F. Nido (Office of City Clerk)	

4. Public Speaking ***None***

5. Approval of Minutes *February 16, 2023 - Regular Meeting*
A motion to approve the Minutes from the previous meeting was made by Ginne Rae Clay, seconded by Martin Spring and CARRIED.

6. New Business
   a. Administrator's Report: *Joe Diorio reviewed the reports for the 1st Quarter of 2023. No red flags were raised. All contractors of active projects have met the goal with Dayton Construction seeing an increase of 17%. Stamford Wrecking has acquired candidates and is working with Parole Officers for approval of selected candidates. Graduates from the Lead/Asbestos Training Program have been hired and the contractors continue to work with NRWIB for referrals of qualified candidates. Contractors have placed ads in the newspaper to solicit Waterbury residents to apply for available positions. Joe will speak with the contractors about utilizing social media to increase awareness as well. There are a number of new projects in the near future and Joe has attended the pre-bid conferences to explain the Good Jobs ordinance. Discussion ensued regarding jobs reporting and projects.*

7. Old Business
   a. *Joe explained the training process and the upcoming programs available. All trainings are listed on their website at www.nrwib.org and he can be reached at 203.574.6971 x434 for more information.*

8. Adjournment ***A motion to adjourn at 6:25 P.M. was made by Martin Spring, seconded by Ginne Rae Clay and CARRIED unanimously.***

MJD/fn
GJLC-Minutes - 05.18.2023

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
June 2023
Project:Silas Bronson elevator
Construction Manager: JA Rosa

Month	Total Hours	Avg # People On Site	Residents			Apprentices			Apprentices by Def.			Minorities			Women			Minority and/or Women			Apprentice/ABD Residents			Minority Residents		
			Goal: 30%			Goal: 25%						Goal: 10%			Goal: 5%			Goal: 25%			Goal: 50% of Appr			Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
Jul	208	8	94	45%	1	10	5%	1	0	0%	0	100	48%	0	0	0%	0	100	48%	1	10	33%	1	94	45%	1
Aug	197	7	90	46%	2	16	8%	2	0	0%	0	114	58%	0	0	0%	0	114	58%	2	16	33%	2	90	46%	2
Sep	250	7	33	13%	1	92	37%	3	0	0%	0	55	22%	0	0	0%	0	55	22%	1	92	67%	3	33	13%	1
Total	**655**	**22**	**217**	**33%**	**4**	**118**	**18%**	**6**	**0**	**0%**	**0**	**269**	**41%**	**0**	**0**	**0%**	**0**	**269**	**41%**	**3**	**118**	**0%**	**3**	**217**	**33%**	**4**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
Sep 2023-
Project:School Auditoriums
Construction Manager: JA Rosa

Month	Total Hours	Avg # People On Site	Residents			Apprentices			Apprentices by Def.			Minorities			Women			Minority and/or Women			Apprentice/ABD Residents			Minority Residents		
			Goal: 30%			Goal: 25%						Goal: 10%			Goal: 5%			Goal: 25%			Goal: 50% of Appr			Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
Jul	843	22	244	29%	5	229	27%	2	0	0%	0	81	10%	0	0	0%	0	81	10%	2	166	8%	2	33	4%	1
Aug	1474	29	508	34%	8	283	19%	4	0	0%	0	264	18%	0	0	0%	0	264	18%	4	275	25%	3	232	16%	3
Sep	754	24	247	33%	8	174	23%	6	0	0%	0	213	28%	0	0	0%	0	213	28%	2	126	36%	4	117	16%	1
Total	**3071**	**74**	**998**	**32%**	**21**	**686**	**22%**	**11**	**0**	**0%**	**0**	**558**	**18%**	**0**	**0**	**0%**	**0**	**558**	**18%**	**5**	**567**	**0%**	**5**	**382**	**12%**	**5**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
Sep 2023
Project:WPC Replacement Building
Construction Manager: JA Rosa

Month	Total Hours	Avg # People On Site	Residents			Apprentices			Apprentices by Def.			Minorities			Women			Minority and/or Women			Apprentice/ABD Residents			Minority Residents		
			Goal: 30%			Goal: 25%						Goal: 10%			Goal: 5%			Goal: 25%			Goal: 50% of Appr			Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
Jul	1222	14	230	19%	3	313	26%	3	0	0%	0	353	29%	0	0	0%	0	319	26%	3	313	40%	3	77	6%	2
Aug	62	4	0	0%	0	31	50%	2	0	0%	0	0	0%	0	0	0%	0	0	0%	0	31	100%	2	0	0%	0
Sep	19	2	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Total	**1303**	**20**	**230**	**18%**	**3**	**344**	**26%**	**5**	**0**	**0%**	**0**	**353**	**27%**	**0**	**0**	**0%**	**0**	**319**	**24%**	**3**	**344**	**0%**	**5**	**77**	**6%**	**2**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
Sep 2023-
Project:BH/Wash school elevators
Construction Manager: JA Rosa

Month	Total Hours	Avg # People On Site	Residents			Apprentices			Apprentices by Def.			Minorities			Women			Minority and/or Women			Apprentice/ABD Residents			Minority Residents		
			Goal: 30%			Goal: 25%						Goal: 10%			Goal: 5%			Goal: 25%			Goal: 50% of Appr			Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
Jul	616	15	243	39%	6	24	4%	1	0	0%	0	255	41%	0	0	0%	0	255	41%	3	24	20%	1	127	21%	3
Aug	279	12	49	17%	2	3	1%	1	0	0%	0	32	11%	0	0	0%	0	32	11%	1	3	0%	1	8	3%	1
Sep	189	8	50	26%	3	20	11%	2	0	0%	0	34	18%	0	0	0%	0	34	18%	1	20	50%	2	14	7%	1
Wallace	**1084**	**34**	**341**	**31%**	**10**	**47**	**4%**	**3**	**0**	**0%**	**0**	**320**	**30%**	**0**	**0**	**0%**	**0**	**320**	**30%**	**4**	**47**	**0%**	**2**	**149**	**14%**	**5**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
Sep 2023-
Project:Hamilton Park Pool
Construction Manager:Montagno Construction

Month	Total Hours	Avg # People On Site	Residents			Apprentices			Apprentices by Def.			Minorities			Women			Minority and/or Women			Apprentice/ABD Residents			Minority Residents		
			Goal: 30%			Goal: 25%						Goal: 10%			Goal: 5%			Goal: 25%			Goal: 50% of Appr			Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
Jul	610	8	121	20%	3	0	0%	0	0	0%	0	187	31%	0	0	0%	0	187	31%	1	0	0%	0	100	16%	0
Aug	1083	20	196	18%	5	16	1%	1	0	0%	0	239	22%	0	0	0%	0	239	22%	5	16	17%	1	34	3%	2
Sep	2029	20	245	12%	2	4	0%	0	0	0%	0	510	25%	0	0	0%	0	510	25%	6	4	20%	0	128	6%	1
Wallace	**3722**	**48**	**562**	**15%**	**10**	**20**	**1%**	**1**	**0**	**0%**	**0**	**936**	**25%**	**0**	**0**	**0%**	**0**	**936**	**25%**	**6**	**20**	**0%**	**1**	**262**	**7%**	**3**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
Sep 2023-
Project: Mill and Pave 2023
Construction Manager: Tilcon

Month	Total Hours	Avg # People On Site	Residents			Apprentices			Apprentices by Def.			Minorities			Women			Minority and/or Women			Apprentice/ABD Residents			Minority Residents		
			Goal: 30%			Goal: 25%						Goal: 10%			Goal: 5%			Goal: 25%			Goal: 50% of Appr			Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
July	0	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Aug	1519	22	121	8%	1	0	0%	0	0	0%	0	430	28%	0	57	4%	1	486	32%	7	0	0%	0	17	1%	0
Sep	3872	34	1076	28%	6	0	0%	0	0	0%	0	1402	36%	0	0	0%	0	1402	36%	10	0	0%	0	787	20%	5
Total	**5391**	**56**	**1197**	**22%**	**7**	**0**	**0%**	**0**	**0**	**0%**	**0**	**1831**	**34%**	**0**	**57**	**1%**	**1**	**1888**	**35%**	**7**	**0**	**0%**	**0**	**804**	**15%**	**5**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
Sep 2023-
Project:Community service bldg
Construction Manager: JA Rosa

Month	Total Hours	Avg # People On Site	Residents			Apprentices			Apprentices by Def.			Minorities			Women			Minority and/or Women			Apprentice/ABD Residents			Minority Residents		
			Goal: 30%			Goal: 25%						Goal: 10%			Goal: 5%			Goal: 25%			Goal: 50% of Appr			Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
July	0	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Aug	627	14	174	28%	4	78	12%	2	0	0%	0	217	35%	0	32	5%	1	249	40%	3	70	#DIV/0!	1	104	0	3
Sep	2034	17	143	7%	1	150	7%	1	0	0%	0	866	43%	0	0	0%	0	866	43%	6	150	20%	1	140	0	1
Total	**2661**	**31**	**317**	**12%**	**6**	**228**	**9%**	**3**	**0**	**0%**	**0**	**1083**	**41%**	**0**	**32**	**1%**	**1**	**1115**	**42%**	**3**	**220**	**0%**	**1**	**244**	**9%**	**4**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
September 2023-
Project:170 Freight st
Construction Manager: SMI

Month	Total Hours	Avg # People On Site	Residents Goal: 30%			Apprentices Goal: 25%			Apprentices by Def. Goal: 25%			Minorities Goal: 10%			Women Goal: 5%			Minority and/or Women Goal: 25%			Apprentice/ABD Residents Goal: 50% of Appr			Minority Residents Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
Jul	0	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Aug	1276	9	450	35%	3	0	0%	0	0	0%	0	1206	95%	8	0	0%	0	1206	95%	8	0	0%	0	450	35%	3
Sep	2354	13	889	38%	5	0	0%	0	0	0%	0	2224	94%	12	0	0%	0	2224	94%	12	0	0%	0	889	38%	5
Total	**3629**	**21**	**1339**	**37%**	**8**	**0**	**0%**	**0**	**0**	**0%**	**0**	**3429**	**94%**	**0**	**0**	**0%**	**0**	**3429**	**94%**	**8**	**0**	**0%**	**0**	**1339**	**37%**	**8**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
September 2023-
Project: Exchange Place Utilities
Construction Manager: CJ Fucci

Month	Total Hours	Avg # People On Site	Residents Goal: 30%			Apprentices Goal: 25%			Apprentices by Def. Goal: 25%			Minorities Goal: 10%			Women Goal: 5%			Minority and/or Women Goal: 25%			Apprentice/ABD Residents Goal: 50% of Appr			Minority Residents Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
July	2019	13	323	16%	2	0	0%	0	0	0%	0	799	40%	0	182	9%	1	981	49%	5	0	0%	0	323	16%	
Aug	2039	17	404	20%	3	0	0%	0	0	0%	0	1042	51%	0	149	7%	1	1190	58%	10	0	0%	0	359	18%	3
Sep	2778	16	504	18%	3	0	0%	0	0	0%	0	1392	50%	0	199	7%	1	1592	57%	9	0	0%	0	504	18%	3
Total	**6835**	**46**	**1231**	**18%**	**8**	**0**	**0%**	**0**	**0**	**0%**	**0**	**3233**	**47%**	**0**	**530**	**8%**	**2**	**3763**	**55%**	**15**	**0**	**0%**	**0**	**1186**	**17%**	**6**

Northwest Regional Workforce Investment Board
Good Jobs 3rd Qtr Report
Sep 2023-
Project:Upgrades Wil,Cros,Kenn
Construction Manager: Sarraco

Month	Total Hours	Avg # People On Site	Residents			Apprentices			Apprentices by Def.			Minorities			Women			Minority and/or Women			Apprentice/ABD Residents			Minority Residents		
			Goal: 30%			Goal: 25%						Goal: 10%			Goal: 5%			Goal: 25%			Goal: 50% of Appr			Goal: N/A		
			Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#	Hours	%	#
Jul	94	2	0	0%	0	43	46%	1	0	0%	0	0	0%	0	0	0%	0	0	0%	0	43	100%	1	0	0%	0
Aug	43	3	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Sep	3	2	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Total	**140**	**6**	**0**	**0%**	**0**	**43**	**31%**	**1**	**0**	**0%**	**0**	**0**	**0%**	**0**	**0**	**0%**	**0**	**0**	**0%**	**0**	**43**	**0%**	**1**	**0**	**0%**	**0**

Connecticut Association *of* Boards of Education

Jody I Goeler, Senior Staff Associate for Policy Service

PRESENTS
POLICY HIGHLIGHTS

November 10, 2023

Leading from Why and the Tactical Decisions that Follow

As CABE looks forward to joining CAPSS in welcoming everyone to the CABE/CAPSS Convention on November 17-18, the Convention theme, *Leading from Why* provides an opportunity to draw connections between the work that drives us and the tasks at hand. In the Convention program's welcoming message, the CABE and CAPSS Executive Directors convey the program's central theme:

"As leaders in our respective roles, we understand that the essence of leadership goes far beyond the mere execution of tasks and the management of resources. It is rooted in a deep understanding of our purpose, our values, and the impact we strive to make on the lives of our students, staff, and communities."

Policy development is perhaps where we see this tension at work the most: the deep understanding of our purpose and the execution of tasks to help realize the impact we seek to make. At the State level, policymakers passed a new law changing the cutoff date for kindergarten entrance requiring next fall that kindergartners must be five years old by September 1, moving the entrance date up four months from January 1st. The "Why" is likely clear to most: Generally speaking, we all want children who enter kindergarten ready to access their learning and achieve success.

However, laws and policy also require a close look at the "hows", as parents who are now required to delay the start of kindergarten for their children are now faced with paying for an extra year of pre-k or child care, and schools now need to adopt, develop, implement, and defend an assessment tool to respond to waiver requests from parents that would allow their children to attend kindergarten under the previous January 1 cutoff date. How are districts going to address the decrease in kindergarten enrollment next year and the increased enrollment the following year? How will pre-k programs make similar adjustments? How will the State monitor the number of waivers and respond to resulting equity concerns?

Already we are seeing superintendents and boards of education developing thoughtful and creative plans for addressing the many "hows" confronting them as a result of the legislation. However, to this date, these approaches seem to vary district by district leaving parents to compare and wonder why their district can't or won't provide the accommodations: Why does a nearby district approve waivers or the assessment tool is more holistic or based primarily on teacher and parent observation?

Perhaps the larger lesson we can glean from this and similar attempts at solving problems is to ensure deliberations include a careful look at the impact and determine what could be the unintended consequences. Central to those deliberations should be matters related to equity, logistics, and transitioning to name a few.

In other school policy-related news, the Connecticut School Climate Policy has been adopted by the SEL Collaborative under the Commission on Women, Children, Seniors, Equity and Opportunity. The Collaborative is currently developing a "Uniform Complaint Form". As you may be aware, Public Act 23-167 required the development of a new school climate policy, the development of school climate standards, *and* a "uniform bullying complaint form". Once the "Uniform Complaint Form" has been finalized and adopted, the policy and related materials will be released and available to districts. For districts subscribing to CABE's Policy Update Service, these materials will be included in the next update anticipated in early December.

Central to the new climate policy is the emphasis on "restorative practices". The policy defines such practices as "evidence and research-based system-level practices that focus on building high-quality, constructive relationships among the school community, holding each student accountable for any challenging behavior, and ensuring each such student has a role in repairing relationships and reintegrating into the school community." Any change in approach to classroom and school practice will require significant attention to how we professionally develop our staff. This is especially true with practices that fundamentally change and improve school climate and a policy that places greater attention on proactively attending to the systems and structures that create a positive school climate. This is a significant and welcome shift from policies that focused primarily on prescribing the steps for leading investigations on reports of bullying.

In a recent opinion piece published in EdWeek (4 Research-Backed Lessons on School Discipline, Richard O. Welsh, November 1, 2023), the author suggests, "District and school leaders are caught between a rock and a hard place." He continues, "Teachers and parents are demanding safe schools. Equity advocates highlight persistent racial inequity in suspensions and expulsions and growing evidence of the school-to-prison pipeline." In addition, concerns about the increase in student behavioral issues related to disruptions from the pandemic and the mental health crisis among students have pushed schools towards zero-tolerance policies and resources to harden schools. Adding restorative practices to teachers' toolkits, especially in an environment where schools have turned to more reactive or exclusionary disciplinary responses, will require significant planning and training as well as board and administrative support.

Overall, Richard O. Welsh provides four considerations for educational policymakers and leaders to address the root cause of discipline disparities by lowering office discipline referrals for African-American students. The first one in particular provides the appropriate context for restorative practices:

School discipline reform needs a strategic direction. Districts and schools are rarely doing one thing to address school discipline issues. Typically, there is some combination of code-of-conduct changes as well as other possible investments in programs and personnel to reduce discipline disparities. Rejecting race-neutral school discipline reforms and strategically coordinating various alternative approaches to exclusionary discipline are a central plank for transforming school discipline. (Welsh, 2023)

You can't improve school climate without strategically improving student discipline. You can't strategically improve student discipline without training and support. If schools are to successfully adapt to the shift towards restorative practices, teachers will, as Welsh puts it, need to develop the "capacity to better manage classrooms." One can take that a step further to principals managing schools and superintendents managing districts. Along with the systems and structures of a new school climate policy and the bet it's making on restorative practices as one of its strategic lynchpins, a strategy for sustained training opportunities for all involved will be critical in ensuring this new policy can make the difference intended: To improve school climate for students and all school community members, which will, in turn, allow for greater student outcomes for all students.

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 27, 2023

Daryl Green
26 N. Elm St.
Waterbury, CT 06702

Dear Mr. Green:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I (Req. #20240480) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, December 7, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be December 8, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 27, 2023

Elaine Lepore
14 Phyllis Ave.
Waterbury, CT 06708

Dear Ms. Lepore:

Your name is being certified to the Department of Education – Food Service for the position of Cafeteria Manager (Req. #20240513A) at $25.91 per hour.

Your official start date in this position is November 30, 2023.

Please contact Linda Franzese, Director of Food Service at (203) 574-8195 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Director of FS
File

Waterbury Public Schools

Office of Competitive Grants

Louise Allen Brown, J.D., M.P.A., Grant Writer

November 28, 2023

Honorable Board of Education
City of Waterbury
236 Grand Street
Waterbury, CT 06702

Re: Notification - Waterbury ARPA Right to Read Grant (CSDE)

Dear President Sweeney and Board of Education Commissioners:

The Connecticut State Department of Education (CSDE) announced a Right to Read Grant opportunity for Waterbury Public Schools (WPS) to make improvements to the K-3 reading program for the district. The CSDE Right to Read Grant allocation for WPS is $981,000.

Grant recipients are required to:

- "use the funds to support approved, evidence-based, scientifically based K-3 Universal Screening Reading Assessments, K-3 Reading Curriculum Models and Programs, and associated professional learning.
- establish a district leadership literacy team that will attend CSDE sponsored virtual workshops pertaining to the science of reading and the creation of a district literacy plan.
- establish school-based literacy leadership teams to build and sustain scientifically based, evidence-based literacy practices and systems.
- create and execute a district literacy plan focused on structures and the utilization of scientifically based, evidence-based literacy curricula, instructional materials, and adult learning opportunities.
- participate in statewide workshops or conferences to support other Connecticut districts in developing replicable programs.
- participate in biannual meetings with CSDE to monitor expenditures.
- consent to participate in evaluations examining the impact of the grant funds on literacy teaching and learning." [CSDE Right to Read Grant Informational Document]

I have worked with Dena Mortensen, Reading and Language Arts Supervisor (PK-5), to develop the Waterbury grant proposal. As a member of the State's team to improve reading education, Ms. Mortensen is familiar with the grant requirements and she has already initiated some of them in the district. Ms. Mortensen will supervise implementation of the grant proposal.

Waterbury will propose to research, purchase and implement a new core reading program that is on CSDE's approved list of reading and language arts curricula and programs. Professional learning will be scheduled during and/or after the grant period to support teachers
1) in the implementation of the core reading program and 2) in continued learning related to

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 27, 2023

Marcia Jolly
64 Southwick Ave.
Waterbury, CT 06705

Dear Ms. Jolly:

Your name is being certified to the Department of Education – Food Service for the position of Cafeteria Manager (Req. #20240513) at $25.91 per hour.

Your official start date in this position is November 30, 2023.

Please contact Linda Franzese, Director of Food Service at (203) 574-8195 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Director of FS
File

evidence-based practices aligned to the core program. The district will also purchase a universal screening assessment for grades kindergarten through three in alignment with CSDE's approved list of universal screeners (namely, Amplify DIBELS 8). The district literacy team and school-based literacy leadership teams will continue to meet throughout and beyond the period of this grant. Ultimately, the district will increase student reading achievement through the continued use of universal screening, a new core reading program, and stronger instructional practices.

The total grant request will be $981,000. No matching funds are required.

The application deadline is December 29, 2023. I will timely submit the Waterbury ARPA Right to Read Grant application to CSDE through eGMS as is required.

Very truly yours,

Louise Allen Brown

Louise Allen Brown, Grant Writer

cc: Dr. Verna D. Ruffin
Doreen Biolo
Janet Frenis
Dena Mortensen

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 28, 2023

Claudia DeMatteis
541 South Plains Rd.
Litchfield, CT 06759

Dear Ms. DeMatteis:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education – Food Service for the position of Dietician (Req. #20240469) at $29.67 per hour. Please contact Linda Franzese, Director of Food Service at (203) 574-8195 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, December 21, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be December 22, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 6 months in duration. The department head will be responsible for executing your probationary evaluation no later than 6 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Linda Franzese, Director of Fd Serv
file

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

November 28, 2023

David Santos
562 Frost Rd., Apt. 1
Waterbury, CT 06705

Dear Mr. Santos:

Welcome to employment with the City of Waterbury. Your name is being certified to the Education Department for the position of Maintainer I @ Tinker Elementary School (Req. #20240433) at $17.24 per hour. Please contact Michal Konopka, School Inspector at (203) 574-8000 ext 11221 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, December 21, 2023 at 9:00 a.m. at the Department of Education Training Room located at 236 Grand Street, 2nd Floor, Room 275 in Waterbury. You must attend this orientation session in order to work for the City. Your first day reporting to your new department/supervisor will be December 22, 2023 at your regular scheduled time.

At the orientation, we will provide you with a brief overview of the City, review its employment practices and complete all required paperwork. In addition, if you are an employee eligible for benefits, it is useful to bring the social security numbers and birth dates of your spouse and children in order to complete the insurance enrollment forms.

Please call us prior to the orientation session if you should have any questions regarding the process.

Your new probationary period in accordance with your applicable contract will be 9 months in duration. The department head will be responsible for executing your probationary evaluation no later than 9 months from your first day in your new position.

Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc Board of Education
Dr. Ruffin, Supt. of Schools
Michal Konopka, School Insp
File

December 2023

CABE Liaison Newsletter

CABE Liaison:
Please talk with your Board about these upcoming events at your next board meeting.

Advocacy

In years past, CABE staff has attended numerous board meetings to discuss upcoming legislative issues. The legislative session will begin in early February and will be challenging. If you would like CABE staff to help your board prepare to discuss issues of concern with legislators or to participate in a meeting with your board and legislators, don't hesitate to get in touch with Sheila McKay at the CABE office.

Upcoming Webinars

The Board's Role in Advocacy Webinar

January 24 • 11:00 am - 12:15 pm
Register: https://bit.ly/3tQWXlq

CABE New Board Member Orientation/Leadership Conference

December 6, 2023
Hartford Sheraton South,
Rocky Hill

Two concurrent programs:
New Board Member Orientation for newly elected board member, board members who have been on the board for less than two years and superintendents.
Leadership Conference for board chairs, superintendents, board committee chairs, board leaders and those who aspire to these positions.

Register: https://bit.ly/48yGBO8

CABE Journal

The December issue of the CABE Journal will be available both in print and digitally on or about the first of December.

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236 Grand Street
Waterbury, CT 06702

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The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

December 4, 2023

Christopher Suarez
183 Line Ridge Rd.
Poughquag, NY 12570

Dear Mr. Suarez:

Your name is being certified to the Department of Education – School Business Office for the position of Accountant II (Req. #20240540) at $26.92 per hour.

Your official start date in this position will be December 14, 2023.

Please contact Doreen Biolo, Chief Fiscal Officer at (203) 574-8000 x 11226 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Doreen Biolo, CFO
File

236 Grand Street
Waterbury, CT 06702

(203) 574-6761

The City of Waterbury
Connecticut
Department of Human Resources
Office of the Civil Service Commission

December 4, 2023

Kelsee Warzecha
316 Fairlawn Ave.
Waterbury, CT 06705

Dear Ms. Warzecha:

Your name is being certified to the Department of Education – School Business Office for the position of Accountant II (Req. #20240531) at $26.92 per hour.

Your official start date in this position will be December 14, 2023.

Please contact Doreen Biolo, Chief Fiscal Officer at (203) 574-8000 x 11226 with any questions you may have in regards to this position.

Under the Civil Service Rules, your name will be removed from the eligibility list if you refuse this offer of appointment unless, within seven days from today, you furnish satisfactory evidence acceptable to me justifying such refusal. Please call the Civil Service Office at (203) 574-6761 if you are not interested in the position so that another candidate can be certified. If you have any questions, please do not hesitate to contact us.

Your new probationary period in accordance with your applicable contract will be 3 months in duration. The department head will be responsible for executing your probationary evaluation no later than 3 months from your first day in your new position.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd
cc: Board of Education
Dr. Ruffin, Supt. of Schools
Doreen Biolo, CFO
File