



M E M O R A N D U M

FROM: Carrie A. Swain, Clerk
Board of Education

DATE: January 2, 2024

TO: Michael J. Dalton, City Clerk

SUBJECT: Notice of Workshop/Committee Meetings, January 4, 2024,
Carrington School

The Committees of the Board of Education will meet on Thursday, December 7, 2023, 5:30 p.m., Carrington School, 24 Kenmore Avenue, 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/F-oPs7Z9mto>.

A G E N D A

SILENT PRAYER

PLEDGE ALLEGIANCE TO THE FLAG

PUBLIC SPEAKING

PRINCIPAL'S REPORT ~ Karen Renna

1. Committee of the Whole/10 minutes ~ WaterburyU Update – C. Carpentieri, M. Waters.
2. Committee of the Whole/10 minutes ~ Commissioners' Network Schools/Turnaround Report – J. Gopie, et al.
3. Committee on Finance/5 minutes ~ Request approval of a Construction Contract with Ferguson Mechanical Company, Inc. for certain mechanical upgrades to the Waterbury Arts Magnet School and Palace Theater – N. Albini.
4. Committee on Finance/5 minutes ~ Request approval of a Construction Contract with All Trade Industries for renovations of weight room at Crosby High School – N. Albini.
5. Committee on Finance/5 minutes ~ Request approval of a Construction Contract with Ferguson Mechanical Company, Inc. for HVAC replacement at Kennedy High School – N. Albini.
6. Committee on Finance/3 minutes ~ Request approval to apply for the CSDE 2023-2025 FIRST Robotics Grant Program (*consensus needed*) – L. Allen Brown, J. Frenis, M. Merati.
7. Committee on Finance/5 minutes:
 - a) FYI - ARP/ESSER Update – D. Biolo.
 - b) Monthly Expenditure Report for November – D. Biolo.
8. Superintendent's Update ~ Dr. Ruffin.
9. Committee on Building & School Facilities/2 minutes ~ Use of school facilities by school organizations and/or City departments – N. Albini.

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

11. Superintendent’s Notification to the Board/5 minutes:

a. Athletic appointments:

<u>Name</u>	<u>Position</u>	<u>Location</u>	<u>Effective</u>
Hasemann, Erich	Assistant Softball	CHS	03/16/24
LaSalle, Ashley	Intra-districts Boys Volleyball	CHS	03/16/24

b. Grant funded appointments:

<u>Name</u>	<u>Position/ Location</u>	<u>FT/PT</u>	<u>Rate</u>	<u>Union</u>	<u>Funding</u>	<u>Effective</u>
Blake, Zita	Tutor Driggs	PT	\$34/hr	NONBOE	Title I/A 23-25	01/04/24
Cancellaro, Carolyn	Tutor Carrington	PT	\$34/hr	NONBOE	Title I/A 23-25	01/04/24
Galarza, Yadelis	Parent Liaison Bucks Hill Pre-K	FT	\$20.06/hr	UPSEU 69	Priority Schools/23-24	12/14/23
Ganesh, Rani (promotion)	Secretary III School Bus. Office	FT	\$18.54/hr	UPSEU 69	General Fund	12/21/23
Garcia Lugo, Raquel	Classroom Asst. International	FT	\$15/41/hr	UPSEU 68	Priority Schools/23-24	12/14/23
Matthews, Jamarus	Hall Monitor Wilby	PT	\$105/day	NONBOE	Alliance Dist. 23-24/	12/14/23
Polanco, Anabel	Parent Liaison WMS	FT	\$20.06/hr	UPSEU 69	Title I/A 23-25	01/04/24
Perez Munoz, Eileen	Parent Liaison Washington	FT	\$20.06/hr	UPSEU 69	Title I/A 23-25	12/14/23
Pruden, Devon	Hall Monitor WHS	PT	\$105/day	NONBOE	SIG 7 WHS 23- 25	12/14/23
Ramos, Jaybes	Beh. Counselor Enlightenment	FT	\$23/hr	F UPSEU 69	Priority Schools/23-24	01/04/24
Reed, Stephen	Crossing Guard Hopeville	PT	\$15.69/hr	SCG	General Fund	01/04/24
Rodriguez, Kirialis	Beh. Counselor CHS	FT	\$21.72/hr	F UPSEU 69	SIG 7 CHS 23-25	12/07/23
Joshua Saliva	Hall Monitor KHS	PT	\$110/day	NONBOE	SIG 7 KHS 23-25	01/04/24
Tweedie, William	Attendance- Truancy Coord. WAMS	FT	\$18.14/hr	F UPSEU 69	WAMS 23-24	01/04/24

c. Miscellaneous after-school program appointments:

<u>Name</u>	<u>Position/Program</u>	<u>Location</u>
Pesce, Marguarite	Administrator/21 st Century	Bucks Hill
Clark, Leah	Teacher/ARP ESSER	Duggan
DosSantos, Pedro	Teacher/ARP ESSER	Duggan
Walker, Ivy	Teacher/ARP ESSER	Duggan
Azar Billini, Alicia	Administrator/SDE	Hopeville
Crespo, Julissa	Administrator/SDE	Hopeville
Lanza, Erika	Administrator/SDE	Hopeville
Smith, Richard	Administrator/SDE	Hopeville
Cordova-Rolon, Carmen	Teacher/SDE	Hopeville
Mancini, Mark	Teacher/SDE	Hopeville
Mastrianni, Jason	Teacher/SDE	Hopeville
Paternostro, Gina	Teacher/SDE	Hopeville
August, Kerry	Administration/SDE	NEMS
Casceillo, Jennifer	Administration/SDE	NEMS
Goggins, Coleen	Administration/SDE	NEMS
Rosa, Jennifer	Administration/SDE	NEMS
Casceillo, Jennifer	Teacher/SDE	NEMS
Costa(Albert), Kristen	Teacher/SDE	NEMS
Doms, Gregory	Teacher/SDE	NEMS
Goff, Colleen	Teacher/SDE	NEMS

Goggins, Coleen	Teacher/SDE	NEMS
Guerrera, Rocco	Teacher/SDE	NEMS
Hyland, Melissa	Teacher/SDE	NEMS
Katrenya, Wesley	Teacher/SDE	NEMS
Munoz, Kelly	Teacher/SDE	NEMS
Bisaillon, Bret	Teacher/21 st Century	Walsh

d. Extended School Hours (ESH) appointments:

<u>School</u>	<u>Last name</u>	<u>First Name</u>	<u>Assignment</u>
Wilson	Johnson	Julia	Para
	Mena	Germain	Para
	Nieves	Ines	Secretary

e. Retirements:

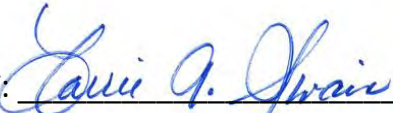
<u>Name</u>	<u>Assignment</u>	<u>Effective</u>
Strange, Linda	Walsh ESL	06/30/24

f. Resignations:

<u>Name</u>	<u>Assignment</u>	<u>Effective</u>
Waldron, John	Duggan/Grade 5	12/22/23

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

ADJOURNMENT

ATTEST: 
Carrie A. Swain, Clerk
Board of Education



#2

WATERBURY
PUBLIC SCHOOLS

School Turnaround Update - Commissioner's Network

January 4, 2024

Commissioner's Network

The Commissioner's Network (the Network) is a commitment between local stakeholders and the **Connecticut State Department of Education (CSDE) to dramatically improve student achievement in up to 25 schools**. The Network offers new resources and authorities to empower teachers and school leaders to implement research-based strategies in schools selected by the Commissioner. Network schools remain part of their local school districts, but the districts and the CSDE secure school-level flexibility and autonomy for the schools in exchange for heightened accountability. Schools participate in the Network for a period of three to five years.

Waterbury Commissioner's Network Schools

Year 4:

North End Middle School

West Side Middle School

Wallace Middle School

Year 3:

Wilby



Funding Allocations

Commissioner's Network: additional State funding that ranges from **\$608,000 to \$900,000 per school per year** depending on size and grant year, decreasing every year.

All these funds must be applied to activities resources outlined in CN plans as well as be research/evidence based initiatives intended to improve teacher instructional practice, school environment, and student outcomes.

Funding Allocations - some sample spending

- **Activities and Programs for students**
 - After school academic support programs
 - Robotics clubs, college visit
- **Additional Staffing**
 - Additional Attendance Counselors - Wilby
 - More counselors - Middle Schools
- **Training for ALL staff**
 - Common Instructional Expectations and Techniques
 - Professional learning
- **Materials, Equipment and Technology**
 - Computers, displays, labs, redesign/upgrade LMC, instructional supplies

Evaluating Progress

Evaluating Progress

Score ranges: 1-4

1. Below standard
2. Developing
3. Proficient
4. Exemplary

Scores based on dozens of classroom visits, staff/student surveys, focus groups and some quantitative data

Commissioner Network (CN) schools are assessed every year, starting in the planning year.

Category
Instructional practice
Leadership Effectiveness
Instructional Leadership
Academic Rigor
Student Engagement
Supports for Special Populations
Assessment System and Data Culture
School Environment
Student attendance
Student behavior
Family and Community Engagement
Adequate Instructional Time
Use of Instructional Time
Financial Management

Comprehensive Level of Evaluation

Quantitative- Chronic Absenteeism, Suspension Rates

Qualitative - Survey data of students, teachers, parents

- Panorama survey
- Focus group interviews of teachers and students

Dozens of classroom observations spread out over months throughout all areas of the school

The Stories of Turnaround

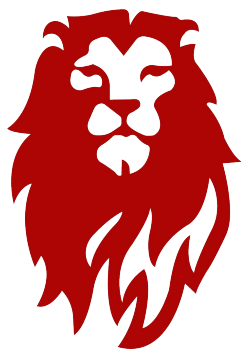
Wallace Middle School



Category	WMS 2019-20 PY Audit	WMS 2021 MOY ratings	WMS 2022 MOY ratings	WMS 2023 MOY ratings
1.1 Instructional practice	2	2	2	3
1.2 Leadership Effectiveness	2	3	3	4
1.3 Instructional Leadership	2	2	3	3
2.1 Academic Rigor	2	2	2	3
2.2 Student Engagement	2	2	3	3
2.3 Supports for Special Populations	2	2	2	2
2.4 Assessment System and Data Culture	2	2	3	3
3.1 School Environment	2	3	3	4
3.2 Student attendance	3	2	2	2
3.3 Student behavior	2	3	2	3
3.4 Family and Community Engagement	1	3	2	3
4.1 Adequate Instructional Time	2	2	3	3
4.2 Use of Instructional Time	2	2	3	3
4.3 Financial Management		3	3	4
Criteria Scored Percent Proficient and Above	7%	36%	57%	86%

DATA IMPROVEMENTS

- Decrease in suspension rate from 24.8% to 21.3%
- MTSS Reading Intervention Services
 - DIBELS 8 MAZE & SBAC Data
 - 85% of students exiting intervention after 8 weeks
 - Average Growth: 29% to 99% accuracy, 25 to 38 questions
- Implementation of Structured LionPRIDE Ticket Reward System
- Expansion of Academic Academy Grades 4-8 (224 students)



23-24 BOY Parent Survey Data (73 Responses)

- 96% Agree or Strongly Agree: The school clearly communicates its expectations for my child's learning to my child and to me.
- 90%: I am satisfied with the opportunities to be involved in my child's education.
- 88%: I feel welcome at my child's school.
- 85% Teachers and the principal(s) make available information about what your child is studying in school.

2023 - 2024 Focus

Goal: Our Mission is 100% Percent of Target Achieved (PTA) GROWTH for all students in ELA, Math, and Science this year.

1	Strengthening the Instructional Core Through Task Design	<ul style="list-style-type: none">• Designing instructional tasks that promote deeper level thinking an understanding• Developing Learning Targets & Success Criteria that reflect higher level DOK levels (Instructional task match LT/SC levels)
2	Instructional Tools & Teacher Actions	<ul style="list-style-type: none">• Questioning Techniques that target higher DOK levels• Providing Opportunities for Student-to-Student Discourse• Inquiry & student-centered learning• Supporting student agency & voice
3	Professional Learning: Instructional Planning, Coaching, & Data Driven Decision Making	<ul style="list-style-type: none">• PLC/IDT collaborative planning structures• Content Coordinator/Admin Learning Walks• Literacy Facilitator Coaching Cycles• PLC/IDT Purposeful use of IABs• Staff Wellness & Retention
4	Student Wellness & Intervention	<ul style="list-style-type: none">• Mood Meter & SEL Support• MTSS Academic & Behavioral Intervention Processes• CAT/LEAP Attendance Interventions

Structures: IDTs (Instructional Data Teams) 5-Step Data Process & Intentional Planning, Learning Walks, Instructional Coaching & Feedback, Professional Learning Workshops, Problem of Practice Protocols, Looking at Student Work (LASW) Protocols

West Side Middle School



WARRIOR PRIDE



Category	WSMS 2019-20 PY Audit	WSMS 2021 MOY ratings	WSMS 2022 MOY ratings	WSMS 2023 MOY ratings
1.1 Instructional practice	1	2	2	3
1.2 Leadership Effectiveness	1	3	3	4
1.3 Instructional Leadership	1	2	3	3
2.1 Academic Rigor	1	2	2	3
2.2 Student Engagement	1	2	3	3
2.3 Supports for Special Populations	2	2	2	2
2.4 Assessment System and Data Culture	2	2	2	3
3.1 School Environment	1	3	3	4
3.2 Student attendance	2	2	2	2
3.3 Student behavior	1	3	2	3
3.4 Family and Community Engagement	2	2	3	3
4.1 Adequate Instructional Time	2	2	3	3
4.2 Use of Instructional Time	2	2	3	4
4.3 Financial Management		3	3	4
Criteria Scored Percent Proficient and Above	0%	29%	57%	86%

DATA IMPROVEMENTS

Indicator	21-22	22-23
1a. ELA Performance Index - All Students	64.1	67.5
1b. ELA Performance Index - High Needs Students	62.3	66.1
1c. Math Performance Index - All Students	47.8	50.1
1d. Math Performance Index - High Needs Students	46.2	48.5
1e. Science Performance Index - All Students	56.1	57.9
1f. Science Performance Index - High Needs Students	55.1	57.2
2a. ELA Academic Growth - All Students	50.1	55.8
2b. ELA Academic Growth - High Needs Students	49.8	56.3
2c. Math Academic Growth - All Students	41.9	43.5
2d. Math Academic Growth - High Needs Students	41.0	43.2
2e. Progress Toward English Proficiency - Literacy	36.5	44.0
2f. Progress Toward English Proficiency - Oral	39.8	46.8



4a. Chronic Absenteeism - All Students	0.0	0.0
4b. Chronic Absenteeism - High Needs Students	0.0	0.0
5. Preparation for CCR - Percent Taking Courses		
6. Preparation for CCR - Percent Passing Exams		
7. On-track to High School Graduation	84.6	84.6
8. 4-year Graduation: All Students (2021 Cohort)		
9. 6-year Graduation: High Needs Students (2019 Cohort)		
10. Postsecondary Entrance (Graduating Class 2021)		
100.0%)	46.9	70.3
12. Arts Access		
Accountability Index	45.2	49.5

2023 - 2024 Focus

- 1 **LESSON DESIGN:** To provide high quality instruction characterized by the **design** of rigorous/cognitively demanding and engaging lessons. (Instructional Task & Design)
- 2 **LESSON IMPLEMENTATION:** To support lesson **implementation** inclusive of high yield instructional strategies that promote engagement and student-centered instruction.
- 3 **STRUCTURES & SYSTEMS:** To identify sustainable and coherent systems in support of the **design** and **implementation** of high quality instruction.

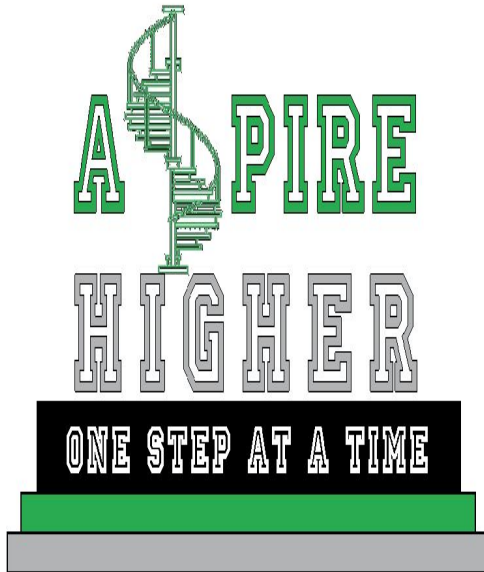
Wilby High School



Category	WHS 2020-21 PY Audit	WHS 2022 MOY ratings	WHS 2023 MOY ratings
1.1 Instructional practice	1	2	3
1.2 Leadership Effectiveness	2	3	4
1.3 Instructional Leadership	2	2	3
2.1 Academic Rigor	1	2	2
2.2 Student Engagement	1	2	2
2.3 Supports for Special Populations	1	1	2
2.4 Assessment System and Data Culture	2	2	2
3.1 School Environment	2	3	4
3.2 Student attendance	1	1	2
3.3 Student behavior	1	2	3
3.4 Family and Community Engagement	1	2	3
4.1 Adequate Instructional Time	2	2	4
4.2 Use of Instructional Time	1	2	2
4.3 Financial Management	2	3	3
Criteria Scored Percent Proficient and Above	0%	21%	57%

WILBY H.S.

Improvements and Highlights



9th Grade
Academy



Career and
Technical
Education



College
Career
Readiness





2023 - 2024 Focus

THE WHY: To Co-Create A Better Future For Our Students Through Enhanced Academic and Social Emotional Wellbeing

THE WHAT	①	Strengthening Academic Rigor Through High Quality Instructional Task Design in ALL Classrooms
	②	Promoting Student Engagement Through High Yield Instructional Strategies and Student-Centered Instruction
	③	Supporting Student and Staff Wellness

THE HOW: Strengthening School-Wide Systems & Structures (Professional Learning Workshops, Collaborative & Intentional Planning Sessions, Lesson Plan Feedback, Learning Walks, Instructional Coaching & Feedback, PLC/IDT Data Protocols for Data-Driven Decision-Making)

North End Middle School



Category	NEMS 2019-20 PY Audit	NEMS 2021 MOY ratings	NEMS 2022 MOY ratings	NEMS 2023 MOY ratings
1.1 Instructional practice	2	2	3	4
1.2 Leadership Effectiveness	3	3	3	4
1.3 Instructional Leadership	2	2	4	4
2.1 Academic Rigor	2	2	3	3
2.2 Student Engagement	2	2	3	4
2.3 Supports for Special Populations	2	2	2	2
2.4 Assessment System and Data Culture	2	2	2	3
3.1 School Environment	3	3	3	4
3.2 Student attendance	3	2	2	2
3.3 Student behavior	2	3	3	3
3.4 Family and Community Engagement	2	3	3	3
4.1 Adequate Instructional Time	2	2	3	3
4.2 Use of Instructional Time	2	2	4	4
4.3 Financial Management		3	3	4
Criteria Scored Percent Proficient and Above	21%	36%	79%	86%

DATA IMPROVEMENTS

Indicator	2021-2022% Points Earned	2022-2023 ESTIMATED % Points Earned
1a. ELA Performance Index - All Students	65.8	67.5
1b. ELA Performance Index - High Needs Students	64.5	66.7
1c. Math Performance Index - All Students	50.4	52.7
1d. Math Performance Index - High Needs Students	49.3	51.7
1e. Science Performance Index - All Students	63.6	59.7
1f. Science Performance Index - High Needs Students	61.8	58.8
2a. ELA Academic Growth - All Students	52.9	50.3
2b. ELA Academic Growth - High Needs Students	53.0	50.6
2c. Math Academic Growth - All Students	43.8	45.3
2d. Math Academic Growth - High Needs Students	44.3	44.5
2e. Progress Toward English Proficiency - Literacy	59.0	49.7
2f. Progress Toward English Proficiency - Oral	56.9	45.0
4a. Chronic Absenteeism - All Students	0.0	41.2
4b. Chronic Absenteeism - High Needs Students	0.0	41.2
5. Preparation for CCR - Percent Taking Courses		
6. Preparation for CCR - Percent Passing Exams		
7. On-track to High School Graduation	90.5	81.8
8. 4-year Graduation: All Students (2021 Cohort)		
9. 6-year Graduation: High Needs Students (2019 Cohort)		
10. Postsecondary Entrance (Graduating Class 2021)		
11. Physical Fitness	24.2	67.3
12. Arts Access		
Accountability Index	48.7	53.2



2023 - 2024 Focus

1

2

3

Rigor / Cognitive Demand of Instructional Tasks	Engagement & Student-Centered Instruction	Intentional Planning
Instructional <u>TASK</u> Design	Instructional <u>TOOLS</u> & Teacher Actions	Instructional <u>PLANNING & DECISION-MAKING</u>
Designing instructional tasks that promote deeper level thinking and processing Developing Learning Targets & Success Criteria(LT/SC) that reflect higher level DOK levels (instructional task levels match LT/SC levels) Planning powerful instructional segments within the instructional block	Increasing student response rates Providing opportunities for Student-to- Student Discourse Executing powerful questioning techniques & strategies Incorporating inquiry & student-centered learning Supporting student agency & student voice	PLC/IDT collaborative lesson planning structures Peer feedback on lesson plans (Lesson Plan Review Protocol) Content Coordinator/Admin feedback on lesson plans Lesson design and lesson delivery alignment
GOAL: To increase the <u>frequency</u> , <u>depth</u> , <u>quality</u> , and <u>automaticity</u> of practices connected to the 3 focus areas.		
STRUCTURES: IDTs (Intentional Planning)/Look Ahead Meetings, Learning Walks; PLCs; Instructional Coaching; Professional Learning Workshops; Problem of Practice Protocols; Looking at Student Work (LASW) Protocols; Evaluation Observation Debriefs		

CONGRATULATIONS TO THE STAFF, STUDENTS, FAMILIES & LEADERSHIP OF NORTH END MIDDLE SCHOOL!!!

Local News Top Stories

North End Middle School in Waterbury removed from state's list of troubled schools

BY STEVE BIGHAM REPUBLICAN-AMERICAN November 10, 2023 408 2



In conclusion...

There is much important work remaining, but we are on the path. All 4 Commissioner Network (CN) schools are making progress increasing the number of school effectiveness categories rated proficient or above each year.

THANK YOU!

You are invited to visit these schools to see the amazing work they are doing.

Chief Operating Officer


(203) 346-2340, x2

nalbini@waterbury.k12.ct.us

EXECUTIVE SUMMARY

DATE: December 16, 2023

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

FROM: Nicholas John Albini, Chief Operating Officer 

RE: Executive Summary for the Construction Contract (RFP #7752) for Certain Mechanical Upgrades to Waterbury Arts Magnet School and The Palace Theater between The City of Waterbury and Ferguson Mechanical Company, Inc.

The Education Department respectfully requests your review and approval of a contract for mechanical (HVAC) upgrades to the mechanical equipment at Waterbury Arts Magnet School and the City owned Palace Theater in an amount not to exceed \$8,977,480. The project would be split funded through the Board of Education's American Rescue Plan Elementary and Secondary School Emergency Relief Funds (ARP ESSER) and the City's State and Local Fiscal Recovery Funds (ARPA). The total value of the contract is \$8,977,480 of which \$4,053,650 represents mechanical upgrades to the Palace Theater. This portion will be funded through the City's ARPA funds. The Education Department's ARP ESSER Grant will fund the portion of the contract that relates to the Waterbury Arts Magnet School mechanical upgrades, which amounts to \$4,923,830. The split funding allocation was derived from a construction cost breakdown provided by Ferguson Mechanical and subsequently reviewed & verified by the project architect, H.F. Lenz. Other associated project costs including project design and pre-purchases are being split funded as well. Refer to attached WAMS-Palace Theater HVAC Project Cost Allocation.

This contract was initiated under the Request for Proposal process (RFP #7752) in which four responses were received. Of the three, Ferguson Mechanical Company, has been deemed the most qualified bidder. The project consists of providing major mechanical upgrades to the HVAC and Fire Protection systems and the existing utilities currently at Waterbury Arts Magnet School along with the installation of a standalone HVAC system in the Palace Theater building. Base project work consists of demolition, structural steel erection, roofing repair, finishes, plumbing, HVAC, electrical and fire alarm systems. Alternate work selected includes a temporary generator to keep the emergency life safety systems on-line while the current system is being replaced, and Building Management System (BMS) changeover to the current BMS vendor for the Education Department.

An owner controlled contingency in the amount of \$200,000 has been included in the contract total to facilitate the timely approval of contractor change order requests resulting from unexpected expenses that may arise during the course of construction. All contractor change order requests are carefully reviewed and evaluated by the architect/engineer of record, program manager KBE, the Palace Theater Facilities Manager and the Board of Education designated project owner representative.

Ferguson's ability to provide a response that improved the project schedule, regardless of potential switchgear delivery delays was a major factor in the Selection Committee's unanimous recommendation to award the project to Ferguson. Other factors that were discussed in each responder's scope review interviews, which swayed the opinion of the Selection Committee towards Ferguson, were as follows:

- Ferguson's preparation for the scope review interview to discuss construction sequencing and logistics.
- Ferguson's written commitment to dedicate more labor hours to the project, including full time project management.
- Ferguson's in-house pre-fabrication shop to manufacture project components off-site and minimize the impact on Waterbury Arts Magnet School's operations.
- Ferguson provides mechanical, electrical, rigging, and insulating services in-house. Given the current nature of the construction economy, using a contractor that will self-perform a large portion of the project's work and, therefore, subcontract a lesser percentage of the required work will reduce significantly the risk of project delays and potential change orders resulting in increased construction costs.

Ferguson has resolved to substantially complete all work and services on or before August 24, 2024 and reach final completion on or before September 24, 2024. The project will be managed by KBE in collaboration with the School Inspector's Office and the Palace Theater Facilities Manager. The vendor's Disclosure and Tax Clearance are attached.

Representatives from the Department of Education, KBE and the City will be present at your upcoming meeting to answer any questions you may have regarding this matter. Thank you for your consideration.

Attachments (3)

Cc: Michael LeBlanc, Tony Mancini, Mike Konopka

WAMS-Palace Theater HVAC Project Cost Allocation

RFP #7752 - Ferguson Contract

Cost Category	CITY - Palace	BOE - WAMS	Total
1. Selective Demolition	\$112,600	\$137,400	\$250,000
2. Structural Steel	\$30,400	\$211,600	\$242,000
3. Roofing Repair	\$66,525	\$83,475	\$150,000
4. Finishes	\$95,248	\$68,752	\$164,000
5. Plumbing	\$95,845	\$14,155	\$110,000
6. HVAC	\$2,764,932	\$3,290,168	\$6,055,100
7. Electrical	\$541,800	\$718,200	\$1,260,000
8. Fire Alarm	\$71,300	\$94,600	\$165,900
Base Bid Total	\$3,778,650	\$4,618,350	\$8,397,000
Accepted Alternates (Ferguson)			
Temporary Generator		\$16,480	\$16,480
WAMS BMS		\$179,000	\$179,000
Palace Theater BMS	\$185,000		\$185,000
Total with Alternates	\$185,000	\$195,480	\$380,480
Contingency	\$90,000	\$110,000	\$200,000
Total Ferguson Contract with Contingency	\$4,053,650	\$4,923,830	\$8,977,480

Pre-Purchases

	CITY - Palace	BOE - WAMS	Total
Air Cooled Chillers	\$351,980	\$519,980	\$871,960
Electrical Equipment	\$64,998	\$64,998	\$129,996

Design Costs

	CITY - Palace	BOE - WAMS	Total
HF Lenz	\$118,763	\$118,763	\$237,525
Total Project Cost Allocation	\$4,589,391	\$5,627,571	\$10,216,961
Total Project Cost Percentage Breakdown	45%	55%	



H.F. Lenz Co. | 101 Centerpoint Drive | Suite 237 | Middletown, CT | 06457 | 860-316-2124

December 15, 2023

Mr. Nick Albini
Départment of Education
236 Grand St.
Waterbury, CT 06702

Subject: RFP #7752 WAMS-Palace Theater Cost Split
HFL File No. 2022-3014.01

Dear Mr. Albini:

H. F. Lenz has reviewed the WAMS-Palace Theater Cost Split document, which details the project costs, including, construction, pre-purchase contracts, and design costs for the project.

The document is primarily based on the construction costs and schedule of alternate costs, which were based on the Bid Proposal submitted by Ferguson Contractors.

Based on the scope of work for each of the two buildings, the costs associated for each building are appropriately allocated within each building's cost column.

The overall split of 55% (WAMS) and 45% (Palace) is also in line with the percentage of split originally provided by the design team.

Attached herein, is the cost split document which was provided and reviewed.

Please advise if you need anything additional.

Very Respectfully,

H.F. LENZ COMPANY

A handwritten signature in blue ink, appearing to read 'Scott Kraynak'.

Scott Kraynak, P.E.
New England Regional Manager

I:\PROJECTS\2022\223000\223014X01\EMAIL\NICK ALBIN\2023 1215_WAMS PALACE COST SPLIT.DOCX

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**Construction Contract
for certain
Mechanical Upgrades
to
The Waterbury Arts Magnet School
and
The Palace Theater
between
City of Waterbury
and
Ferguson Mechanical Company, 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 **FERGUSON MECHANICAL COMPANY, INC.**, located at 112 Northwest Drive, Plainville, Connecticut 06062, a duly registered Connecticut corporation (the "Contractor").

WHEREAS the Contractor submitted a bid to the City in response to **Request for Proposal ("RFP") No. 7752** for certain mechanical upgrades at The Waterbury Arts Magnet School and The Palace Theater; and

WHEREAS the City accepted the Contractor's bid for **RFP No. 7752**; 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 "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 certain mechanical system upgrades (HVAC and fire protection), which serve The Waterbury Arts Magnet School and The Palace Theater located at 16 South Elm Street and 100 East Main Street, 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

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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. 7752**, incorporated by reference;
- 1.1.2 Addendum 1 to **RFP No. 7752** (attached hereto);
- 1.1.3 Contractor's Price Proposal, emailed to City Purchasing on September 15, 2023, which was part of a typed response on a City letter to it, dated September 12, 2023, and consists of 13 pages including a Project schedule (attached hereto);
- 1.1.4 Contractor's Response with associated attachments to **RFP No. 7752**, dated August of 2023, consisting of 53 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. 7752**, 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 H.F. Lenz consisting of 93 pages, dated March 3, 2023, of plans and Volumes I and II of project specifications, dated March 3, 2023, consisting of 813 pages (see **Attachment A**, which contains the link to the Site Map);
- 1.1.8 State of Connecticut Prevailing Wage Schedule dated June 12, 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).

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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. 7752**;
- 1.2.5 **RFP No. 7752** including "City of Waterbury, Board of Education, **RFP No. 7752, Attachment A** "Scope of Services/Technical Specifications";
- 1.2.6 Contractor's Price Proposal;
- 1.2.7 Contractor's Response;
- 1.2.8 Drawings; and
- 1.2.9 Waterbury Arts Magnet Schools – Palace Theater Construction Cost Split Breakdown.

13 For clarity's sake, at its sole cost and expense, Contractor agrees and understands that its work includes the purchase and installation of new breakers in the existing switchgear for the fourth floor distribution equipment (see ID 24/25 on the Project Schedule), as well as installation of the new switchboard once it is delivered to the Project address; Contractor understands that it shall return to the Project address to install the new switchboard, even if such delivery occurs after it completes its other work – there shall not be any additional costs (e.g., remobilization or wage escalation) as a result of Contractor returning to the Project and completing the installation.

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.

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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

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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. 7752** (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,

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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

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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

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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

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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 **on or before August 24, 2024**, and shall reach Final Completion **on or before September 24, 2024** ("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 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.

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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 **EIGHT MILLION NINE HUNDRED SEVENTY-SEVEN FOUR HUNDRED EIGHTY DOLLARS (\$8,977,480)** (hereafter referred to as "Total Compensation") with the basis for payment being Contractor's Bid set forth in **Attachment A** and its Price Proposal (revised), which is summarized below and inclusive of the required payment and performance bonds:

- i. \$4,618,350 (base payment – Waterbury Arts Magnet School);
- ii. \$3,778,650 (base payment – Palace Theater);
- ii. \$16,480 (Alternate 3 – Temporary Generator – Waterbury Arts Magnet School);
- iii. \$179,000 (Alternate 5 – WAMS BMS – Waterbury Arts Magnet School);
- iii. \$185,000 (Alternate 6 – Palace Theater BMS – Palace Theater);
- iv. \$110,000 Owner Controlled Contingency – Waterbury Arts Magnet School (subject to 6.1.1 below); and
- v. \$90,000 Owner Controlled Contingency – Palace Theater (subject to 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 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.

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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 Contract 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.

6.3.3 Schedule of Values. The Contractor shall submit one (1) monthly invoice for work completed during that period. The invoice shall be accompanied by two (2) Schedules of Values ("SOV"), a SOV for the Waterbury Arts Magnets School and a SOV for the Palace Theater with totals matching **Section 1.2.9 of Attachment A**. Both Schedule of Values shall be subject to advanced written approval by the City and its agents prior to acceptance and submittal of the first payment invoice.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP No. 7752** 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

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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

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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.

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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, The Palace Theater Group, Inc., 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, The Palace Theater Group, Inc., 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, The Palace Theater Group, Inc., KBE Building Corporation and all affiliated entities and each of their respective members, managers,

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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, The Palace Theater Group, Inc., 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, The Palace Theater

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Group, Inc. 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 \$500,000.00
EL Disease Each Employee \$500,000.00
EL Disease Policy Limit \$500,000.00

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 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 known 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, The Palace Theater Group, Inc., 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, \$2,000,000.00 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.

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, The Palace Theater Group, Inc. 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, The Palace Theater Group, Inc. 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, The Palace Theater Group, Inc. and KBE Building Corporation ,**

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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 OPPORTUNITY; 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.

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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.

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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 contract awarded to the Contractor is funded in whole or in part by state funds.

12.4.3 The Contractor shall be subject to the following set-aside requirements if the municipal public works contract, 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.

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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,

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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:

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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 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

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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

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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.

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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; and

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.

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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

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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

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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.

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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

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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

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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,

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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. 7752** and (ii) the Contractor's Bid response to **RFP No. 7752**, dated August 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 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

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by mail, postage prepaid, to the party to whom it is directed, which until changed by written notice, are as follows:

Contractor: Ferguson Mechanical Company, Inc.
112 Northwest Drive
Plainville, CT 06062

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.

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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 owed 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.

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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 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.

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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.

FINAL CONTRACT for Ferguson for
RFP 7752 WAMS-Palace HVAC Upgrades

JPY 12.19.23

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

WITNESSES:

CITY OF WATERBURY

By: _____
Paul K. Pernerewski, Mayor

Date: _____

WITNESSES:

**FERGUSON MECHANICAL
COMPANY, INC.**

By: _____
Ryan L. Ferguson, President

Date: _____

FINAL CONTRACT for Ferguson for
RFP 7752 WAMS-Palace HVAC Upgrades

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ATTACHMENT A

FINAL CONTRACT for Ferguson for
RFP 7752 WAMS-Palace HVAC Upgrades

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ATTACHMENT B

FINAL CONTRACT for Ferguson for
RFP 7752 WAMS-Palace HVAC Upgrades

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ATTACHMENT C

KEVIN McCAFFERY
DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

September 12, 2023

Ryan L. Ferguson
Ferguson Mechanical Company, Inc.
112 Northwest Drive
Plainville, CT 06062

Dear Mr. Ferguson,

Thank you for your firm's recent presentation in response to Request for Proposal (RFP) #7752 HVAC Upgrade WAMS and Palace Theater for the City of Waterbury.

As part of the evaluation process, the RFP Selection Committee has determined to offer Ferguson Mechanical the ability to enter into negotiations and respectfully requests that a revised Cost Proposal be submitted reflecting a reduction in price. In addition to your best and final offer, please provide the following:

- Work Schedule
- Schedule of Values
- Labor-hour breakdown with the following divisions of work:
 1. Controls 1,386 hrs.
 2. Electrical 4,500 hrs.
 3. Fire Alarm 376 hrs.
 4. Plumbing 400 hrs.
 5. Mechanical 9,500 hrs.
 6. Structural Submittals 3 - 4 wks., Fabrication 3-4 wks., Galvanizing 3-5 wks., Field 3-4 wks.

Please submit a revised Cost Proposal via e-mail to kmccaffery@waterburyct.org *no later than 2:00pm on September 15, 2023.*

Sincerely,

Kevin McCaffery
Director of Purchasing

*Ferguson has determined that electrical power for chillers can be energized and commissioned in the summer of 2024; thereby, avoiding any detriment associated with the lead time on the new switchgear.

ATTACHMENT E
PRICING PROPOSAL
Revised

WAMS-Palace Theater HVAC System Split

RFP#7752

BASE BID	
1. Selective Demolition	\$ 250,000
2. Structural Steel	\$ 242,000
3. Roofing repair	\$ 150,000
4. Finishes	\$ 164,000
5. Plumbing	\$ 110,000
6. HVAC	\$6,055,100
7. Electrical	\$ 1,260,000
8. Fire Alarm	\$ 165,900
BASE BID GRAND TOTAL	\$8,397,000
SCHEDULE OF ALTERNATES (Refer to specification section 012300 for further information on schedule of alternatives)	
1. Temporary Hot Water Heating	\$212,000 / initial month - \$52,000 every month after
2. Temporary Cooling	\$237,000 / initial month - \$67,000 evry month after
3. Temporary Generator	\$ 16,480 per month
4. Palace Boiler Installation	\$330,000
5. WAMS BMS	\$179,000
6. Palace Theater BMS	\$ 185,000

Estimated Lead Time for Major Equipment: (how many weeks)

VFDs 40 weeks

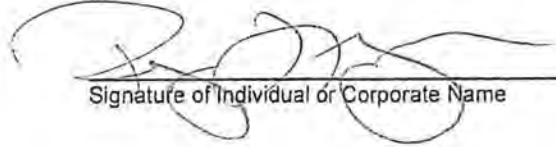
In the event of mathematically incorrect calculations of individual items or totals, the mathematically correct amount as determined by the City shall govern in determining the TOTAL PROPOSAL PRICE.

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.

06-1491108
Social Security Number or Federal Identification
Number

Ferguson Mechanical Company, Inc.
Company Name


Signature of Individual or Corporate Name

Ryan L. Ferguson, President
Corporate Officer (if applicable)

Ferguson Companies					Preliminary Schedule Outline											
					RFP #7752 HVAC Upgrade WAMS and Palace Theater											
ID	Task Name	Start	Duration	Finish	2024											
					S	O	N	D	J	F	M	A	M	J	J	A
1	General Condition/Mobilization	10/3/23	219 days	8/2/24												
2	Sample Notice To Proceed	10/2/23	0 days	10/2/23	◆	10/2										
3	Contractor Long Lead Submittals	10/3/23	40 days	11/27/23												
8	Owner Equipment Deliveries [Est]	10/3/23	180 days	6/10/24												
4	A/E Review & Approval	11/28/23	20 days	12/25/23												
5	Traffic Material/Steel/Concrete Delivery	12/26/23	20 days	1/22/24												
6	Electrical Equipment Fab & Deliver	12/26/23	120 days	6/10/24												
7	Mechanical Equipment Fab & Deliver	12/26/23	120 days	6/10/24												
9	On Site Mobilization	12/26/23	5 days	12/29/23												
10	Commissioning & Close Out	7/24/24	5 days	7/30/24												
11	Theatre	1/2/24	154 days	8/2/24												
12	Lower Level Area C/E Bid	1/2/24	34 days	2/16/24												
13	Civil General Trades	1/2/24	6 days	1/9/24												
14	Survey - Selective Demolition as Necessary	1/2/24	6 days	1/9/24												
15	HVAC	1/10/24	28 days	2/16/24												
16	HVAC Selective Demolition	1/10/24	3 days	1/12/24												
17	Survey, Hanger & Support Install for HVAC Pipe & Equipment	1/15/24	7 days	1/23/24												
18	HVAC Piping	1/24/24	10 days	2/6/24												
21	Re Route Gas & Vensting	1/24/24	10 days	2/6/24												
22	ATC Rough	2/6/24	3 days	2/8/24												
19	HVAC Testing	2/7/24	3 days	2/9/24												
23	ATC Termination & Deicing	2/9/24	3 days	2/13/24												
20	HVAC Insulation	2/12/24	5 days	2/16/24												

Ferguson Companies					Preliminary Schedule Outline					RFP #7752 HVAC Upgrade WAMS and Palace Theater											
ID	Task Name	Start	Duration	Finish	S	O	N	D	2024	J	F	M	A	M	J	J	A				
24	Electrical	1/10/24	19 days	2/5/24																	
25	Install New Breakers in Existing Switchgear For Fourth Floor Distribution Equipment	1/10/24	4 days	1/15/24																	
26	Overhead Feeder Conduit & Wire to Fourth Floor	1/16/24	10 days	1/29/24																	
27	Modify Existing Fire Alarm System	1/30/24	5 days	2/5/24																	
28	Main Level C	1/10/24	56 days	3/27/24																	
29	Civil General Trades	1/10/24	6 days	1/17/24																	
30	Survey - Selective Demolition as Necessary	1/10/24	6 days	1/17/24																	
39	Electrical	1/30/24	8 days	2/8/24																	
40	Overhead Feeder & Conduit to Second Floor	1/30/24	4 days	2/2/24																	
41	Modify Existing Fire Alarm System	2/5/24	4 days	2/8/24																	
31	HVAC	2/12/24	33 days	3/27/24																	
32	HVAC Demolition	2/12/24	3 days	2/14/24																	
33	Survey, Hanger& Support Install for HVAC Pipe & Equipment	2/15/24	7 days	2/23/24																	
34	HVAC Piping	2/26/24	10 days	3/8/24																	
35	HVAC Testing	3/11/24	2 days	3/12/24																	
36	HVAC Insulation	3/13/24	5 days	3/19/24																	
37	ATC Rough	3/20/24	3 days	3/22/24																	
38	ATC Terminations & Devices	3/25/24	3 days	3/27/24																	
42	Second Level Area C/E	1/18/24	73 days	4/29/24																	
43	Civil General Trades	1/18/24	5 days	1/24/24																	
44	Survey - Selective Demolition as Necessary	1/18/24	5 days	1/24/24																	
53	Electrical	2/5/24	12 days	2/20/24																	

Ferguson Companies		Preliminary Schedule Outline			RFP #7752 HVAC Upgrade WAMS and Palace Theater													
ID	Task Name	Start	Duration	Finish	S	O	N	D	2024	J	F	M	A	M	J	J	A	
54	Overhead Feeder Conduit & Wire to Third Floor	2/5/24	10 days	2/16/24														
55	Modify Existing Fire Alarm System	2/19/24	2 days	2/20/24														
45	HVAC	3/13/24	34 days	4/29/24														
46	HVAC Selective Demolition	3/13/24	4 days	3/18/24														
47	Survey, Hanger&Support Install for HVAC Pipe & Equipment	3/19/24	7 days	3/27/24														
48	HVAC Piping	3/28/24	10 days	4/10/24														
49	HVAC Testing	4/11/24	3 days	4/15/24														
50	HVAC Insulation	4/16/24	4 days	4/19/24														
51	ATC Rough	4/22/24	3 days	4/24/24														
52	ATC Terminations & Devices	4/25/24	3 days	4/29/24														
56	Third Level	1/25/24	96 days	6/6/24														
57	Civil General Trades	1/25/24	93 days	6/3/24														
58	Survey - Selective Demolition as Necessary	1/25/24	5 days	1/31/24														
59	Instal Gypsum Board Walls & Associated Ceiling Moc	5/21/24	10 days	6/3/24														
67	Electrical	2/1/24	16 days	2/22/24														
68	Overhead Feeder Conduit & Wire to Fourth Floor	2/1/24	4 days	2/6/24														
69	Modify Existing Fire Alarm System	2/21/24	2 days	2/22/24														
60	HVAC	4/16/24	38 days	6/6/24														
61	HVAC Selective Demolition	4/16/24	3 days	4/18/24														
62	Survey, Hanger&Support Install for HVAC Pipe & Equipment	4/19/24	7 days	4/29/24														
63	HVAC Main Piping	4/30/24	10 days	5/13/24														
64	HVAC Insulation	5/14/24	5 days	5/20/24														
Page 3																		

Ferguson Companies					Preliminary Schedule Outline					RFP #7752 HVAC Upgrade WAMS and Palace Theater											
ID	Task Name	Start	Duration	Finish	S	O	N	D	2024 J	F	M	A	M	J	J	A					
65	ATC Rough	5/21/24	3 days	5/23/24																	
66	ATC Terminations & Devices	6/4/24	3 days	6/6/24																	
70	Fourth Level C/E BLD	2/1/24	117 days	7/12/24																	
71	Civil General Trades	2/1/24	102 days	6/21/24																	
72	Survey, Selective Demolition as Necessary	2/1/24	5 days	2/7/24																	
73	Install Overhead Supplementary Steel for Chillers	2/8/24	10 days	2/21/24																	
74	Form & Pour Houskeeping Pads	2/22/24	7 days	3/1/24																	
75	Patch Penetrations & Removals for Finishes	6/19/24	3 days	6/21/24																	
92	Electrical	2/7/24	33 days	3/22/24																	
93	Install Power Distribution Equipment to Serve Chillers 4 & 5, Miscellaneous Pumps and HVAC EQ	2/7/24	6 days	2/14/24																	
94	Overhead Feeder Conduit to Distribution Panels	2/15/24	15 days	3/6/24																	
95	Overhead Branch Conduit to VFDs, Pumps & Receptacles	3/7/24	7 days	3/15/24																	
96	Wire Terminations at VFDs, Pumps & Receptacles	3/18/24	3 days	3/20/24																	
97	Modify Existing Fire Alarm System	3/21/24	2 days	3/22/24																	
76	HVAC	5/14/24	44 days	7/12/24																	
77	HVAC Selective Demolition	5/14/24	3 days	5/16/24																	
78	Survey, Hanger&Support Install for HVAC Pipe & Equipment	5/17/24	6 days	5/24/24																	
79	HVAC Piping	5/28/24	7 days	6/5/24																	
80	Set/Install Humidifier 10, 11, 12	6/6/24	2 days	6/7/24																	
81	Set/Install Pumps & Tanks	6/10/24	3 days	6/12/24																	
86	Modify Gas Venting to Outdoors	6/10/24	7 days	6/18/24																	
82	HVAC Pipe Humidifiers & Pumps	6/13/24	3 days	6/17/24																	

Ferguson Companies					Preliminary Schedule Outline					RFP #7752 HVAC Upgrade WAMS and Palace Theater											
ID	Task Name	Start	Duration	Finish	S	O	N	D	2024	J	F	M	A	M	J	J	A				
83	Cut/Install New Floor Drain	6/18/24	2 days	6/19/24																	
85	HVAC Piping Terminations	6/18/24	3 days	6/20/24																	
84	Tie In Gas Line to Floor Above	6/20/24	3 days	6/24/24																	
87	Cut & Install New Make Up Water to Floor Above	6/25/24	2 days	6/26/24																	
88	HVAC Testing	6/27/24	2 days	6/28/24																	
89	HVAC Insulation	7/1/24	4 days	7/4/24																	
90	ATC Rough	7/5/24	3 days	7/9/24																	
91	ATC Terminations & Devices	7/10/24	3 days	7/12/24																	
98	Fifth Level D/E BLD	2/8/24	127 days	8/2/24																	
99	Civil General Trades	2/8/24	122 days	7/26/24																	
100	Survey, Selective Demolition as Necessary	2/8/24	3 days	2/12/24																	
101	Form & Pour Houskeeping Pads	3/4/24	10 days	3/15/24																	
102	Patch Exterior Wall Penetrations	7/19/24	3 days	7/23/24																	
115	Electrical	3/21/24	21 days	4/18/24																	
116	Overhead Branch Conduit & Wire to Chillers #4 & #5	3/21/24	8 days	4/1/24																	
117	Overhead Branch Conduit & Wire tonn Mechaical Equipment, Lighting & Receptacles	4/2/24	6 days	4/9/24																	
118	Install Lights & Receptacles	4/10/24	4 days	4/15/24																	
119	Modify Existing Fire Alarm Sysyem	4/16/24	3 days	4/18/24																	
103	HVAC	6/21/24	31 days	8/2/24																	
104	HVAC Selective Demolition	6/21/24	2 days	6/24/24																	
105	Survey, Hanger&Support Install for HVAC Pipe & Equipment	6/26/24	5 days	7/2/24																	
106	Instal Boilers #4 & #5	7/3/24	7 days	7/11/24																	

Ferguson Companies					Preliminary Schedule Outline					RFP #7752 HVAC Upgrade WAMS and Palace Theater												
ID	Task Name	Start	Duration	Finish	S	O	N	D	2024	J	F	M	A	M	J	J	A					
107	Instal Boiler Flue & Combustion Air Duct	7/12/24	5 days	7/18/24																		
108	HVAC Main Piping	7/12/24	5 days	7/18/24																		
109	HVAC Piping Terminations	7/19/24	5 days	7/25/24																		
110	ReRoute Gas & WH Venting	7/19/24	3 days	7/23/24																		
113	ATC Rough	7/19/24	3 days	7/23/24																		
114	ATC Terminations & Devices	7/24/24	3 days	7/26/24																		
111	HVAC Testing	7/26/24	1 day	7/26/24																		
112	HVAC Insulation	7/22/24	5 days	7/26/24																		
120	Roof Top	2/22/24	106 days	7/18/24																		
121	Civil	2/22/24	8 days	3/4/24																		
122	Selective Demolition for Installation of Chiller Curb	2/22/24	3 days	2/26/24																		
123	Set Curbs for Chillers #4 & #5	2/27/24	3 days	2/29/24																		
124	Patch at Roof Curbs	3/1/24	2 days	3/4/24																		
125	Mechanical	6/11/24	28 days	7/18/24																		
126	Set Chillers #5 & #5	6/11/24	3 days	6/13/24																		
127	Pipe Chillers	6/14/24	20 days	7/11/24																		
129	Cortrols Terminations at Chillers	6/14/24	3 days	6/18/24																		
128	Insulate Roof Top Piping	7/12/24	5 days	7/18/24																		
130	Electrical	6/14/24	4 days	6/19/24																		
131	Power Connections to Chillers #4 & #5	6/14/24	4 days	6/19/24																		
132	WAMS	1/2/24	132 days?	7/3/24																		
133	Main Level	1/2/24	120 days?	6/17/24																		
134	Civil	1/2/24	14 days	1/19/24																		
135	Selective Demolition	1/2/24	5 days	1/8/24																		

Ferguson Companies			Preliminary Schedule Outline			RFP #7752 HVAC Upgrade WAMS and Palace Theater													
ID	Task Name	Start	Duration	Finish	2024														
					S	O	N	D	J	F	M	A	M	J	J	A			
136	Survey, Set Hangers & Supports	1/9/24	5 days	1/15/24															
137	Remove Exterior Grate & Handrail	1/16/24	1 day	1/16/24															
138	Install Exterior Grate & Handrail	1/17/24	1 day	1/17/24															
139	Removal of Louver	1/18/24	1 day	1/18/24															
140	Removal of Generator Exhaust	1/19/24	1 day	1/19/24															
141	Mechanical	1/9/24	65 days	4/8/24															
142	Demo HVAC Piping	1/9/24	5 days	1/15/24															
143	Demo HVAC Boilers	1/16/24	4 days	1/19/24															
144	Demo HVAC Chillers	1/22/24	4 days	1/25/24															
145	Demo HVAC Pumps & Accessories	1/26/24	4 days	1/31/24															
146	HVAC In Wall & OH Piping	2/1/24	25 days	3/6/24															
147	ATC Rough	3/7/24	15 days	3/27/24															
148	Installation of Boilers	3/28/24	5 days	4/3/24															
149	Installation of Louvers	4/4/24	3 days	4/8/24															
150	Electrical	1/16/24	110 days?	6/17/24															
153	Overhead Feeder Conduit & Wire to Main Level	9/25/23	10 days	10/6/23															
154	Overhead Branch Conduit & Wire to Mechanical Equipment & Lighting	10/9/23	5 days	10/13/23															
155	Wire Termination at VFDs, Pumps, Boioler & Lighting	10/16/23	2 days	10/17/23															
151	Overhead Conduit & Wire to 2nd Floor	1/16/24	7 days	1/24/24															
152	Overhead Branch Conduit & Wire to Mech Equipment & Ligtingk	1/25/24	7 days	2/2/24															
156	* Install New Switchboard Section	6/11/24	5 days	6/17/24															
157	Second Floor	1/22/24	53 days	4/3/24															

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* Provide new breakers in Existing Switchboard for Chiller's #1 & #2.

Ferguson Companies					Preliminary Schedule Outline					RFP #7752 HVAC Upgrade WAMS and Palace Theater											
ID	Task Name	Start	Duration	Finish	S	O	N	D	2024 J	F	M	A	M	J	J	A					
158	Civil	1/22/24	10 days	2/2/24																	
159	Selective Demolition	1/22/24	3 days	1/24/24																	
160	Survey, Set Hangers & Supports	1/25/24	7 days	2/2/24																	
169	Electrical	2/20/24	8 days	2/29/24																	
170	Install Breaker In Existing Panels Area F	2/20/24	2 days	2/21/24																	
171	Overhead Branch to Mech Equipment & Receptacles Area F	2/22/24	2 days	2/23/24																	
172	Wire Termiantions at Mech Equipment & Receptacles Area F	2/26/24	2 days	2/27/24																	
173	Overhead Feeder Conduit & Wire to Third Floor Area	2/28/24	2 days	2/29/24																	
161	Mechanical	3/7/24	20 days	4/3/24																	
162	Selective Demolition	3/7/24	4 days	3/12/24																	
163	Survey, Set Hangers & Supports	3/13/24	2 days	3/14/24																	
164	Instal HP1	3/15/24	2 days	3/18/24																	
165	Install TY 1 & 2	3/19/24	5 days	3/25/24																	
166	Refrigeration Piping Install	3/26/24	2 days	3/27/24																	
167	HVAC Testing	3/28/24	5 days	4/3/24																	
168	ATC Rough	3/28/24	5 days	4/3/24																	
184	Fourth Floor	1/25/24	66 days	4/25/24																	
185	Civil	1/25/24	57 days	4/12/24																	
186	Selective Demolition	1/25/24	3 days	1/29/24																	
187	F/R/P Housekeeping Pad	1/30/24	10 days	2/12/24																	
188	Survey, Set Hangers& Supports	4/10/24	3 days	4/12/24																	
189	Mechanical	3/13/24	32 days	4/25/24																	

Ferguson Companies					Preliminary Schedule Outline					RFP #7752 HVAC Upgrade WAMS and Palace Theater												
ID	Task Name	Start	Duration	Finish	S	O	N	D	2024	J	F	M	A	M	J	J	A					
190	HVAC Pipe Demolition	3/13/24	4 days	3/18/24																		
191	HVAC Piping In Wall & Overhead Rough	4/15/24	5 days	4/19/24																		
192	Install Buffer Tank #3	4/22/24	2 days	4/23/24																		
193	ATC Rough	4/24/24	2 days	4/25/24																		
194	Electrical	4/10/24	3 days	4/12/24																		
195	Overhead Conduit & Wire to Roof [Feeds to Rooftop Equipment]	4/10/24	3 days	4/12/24																		
174	Third Floor	2/5/24	15 days	2/23/24																		
175	Civil	2/5/24	12 days	2/20/24																		
176	Selective Demolition	2/5/24	5 days	2/9/24																		
177	Survey, Set Hangers & Supports	2/12/24	7 days	2/20/24																		
178	Mechanical	2/12/24	10 days	2/23/24																		
179	Selective Demolition	2/12/24	3 days	2/14/24																		
180	Cut & Cap Chilled Water S&R	2/15/24	2 days	2/16/24																		
181	Demove/Remove [2] Cooling Towes	2/19/24	5 days	2/23/24																		
182	Electrical	2/21/24	3 days	2/23/24																		
183	Overhead Conduit & Wire to Roof [Feeds to Rooftop Equipment]	2/21/24	3 days	2/23/24																		
196	Fifth Floor	3/19/24	51 days	5/28/24																		
197	Civil	3/19/24	21 days	4/16/24																		
198	Selective Demolition	3/19/24	6 days	3/26/24																		
199	F/R/P Housekeeping Pad	3/27/24	10 days	4/9/24																		
200	Survey, Set Hangers&Supports	4/10/24	5 days	4/16/24																		
206	Electrical	4/15/24	29 days	5/23/24																		


Ferguson Companies					Preliminary Schedule Outline					RFP #7752 HVAC Upgrade WAMS and Palace Theater											
ID	Task Name	Start	Duration	Finish	S	O	N	D	2024	J	F	M	A	M	J	J	A				
207	Installatin of Elec Distribution Equip Panels & Transformers	4/15/24	6 days	4/22/24																	
208	Feeder Conduit & Wire to Panels & Tranformers	4/23/24	8 days	5/2/24																	
209	Feeder Conduit & Wire to Chillers #1 & #2	5/3/24	7 days	5/13/24																	
210	Branch Conduit & Wires to VFDs & Receptacles	5/14/24	5 days	5/20/24																	
211	Wire Terminations at VFDs, Chillers, Pumps & Recept	5/21/24	3 days	5/23/24																	
201	Mechanical	4/17/24	30 days	5/28/24																	
203	Install New Pumps [4]	4/17/24	3 days	4/19/24																	
204	Install New XT2 & BT 1 & 2	4/22/24	3 days	4/24/24																	
202	HVAC Piping In Wall & Overhead Rough	4/24/24	15 days	5/14/24																	
205	ATC Rough	5/15/24	10 days	5/28/24																	
212	Rooftop	3/27/24	71 days	7/3/24																	
213	Civil	3/27/24	61 days	6/19/24																	
214	Open Roof at Designated Areas	3/27/24	2 days	3/28/24																	
215	Install Chiller Dunnage Framing	3/29/24	15 days	4/18/24																	
216	Patch Roof at Chiller Dunnage	6/14/24	2 days	6/17/24																	
217	Exterior Wall Brick Modifications	6/18/24	2 days	6/19/24																	
218	Mechanical	6/18/24	12 days	7/3/24																	
219	Set Chillers 1 & 2	6/18/24	5 days	6/24/24																	
220	Install Chillers 1 & 2 Piping	6/25/24	5 days	7/1/24																	
221	Insulate Piping	7/2/24	2 days	7/3/24																	
222	Electrical	6/25/24	4 days	6/28/24																	
223	Wire Terminations Chiller #1 & #2	6/25/24	4 days	6/28/24																	



MEMORANDUM

DATE: December 8, 2023

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

FROM: Nicholas J. Albini, Chief Operating Officer 

RE: Executive Summary for the Construction Contract for the Conversion of the Weight Room and Firing Range at Crosby High School in Physical Education Space with All Trade Industries, LLC

All Trade Industries, LLC was awarded the contract for the conversion of the weight room and firing range at Crosby High School into physical education space. The contract is based on a predetermined scope of work, which includes removal and disposal of the existing dilapidated fitness equipment, installation of a new condensing unit on the complex roof with roof patching and all thermal and moisture protection, installation of fabric ductwork for fresh air distribution, and installation of additional fire alarm devices tying into the existing system. Equipment ordering has long lead times due to supply chain issues.

The contract was initiated under RFP#7900 and the project is being funded through the American Rescue Plan Act/Elementary and Secondary Schools Emergency Relief funds (ARPA/ESSER). The total agreement amount is \$743,050, which includes an owner controlled contingency. Work shall be completed in 180 days.

The Education Department will have a representative present at your upcoming meeting to answer any questions you may have regarding this matter. Thank you for your consideration.

c: Mike Konopka, Dave Heavener, Jake Schick, Amy Hunihan

**Construction Contract
for
Conversion of the Crosby High School
Weight Room and Firing Range
into
Physical Education Space
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 (the "City") and **ALL TRADE INDUSTRIES, LLC**, located at 94 Edwin Avenue, Waterbury, Connecticut 06702, 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. 7900** for a construction project converting the weight room and firing range at Crosby High School into physical education space (the "Project").

WHEREAS the City accepted the Contractor's bid for **RFP No. 7900**; 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 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 converting the weight room and firing range at Crosby High School (300 Pierpont Road) into physical education space. 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. 7900**;
- 1.1.2 Addendum 1 to **RFP No. 7900** (attached hereto);
- 1.1.3 Contractor's Price Proposal (revised), dated November 22, 2023, consisting of one page (attached hereto);
- 1.1.4 Contractor's Response with associated attachments to **RFP No. 7900**, dated November of 2023, consisting of 121 pages (attached hereto);
- 1.1.5 "City of Waterbury, Board of Education, **RFP No. 7900**, "Scope of Services" (also referred to as "Technical Specifications"), consisting of 298 pages and dated August 21, 2023, which are accessible through the link contained in **RFP No. 7900**;
- 1.1.6 "Site Map" with List of Drawings prepared by Studio JAED, consisting of 8 pages, and specifications, dated August 21, 2023, consisting of 298 pages which are accessible through the link contained in **RFP No. 7900**;
- 1.1.7 State of Connecticut Prevailing Wage Schedule dated October 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 **Attachments B** and **C**) 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. 7900**;
- 1.2.5 **RFP No. 7900** including City of Waterbury, Board of Education, **RFP No. 7900**, 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 the 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.

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. 7900** (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 it.

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 an 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 fifty (150) consecutive calendar days** of the City's written Notice to Proceed and shall reach Final Completion within **one hundred eighty (180) 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 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 **SEVEN HUNDRED FORTY-THREE THOUSAND FIFTY DOLLARS (\$743,050)** (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. \$663,050 (base payment, inclusive of allowance); and
- ii. \$80,000- **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 Contract 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 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. 7900** shall be borne solely 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 the 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 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 known 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.

11.5. 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 OPPORTUNITY; 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 title.

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 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 (vi) 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. 7900** and (ii) the Contractor's Bid response to **RFP No. 7900**, dated November 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 owed 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 the 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.

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

WITNESSES:

CITY OF WATERBURY

By: _____
Paul K. Pernerewski, Mayor

Date: _____

WITNESSES:

ALL TRADE INDUSTRIES, LLC



By: 
Giovanni Orsini, Manager

Eric Bordett

Date: 12-27-23

ATTACHMENT A

ATTACHMENT B

ATTACHMENT C

**REQUEST FOR PROPOSAL NO. 7900
BY
THE CITY OF WATERBURY
DEPARTMENT OF EDUCATION
FOR
CONVERSION OF WEIGHT ROOM AND FIRING RANGE
AT
CROSBY HIGH SCHOOL INTO PHYSICAL EDUCATION SPACE**

The City of Waterbury, Department of Education (hereinafter "City"), is seeking proposals from third parties ("proposer" or "contractor", depending on context) to provide all labor, materials, tools and equipment for a project converting the weight room and firing range at Crosby High School into physical education space (hereinafter "Project"), all as more particularly detailed and described herein.

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

[Crosby HS Weight Room Conversion Bid Documents](#)

A. Background and Intent

The Waterbury Board of Education ("BOE") is seeking to engage a qualified contractor to provide **ALL** new work for renovations to the existing Crosby High School weight room and firing range necessary to convert it into physical education space. The 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 of Connecticut Department of Education. The BOE anticipates a portion of the ESSER funding will be appropriated by the Board of Education 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; and
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 to the existing Crosby High School weight room and firing range to convert same into physical edcutationspace, all as required by the contract documents, including but not limited to the following:**
 - a. All General Requirements;
 - b. All Demolition;
 - c. All Concrete Work
 - d. All Masonry;
 - e. All Thermal and Moisture Protection
 - All required roof patching for the installation of new condensing unit on existing roof;
 - f. All Finishes;
 - g. All Heating, Ventilation and Air Conditioning Work;
 - h. All Electrical Work; and
 - i. All Fire Alarm Work.
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 **six (6) months** from issuance of the notice to proceed with the Project.

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. **If a proposer did not attend the mandatory information session conducted for RFP No. 7753, then there will be a Mandatory Information Session for this RFP on October 31, 2023, at 10:00 a.m. at Crosby High School, 300 Pierpont Road, Waterbury, Connecticut. UNLESS THE INFORMATION SESSION FOR RFP NO. 7753 WAS ATTENDED, THOSE NOT ATTENDING THE INFORMATION SESSION WILL NOT BE ELIGIBLE TO SUBMIT A PROPOSAL.**
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 November 3, 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 November 7, 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 **one hundred twenty (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 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 November 13, 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. In **Attachment C**, proposers shall also 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 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.

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 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 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](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 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

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			
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

LIMITED LIABILITY 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

ATTACHMENT B

**Construction Contract
for
Conversion of the Crosby High School
Weight Room and Firing Range
into
Physical Education Space
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. 7900** for a construction project converting the weight room and firing range at Crosby High School into physical education space (the "Project").

WHEREAS the City accepted the Contractor's bid for **RFP No. 7900**; 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 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 converting the weight room and firing range at Crosby High School (300 Pierpont Road) into physical education space. 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. 7900**;
 - 1.1.2 Addendums _ through _ to **RFP No. 7900** (attached hereto);
 - 1.1.3 Contractor's Price Proposal, dated _____, 2023, consisting of one page (attached hereto);
 - 1.1.4 Contractor's Response with associated attachments to **RFP No. 7900**, dated _____, 2023, consisting of _ pages, (attached hereto);
 - 1.1.5 "City of Waterbury, Board of Education, **RFP No. 7900**, Attachment _ "Scope of Services" (also referred to as "Technical Specifications"), consisting of 298 pages and dated August 21, 2023, which are accessible through the link contained in **RFP No. 7900**;
 - 1.1.6 "Site Map" with List of Drawings prepared by Studio JAED, consisting of 8 pages, and specifications, dated August 21, 2023, consisting of 298 pages which are accessible through the link contained in **RFP No. 7900**;
 - 1.1.7 State of Connecticut Prevailing Wage Schedule dated October 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 **Attachments B** and **C**) 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. 7900**;
- 1.2.5 **RFP No. 7900** including City of Waterbury, Board of Education, **RFP No. 7900**, Attachment _ 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 the 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.

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. 7900** (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 it.

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 an 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 fifty (150) consecutive calendar days** of the City's written Notice to Proceed and shall reach Final Completion within **one hundred eighty (180) 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 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
- iii. N/A (change orders, if any).

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 Contract 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 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. 7900** shall be borne solely 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 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 known 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.

11.5. 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 OPPORTUNITY; 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 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 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. 7900** and (ii) the Contractor's Bid response to **RFP No. 7900**, 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.

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 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 owed 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.

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

WITNESSES:

WITNESSES:

CITY OF WATERBURY

By: _____
Neil M. O'Leary, Mayor

Date: _____

_____, LLC

By: _____

Date: _____

ATTACHMENT A

ATTACHMENT B

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-VII."

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 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, *director's*, 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 and Professional Liability. All policies shall include a Waiver of Subrogation except Builders Risk.

ATTACHMENT E

**ATTACHMENT E
PRICING PROPOSAL**

Crosby High School Weight Room Conversion

RFP#7900

1. General Conditions	\$
2. Demolition	\$
3. Concrete	\$
4. Masonry	\$
5. Doors/Frames/Hardware	\$
5. Painting	\$
6. Flooring	\$
7. Heating, Ventilation and Cooling	\$
8. Electrical	\$
9. Fire Alarm	\$
10. Allowance for Patch & Repair Cracks and holes in walls in floors	\$ 10,000.00
TOTAL BASE BID	\$
Schedule of Unit Prices	
Cost per square foot for patching and repairing cracks/holes in walls beyond the \$10,000.00 allowance listed in item #10 above.	\$ /Square Foot
Cost per square foot for patching and repairing cracks/holes in Floors beyond the \$10,000.00 allowance listed in item #10 above.	\$ /Square Foot

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)

ATTACHMENT F

Minimum Rates and Classifications
for Building Construction

ID#: 23-54044

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: 7900 Project Town: Waterbury
State#: FAP#:
Project: Conversion of Existing Weight Room & Firing Range to PE Space at Crosby 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

-----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: October 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: October 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: October 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
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Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	41.69	27.80 + a
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Group 12: Wellpoint Operator.	41.61	27.80 + a
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Group 13: Compressor Battery Operator.	40.92	27.80 + a
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Group 14: Elevator Operator; Tow Motor Operator (solid tire no rough terrain).	39.54	27.80 + a
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Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	39.06	27.80 + a
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Group 16: Maintenance Engineer.	38.28	27.80 + a
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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
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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
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-----PAINTERS (Including Drywall Finishing)-----

10a) Brush and Roller	37.62	24.55
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10b) Taping Only/Drywall Finishing	38.37	24.55
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As of: October 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: October 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 journeyman 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

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: October 19, 2023

As of: October 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



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 ULTIMATELY ARISE CONCERNING 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										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		DAY AND DATE						Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY																										
						S	M	T	W	TH	F	S				FICA	FEDERAL	STATE	LIST OTHER																												
				Trade License Type & Number - OSHA 10 Certification Number												Total O/T Hours	TOTAL FRINGE BENEFIT PLAN CASH																														
HOURS WORKED EACH DAY																																															
												\$ Base Rate	1. \$ 2. \$ 3. \$																																		
												\$ Cash Fringe	4. \$ 5. \$ 6. \$																																		
												\$ Base Rate	1. \$ 2. \$ 3. \$																																		
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12/9/2013												*IF REQUIRED												*SEE REVERSE SIDE												PAGE NUMBER ____OF											
WWS-CP1																																															

***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)

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	DAY AND DATE							Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				S	M	T	W	TH	F	S	FICA				FEDERAL	STATE	OTHER			
			Trade License Type & Number - OSHA								Total	TOTAL FRINGE BENEFIT PLAN								
			10 Certification Number	HOURS WORKED EACH DAY							O/T Hours	CASH								
												\$ Base Rate	1. \$							
													2. \$							
													3. \$							
													4. \$							
													5. \$							
													6. \$							
												\$ Cash Fringe	1. \$							
													2. \$							
													3. \$							
													4. \$							
													5. \$							
													6. \$							
												\$ Base Rate	1. \$							
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												\$ Cash Fringe	1. \$							
													2. \$							
													3. \$							
													4. \$							
													5. \$							
													6. \$							

12/9/2013
WWS-CP2

*IF REQUIRED

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

PAGE NUMBER ____ OF

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. RESILIENT 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, assemble, install and repair 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, fascia, 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 required 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 notwithstanding, 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 (journey person 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)



OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #1

November 7, 2023

RFP 7900 Conversion of Weight Room and Firing Range into Phys Ed Space/Crosby H.S.

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:

Changes to Drawings:

Electrical

1. Drawing E-000

- a. Changed the horn strobe to a speaker strobe in the symbol legend.
- b. Added that the existing fire alarm control panel is a Notifier NFS-3030, voice evac,
and addressable.

2. Drawing E-101

- a. Changed all horn strobes to speaker strobes.

Please refer to the questions and answers below.

Question: What is the Model number of the Fire panel?

Answer: The panel is a Notifier panel M/N NFS3030. Refer to attached drawings which indicate model number, etc.

Question: Who is responsible for removing the existing weight room equipment?

Answer: Contractor shall include removal of existing weight room equipment under Item #2 Demolition on the pricing proposal sheet.

Question: Will there be a lead abatement needed for this project?

Answer: Abatement has previously been performed in this space, contractor shall include testing to ensure that there is no additional lead in the project scope.

Question: Who is the fire alarm service provider of record for the school?

Answer: FCS is the new Fire Alarm Service Provider and should be engaged for this project.

Question: Will the newly/added fire alarm devices burden the fire system?

Answer: The newly added fire alarm devices will not burden the fire alarm system.

Question: Is the fire system Addressable or conventional?

Answer: The fire system is addressable.

Question: Will touching the fire system in any way void a pre-existing warranty with the fire alarm service provider?

Answer: No, Contractor shall coordinate new scope with FCS, fire service provider.

Question: What is the point of contact for the fire service provider (name and phone number)?

Answer: ITS 1-800-487-6290

FCS 1-203-440-0550

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

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 AND A COMPLETE ESTIMATION. 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 PRIOR TO 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.
3. 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.
4. REPAIR AND PATCH ANY DISTURBED AREAS TO MATCH ADJACENT CONSTRUCTION.
5. DISCONNECT AND MAKE SAFE ANY EQUIPMENT TO BE REMOVED BY OTHERS. COORDINATE REMOVAL OF EQUIPMENT WITH OTHER TRADES PRIOR TO DEMOLITION.
6. 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.
7. PRIOR TO THE START OF DEMOLITION, CONTRACTOR SHALL FIELD VERIFY ALL BRANCH CIRCUITS AND MAINTAIN THOSE CIRCUITS THAT EXTEND OUTSIDE THE SCOPE OF WORK.
8. 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.
9. ALL ELECTRICAL WORK INDICATED TO REMAIN SHALL BE SUITABLY PROTECTED TO PREVENT ANY DAMAGE.
10. 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.
11. CONTRACTOR SHALL SUBMIT FOR REVIEW, SHOP DRAWINGS FOR ALL EQUIPMENT AND MATERIALS USED ON THE PROJECT. SUBMITTALS SHALL BE REVIEWED BY THE ENGINEER BEFORE FURNISHMENT OF MATERIALS.
12. ALL WIRING SHALL BE COPPER, 600V, 75/90° RATED WITH FLAME-RETARDANT, HEAT AND MOISTURE RESISTANT INSULATION.
13. 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.
14. 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.
15. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION THAT IS NOT SHOWN ON THE DRAWINGS.
16. OPENINGS IN EXISTING CONCRETE AND MASONRY WALLS AND FLOORS REQUIRED FOR CONDUIT INSTALLATION SHALL BE CORE DRILLED. MAXIMUM CORE DRILL SIZE SHALL BE 1/2" 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.
17. ALL OUTGAGES SHALL BE KEPT TO A MINIMUM. ALL WORK THAT REQUIRES A SUSTAINED EQUIPMENT OUTAGE SHALL BE SURFACE MOUNTED WITH CIRCUIT BREAKER AND THE CLOCK UNTIL WORK IS COMPLETED UNLESS NOTED OTHERWISE. COORDINATE OUTGAGES WITH OWNER REPRESENTATIVE.
18. PROVIDE FOR EACH BRANCH CIRCUIT AND FEEDER CIRCUIT A DEDICATED EQUIPMENT GROUND WIRE. FOR SINGLE PHASE BRANCH CIRCUITS OF 120 V/200 PH 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 OUTDOOR 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 PROVIDED IN EITHER EMT CONDUIT OR FLEXIBLE METAL CONDUIT. DO NOT USE PLASTIC TIE WRAPS TO SUPPORT CONDUITS AND CABLES. MC CABLE SHALL BE SUPPORTED AT MAXIMUM OF 6'-0" WITH MAXIMUM OF 4'-0" BETWEEN SUPPORTS. PROVIDE SUPPORT CLAMPS, J-HOOKS, OR METAL CABLE BRACKETS.
19. PROVIDE IDENTIFICATION LABELS FOR ALL BRANCH CIRCUITS AND FEEDERS CIRCUITS AT JUNCTION BOXES, PANELBOARDS, TROUGHS, AND SPLICER BOXES.
20. PROVIDE UNSHIELDED FEEDERS FROM PANELBOARD OR SWITCHBOARD TO ALL EQUIPMENT, INCLUDING ALL 20 AMPERE, SINGLE POLE BRANCH CIRCUIT WIRING.
21. 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.
22. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL (1) #14-3 (FROM EACH VENDOR SUPPLIED DUCT SMOKE DETECTOR TO EACH VENDOR SUPPLIED DUCT SMOKE DETECTOR) AND (2) #14-3 (FROM EACH ELECTRICAL CONTRACTOR SUPPLIED ALARM, NECESSARY ELECTRICAL TERMINATIONS, EACH BLOWER COIL (BO) AND EACH ENERGY RECOVERY VENTILATOR (ERV) WILL HAVE (1) SUPPLY DUCT SMOKE DETECTOR AND (1) RETURN DUCT SMOKE DETECTOR.
23. VFD CABLE SHALL BE TYPE MC-HL (XHHW), 3/0 VFD CABLE SHALL BE RATED FOR 600 VAC WITH 2000 VOLT INSULATION WITHSTAND AND UL LISTED AS TYPE MC-HL PER UL2225-838916. VFD CABLES SHALL HAVE UNCOATED SOFT COPPER STRANDS CONDUCTORS RATED FOR 90 DEG CENTIGRADE WET DRY VOLT. CROSS LINK POLYETHYLENE HIGH DIELECTRIC STRENGTH INSULATION CONDUCTOR AND THREE BARE SOFT STRANDED COPPER CONDUCTORS WITH NON-HYDROSCOPIC FILLER AND BINDER PASTE. SHEATH SHALL BE CLOSE FITTING, IMPERVIOUS, CONTINUOUS WELDED CORRUGATED ALUMINUM CL-XL PER UL9596. SHEATH SHALL BE PROTECTED WITH LOW TEMPERATURE BLACK PVC JACKET. CONTRACTOR SHALL PROVIDE PROPER FITTINGS FOR INSTALLATION OF VFD CABLE.
24. ALL CONDUIT PENETRATIONS THROUGH WALLS OR CEILINGS SHALL BE PATCHED AND SEALED WITH FIRE RATED FOAM SEALANT.
25. PROVIDE INSULATING BUSHINGS ON CONDUIT THREADED OR CONNECTORS WHERE RACEWAYS WITH CONDUITS OR MC CABLES ENTER A BOX OR ENCLOSURE. THIS BUSHING SHALL BE INSTALLED ON ALL CABLES AND CONDUITS.
26. 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.
27. 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.












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, BOX, BASKETS, SLEEVES, CHASSES, CABLE TRAY AND J-HOOKS. ANY PENETRATION OF 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 EXISTING CONDITIONS ON WHICH HIS 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 HINDER 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 RACEWAY OR WALL ITSELF.
18. PROVIDE AND LEAVE ACCESSIBLE PULL STRINGS IN ALL CONDUITS, FLOORS, SLEEVES AND CHASSES 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 PRICE 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, 4 PAIRS, UNSHIELDED TWISTED PAIR CABLE, HUBBELL CAT NO 600P OR EQUIV. ROUTED BETWEEN TELEDATA 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" LF) FOR CONNECTION OF PATCH PANEL TO FUTURE ETHERNET SWITCH. CONTRACTOR SHALL NOTIFY/TERMINATE ALL CONNECTIONS. PROVIDE ADDITIONAL CAT6a PATCH PANEL(S) IN MDP OR IDF, AS APPLICABLE, AS REQUIRED TO SUPPORT ADDITIONAL DATA CONNECTIONS IN MDP/IDF. DATA PATCH PANELS SHALL BE HUBBELL MN H9460 OR APPROVED EQUIV.
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)
DATA	R06	MATCH EXISTING (COORDINATE WITH OWNER)
25. CONNECT TELECOMMUNICATION OUTLETS TO APPROPRIATE MDP/IDF IN ACCORDANCE WITH OWNERS REQUIREMENTS AND DIRECTION.

ELECTRICAL SYMBOL LEGEND










Power Devices

	GENERAL PURPOSE DUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP (MIN.)
	GENERAL PURPOSE QUADRUPLX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP (MIN.)
  	GENERAL PURPOSE GFCI RECEPTACLE (DUPLEX OR QUADRUPLX) - 20AMP, 125VOLTS, NEMA5-20R, TAMPER RESISTANT. ELECTRICAL BOX TO BE 2-1/8" DEEP
	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 DRASTIC ALUMINUM BOX 2-1/8" DEEP (MIN.) AND WHILE IN USE WEATHERPROOF COVER; THOMASBATES CSXSV OR APPROVED EQUAL.
	JUNCTION BOX
	FRACTIONAL HORSEPOWER MOTOR STARTER WITH OVERLOAD IN NEMA 1 ENCLOSURE; 50D FGCP OR APPROVED EQUAL FOR INDORS, FWPZ FOR OUTDOORS WITH NEMA 1 ENCLOSURE
	FUSED DISCONNECT SWITCH-HEAVY DUTY, 3POLE WITH FUSE CLIPS SUITABLE FOR CLASS "R" FUSES, NEMA UNLESS NOTED. WP/WEATHER PROOF-NEAR ELEC. ENCLOSURE (NONCUMULATIVE: 30A/20A - SWITCH SIZE/FUSE SIZE), 30 < CLASS 215 OR EQUAL, DO NOT INSTALL ON TOP OF EQUIPMENT LABELS OR NAMEPLATES.
	COMBINATION MAGNETIC STARTER, FUSEBLE DISCONNECT SWITCH TYPE; 3POLE, FULL VOLTAGE NON-REVERSIBLE TYPE WITH FUSE, MOTOR TRANSFORMER, BI-METALLIC OVERLOAD RELAYS, ON/OFF PUSH BUTTONS OR HAND-OFF-AUTO SELECTOR SWITCH, 110V (114V C. - AUXILIARY COUNTERS AND LED PILOT LIGHT, CLASS "R" FUSE CLIPS, NEMA 1 ENCLOSURE UNLESS NOTED; 50 D CLASS 8538 OR EQUAL, NEMA 1 - SEE TYPE 1 UNLESS NOTED OTHERWISE.
	VFD - SUPPLIED BY VENDOR, INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECTRICAL GENERAL NOTE #31 ON THIS SHEET FOR VFD CABLE REQUIREMENTS.








Lighting Controls



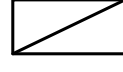
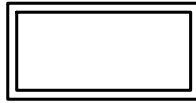

	LIGHT SWITCH - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
	KEYED WALL SWITCH (3-WAY) - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
	SLIDER DIMMER WITH ON/OFF SWITCH, RATED FOR 120/277V - 105 AMP, 1/60/60HZ OR APPROVED EQUAL, CLOSING TO BE SELECTED BY ARCHITECT. PROVIDE LOW VOLTAGE WIRING BETWEEN SWITCH AND LIGHT FIXTURES.
	MOTION SENSOR, CULMINA MOUNTED, 2000 SOFT - HUBBELL / CDMN-01-2000 OR APPROVED EQUAL, PROVIDE LOW VOLTAGE WIRING TO POWER PACK.
	POWER PACK - HUBBELL / UNYP OR APPROVED EQUAL, PROVIDE LOW VOLTAGE WIRING TO MOTION SENSOR. CONNECT TO LOCAL LIGHTING CIRCUIT WITH 2#12 - #12/3 - 3/4" C WIRING.

Fire Alarm Devices

	FIRE ALARM CONTROL PANEL
  	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.
	CONTROL RELAY - PROVIDE A CONTROL RELAY WITH EACH DUCT DETECTOR. PROVIDE LOW VOLTAGE WIRING TO FACP.
	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.
	FIELD CONFIGURABLE NOTIFICATION DEVICE (AUDIO/VISUAL), - MOUNT SPEAKER WITH STROBE AS SINGLE ASSEMBLY, REQUIRED CANNDA RATING "X" INDICATED "X" 60".
	MANUAL STATION - PULL STATION/FIRE ALARM BOX
	DETECTION DEVICE - SMOKE DETECTOR - PHOTOELECTRIC PRODUCTS OF COMBUSTION DETECTOR

Communication Devices

	TYPE CX TELECOMMUNICATION OUTLET - DATA WIRING DEVICE WITH RJ45, CAT5 JACKS. PROVIDE A 4-PAIR, CAT4 CABLE BETWEEN EACH JACK AND IDF. (TR) ROOM FROM ADJACENT SLACK FOR FINAL TERMINATION TO NETWORK OR TELEPHONE PATCH PANEL. NUMBER INSCRIBED IN TRIANGLE SHOWS NUMBER OF JACKCROSSES AT THAT OUTLET LOCATION. ELECTRICAL BOX 2-1/8" DEEP. SEE TYPE CX TELECOMMUNICATION OUTLET DETAIL ON SHEET E-500.
	TYPE C2 TELECOMMUNICATION OUTLET - (CWAP), - 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 - TYPE C2 TELECOMMUNICATION OUTLET. CONTRACTOR TO SHOW, SEE TYPE C2 TELECOMMUNICATION OUTLET DETAIL ON SHEET E-500. P. OWNER SUPPLIED, CONTRACTOR INSTALLED POLYCARBONATE ENCLOSURE.
	PA SPEAKER - CALL-IN SWITCH - PROVIDE WALL MOUNTED, SURFACE MOUNT PA SPEAKER, CALL-IN SWITCH BY VALCOM OR APPROVED EQUAL. CALL-IN SWITCH SHALL HAVE STAINLESS STEEL FACELATE WITH CALL BUTTON AND ADJUSTABLE VOLUME CONTROL. CALL-IN SWITCH SHALL BE COMPATIBLE WITH SCHOOL'S PA SYSTEM AND ASSOCIATED SPEAKER. CONNECT CALL-IN SWITCH TO SCHOOLS 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 SURFACE MOUNT METAL ELECTRICAL JUNCTION BOX ON WALL IN WHICH TO INSTALL CALL-IN SWITCH AND THE APPLICABLE CABLE. PROVIDE SURFACE MOUNT EMT CONDUIT FROM WALL TO WALL TO CLOSEST POINT AT WHICH CABLEING CAN BE HIDDEN IN WALLS AND ABOVE CEILING TO ASSOCIATED SPEAKER AND HEAD END, AS APPLICABLE. IN CASES WHERE CABLEING CANNOT BE CONCEALED, IT SHALL BE RUN IN EMT. ENSURE PROPER TWO WAY OPERATION WITH SCHOOL'S PA SYSTEM. MOUNT AT 48" AFF.
	CLOCK - WALL MOUNT, PROVIDE ANALOG WIREED 12 INCH CLOCK BY VALCOM OR APPROVED EQUAL. CLOCK SHALL BE CONSTRUCTED OF A ROUND METAL CASE WITH SHATTER-PROOF POLYCARBONATE CRYSTAL. CLOCK SHALL BE COMPATIBLE WITH SCHOOL CLOCKS SYSTEM. CONNECT CLOCK TO SCHOOLS'S CLOCKS SYSTEM TO ALLOW FOR PROPER CONTROL BY THE SCHOOLS'S MASTER CLOCK AS WELL AS POWER TO RUN THE CLOCK. PROVIDE SURFACE MOUNT EMT CONDUIT FROM CLOCK ON WALL TO CLOSEST POINT AT WHICH CABLEING CAN BE HIDDEN BY ADJACENT CEILINGS, WALLS, ETC. ALL CABLEING SHALL BE RUN CONCEALED IN WALLS AND ABOVE CEILING TO MASTER CLOCK, AS APPLICABLE. IN CASES WHERE CABLEING CANNOT BE CONCEALED, IT SHALL BE RUN IN EMT. ENSURE PROPER TWO WAY OPERATION WITH SCHOOLS'S CLOCK SYSTEM. MOUNT CLOCK AT 7'-6" AFF UNLESS OTHERWISE SHOWN OR INDICATED. W5: PROVIDE MANUFACTURER SUPPLIED WIRE GRILL IN FRONT OF SPEAKER.
	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 GRILL. SPEAKER SHALL BE COMPATIBLE WITH SCHOOL'S PA SYSTEM. CONNECT SPEAKER TO SCHOOLS'S PA SYSTEM TO ALLOW FOR ONE WAY COMMUNICATIONS THROUGH THE SPEAKER. PROVIDE SURFACE MOUNT EMT CONDUIT FROM SPEAKER ON WALL TO CLOSEST POINT AT WHICH CABLEING CAN BE HIDDEN BY ADJACENT CEILINGS, WALLS, ETC. ALL CABLEING SHALL BE RUN CONCEALED IN WALLS AND ABOVE CEILING TO ASSOCIATED SPEAKER AND HEAD END, AS APPLICABLE. IN CASES WHERE CABLEING CANNOT BE CONCEALED, IT SHALL BE RUN IN EMT. ENSURE PROPER TWO WAY OPERATION WITH SCHOOLS'S PA SYSTEM. SPEAKER SHALL COVERHIDE THE ABOVE MENTIONED JUNCTION BOX. MOUNT SPEAKER AT 7'-6" AFF UNLESS OTHERWISE SHOWN OR INDICATED. W5: PROVIDE MANUFACTURER SUPPLIED WIRE GRILL IN FRONT OF SPEAKER.
	PA SPEAKER - PROVIDE ONE 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 GRILL. SPEAKER SHALL BE COMPATIBLE WITH SCHOOL'S PA SYSTEM. CONNECT SPEAKER TO SCHOOLS'S PA SYSTEM TO ALLOW FOR ONE WAY COMMUNICATIONS THROUGH THE SPEAKER. PROVIDE SURFACE MOUNT EMT CONDUIT FROM SPEAKER ON WALL TO CLOSEST POINT AT WHICH CABLEING CAN BE HIDDEN BY ADJACENT CEILINGS, WALLS, ETC. ALL CABLEING SHALL BE RUN CONCEALED IN WALLS AND ABOVE CEILING TO ASSOCIATED SPEAKER AND HEAD END, AS APPLICABLE. IN CASES WHERE CABLEING CANNOT BE CONCEALED, IT SHALL BE RUN IN EMT. ENSURE PROPER ONE WAY OPERATION WITH SCHOOLS'S PA SYSTEM. SPEAKER SHALL COVERHIDE THE ABOVE MENTIONED JUNCTION BOX. MOUNT SPEAKER AT 7'-6" AFF UNLESS OTHERWISE SHOWN OR INDICATED. W5: PROVIDE MANUFACTURER SUPPLIED WIRE GRILL IN FRONT OF SPEAKER. ADJUST VOLUME IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AS DIRECTED BY OWNER.

GRAPHIC CONVENTIONS	
<h3>Wiring Devices</h3>  <p>  PLA-11 </p> <p> HOMERUN PANEL DESIGNATION BRANCH CIRCUIT DESIGNATION </p> <p>OUTLETS TO BE MOUNTED AT STANDARD HEIGHT UNLESS OTHERWISE NOTED</p>	<h3>Disconnects</h3>  <p> 30A, WP DISCONNECT SIZE, WP: WEATHER PROOF </p> <p> 20A, RK1 FUSE SIZE, TYPE RK1 </p>
<h3>Lighting Fixtures</h3>  <p> TYPE: A LUMINAIRE TYPE - SEE LIGHT FIXTURE SCHEDULE PLA-11-a </p> <p> CONTROL DEVICE IDENTIFICATION BRANCH CIRCUIT NUMBER PANEL DESIGNATION </p>	<h3>Lighting Switches</h3>  <p> CONTROL DEVICE IDENTIFICATION </p> <p> DEVICE TYPE DESIGNATION </p>

(ID) - DENOTES EQUIPMENT OR WIRING TO BE DEMOLISHED	KVA - KILO VOLT AMPERE
(E) - DENOTES EXISTING EQUIPMENT OR WIRING TO REMAIN	LG - LOG CORRELATION
NJ - DENOTES NEW EQUIPMENT OR WIRING	LI - LONG TIME + INSTANTANEOUS
	LSI - LONG TIME + SHORT TIME + INSTANTANEOUS
A - AMPS	MCB - MAIN CIRCUIT BREAKER
AF - AMPERE FRAME	MDP - MAIN DISTRIBUTION PANEL
AFB - ABOVE FINISHED FLOOR	MTS - MANUAL TRANSFER SWITCH
AT - AMPERE TRIP	MVSS - MEGH VOLT AMPERE SHORT CIRCUIT
ATS - AUTOMATIC TRANSFER SWITCH	OC - ON CENTER
BLDG - BUILDING	PH - PHASE
C - CONDUIT	QF - CIRCUIT PROTECTION
CB - CIRCUIT BREAKER	SF - SURGE PROTECTIVE DEVICE
ENCL - ENCLOSURE	SW - SWITCH
FA - FIRE ALARM	SWBO - SWITCHBOARD
G - GROUND	UG - UNDERGROUND
GE - GENERAL ELECTRIC	V - VOLTS
KA - KILO AMPERE	W - WATTS OR WIRE
KV - KILO VOLT	Z - IMPEDANCE

LIGHTING FIXTURE SCHEDULE						
TYPE	LAMPS	VOLTAGE	MOUNT	FIXTURE DESCRIPTION	MANUFACTURER/CATALOG NUMBER	REMARKS
A	LED 5000LM 35% UP 64% DOWN	120/277	SUSPENDED	4' LONG x 3.5" APERTURE, LINEAR INDIRECT-DIRECT, FIXTURE	FINELITE? HP-Q-P-ID-4-S-H-840-W850-F-120-DC-FC-10%-FA50-CA-FE-XX OR APPROVED EQUIVA.	PROVIDE WITH MOUNTING HARDWARE.
B	LED 1968 LUMENS	120/277	SURFACE	4' LONG x 4" APERTURE, LINEAR DIRECT FIXTURE	FINELITE? HP4-SM-D-4-S-B-840-F-960-G-120-DC-FC-10%-CA-FE-XX-EF OR APPROVED EQUIVA.	PROVIDE WITH MOUNTING HARDWARE. PROVIDE CUSTOM END CAP FEED WITH 7/8" KO.
EM	3WATT LED HEADS	120/277	SURFACE	EMERGENCY LIGHT FIXTURE WITH BATTERY BACKUP AND WIRE GUARD	DUALITE/ LM-031-405 OR APPROVED EQUIVA.	PROVIDE WITH MOUNTING HARDWARE.

PROVIDE NEW FIRE ALARM SYSTEM DEVICES AND CONNECT TO EXISTING FIRE ALARM SYSTEMS (CROSBY HIGH SCHOOL FACP - NOTIFIER NFS-3030, VOICE EVAC, ADDRESSABLE) (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.

THIS DRAWING IS THE PROPERTY OF STUDIOJAE
AND IS PREPARED FOR THE EXCLUSIVE USE OF IT.
CLIENTS AT THE LOCATION INDICATED. NO OTHER
USE IS AUTHORIZED OR INTENDED.

WATERBURY PUBLIC SCHOOLS ROOM & FIRING RANGE CONVERSION TO PHYSICAL EDUCATION SPACE

[illegible]ELECTRICAL COVER
SHEET

ISSUED FOR BID		
AUGUST 21, 2023		
DRAWN TMC	CHK'D JD	PROJECT NO. 23049

E-000



- | <u>ELECTRICAL NEW WORK NOTES:</u> | |
|-----------------------------------|--|
| 1. | PROVIDE NEW LIGHT FIXTURES AND NEW LIGHTING CONTROL DEVICES WITH NEW WIRE AND CONDUIT. |
| 2. | PROVIDE NEW FIRE ALARM DEVICES WITH NEW WIRE AND CONDUIT. |
| 3. | PROVIDE NEW RECEPTACLES WITH NEW WIRE AND CONDUIT. |
| 4. | PROVIDE POWER TO NEW AHU WITH NEW DISCONNECT SWITCH, VFD, WIRE, AND CONDUIT. PROVIDE POWER TO NEW MOD'S WITH NEW WIRE AND CONDUIT. |

**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 to 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 LEP 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.

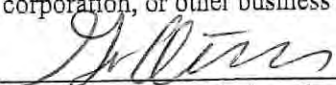
The undersigned acknowledges receipt of addenda numbered: (insert date)

1 ADDENDUM 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.

13-4219057
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-VII".

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 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, *director's*, 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 and Professional Liability. All policies shall include a Waiver of Subrogation except Builders Risk.

ATTACHMENT E

ATTACHMENT E PRICING PROPOSAL

Crosby High School Weight Room Conversion

RFP#7900

1. General Conditions	\$ 60,000
2. Demolition	\$ 44,000
3. Concrete	\$ 9,000
4. Masonry	\$ 7,500
5. Doors/Frames/Hardware	\$ 2,000
5. Painting	\$ 22,200
6. Flooring	\$ 67,000
7. Heating, Ventilation and Cooling	\$ 220,000
8. Electrical	\$ 200,000
9. Fire Alarm	\$ 29,350
10. Allowance for Patch & Repair Cracks and holes in walls in floors	\$ 10,000.00
TOTAL BASE BID	\$ 671,050.00
Schedule of Unit Prices	
Cost per square foot for patching and repairing cracks/holes in walls beyond the \$10,000.00 allowance listed in item #10 above.	\$ 12.00 /Square Foot
Cost per square foot for patching and repairing cracks/holes in Floors beyond the \$10,000.00 allowance listed in item #10 above.	\$ 12.00 /Square Foot

Estimated Lead Time for Major Equipment: (how many weeks)

AFTER APPROVALS AND SIGN OFF OF SHOP DRAWINGS, LIGHTING 10-12 WEEKS AIR HANDLER 15-18 WEEKS AND THE DUCT SOCK 7-10 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.

13-4219057
Social Security Number or Federal Identification
Number

ALL TRADE INDUSTRIES
Company Name


Signature of Individual or Corporate Name

Corporate Officer (if applicable)

ATTACHMENT F

Project: Conversion of Existing Weight Room & Firing Range to PE Space at Crosby High School

**Minimum Rates and Classifications
for Building Construction**

ID#: 23-54044

**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: 7900

Project Town: Waterbury

State#:

FAP#:

Project: Conversion of Existing Weight Room & Firing Range to PE Space at Crosby 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: October 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, fireproofers/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: October 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

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: October 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
-----FAINTERS (Including Drywall Finishing)-----		
10a) Brush and Roller	37.62	24.55
10b) Taping Only/Drywall Finishing	38.37	24.55

As of: October 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: October 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)).

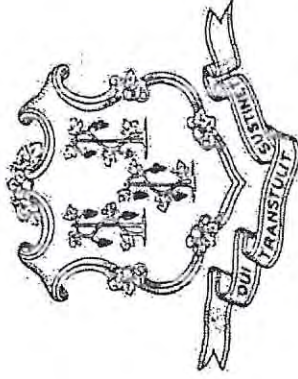
Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: October 19, 2023

As of: October 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)



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 ULTIMATELY ARISE CONCERNING 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, GIOVANNI ORSINI of ALL TRADE INDUSTRIES LLC
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the ALL TRADE INDUSTRIES
Company Name
94 EDWIN AVE
Street
WATERBURY CT
City

and all of its subcontractors will pay all workers on the

CONVERSION OF WEIGHT ROOM AND FIRING RANGE #7900
Project Name and Number

300 PIERPONT RD WATERBURY CT 06705
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

G. Orsini
Signed

Subscribed and sworn to before me this 13th day of November, 2023.

[Signature]
Notary Public

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): OCT 19, 2023

<div style="display: flex; justify-content: space-between;"> <div> <p>In accordance with Connecticut General Statutes, § 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.</p> </div> <div> <p>PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS</p> <p>WEEKLY PAYROLL</p> </div> <div> <p>Connecticut Department of Labor Wage and Workplace Standards Division 200 Folly Brook Blvd. Wethersfield, CT 06109</p> </div> </div>																									
CONTRACTOR NAME AND ADDRESS:				PROJECT NAME & ADDRESS				SUBCONTRACTOR NAME & ADDRESS																	
PAYROLL NUMBER		Week-Ending Date		POLICY #																					
PERSON/WORKER ADDRESS and SECTION		APPR RATE / MALE / FEMALE AND RACE*		WORK CLASSIFICATION		DAY AND DATE					Total ST Hours		Total OT Hours		GROSS PAY FOR ALL WORK PERFORMED THIS WEEK		TOTAL DEDUCTIONS		GROSS PAY FOR THIS PREVAILING RATE JOB		CHECK # AND NET PAY				
				S		M		T		W		TH		F		S		FICA		FEDERAL STATE		LIST OTHER			
				Trade License Type & Number - OSHA 10 Certification Number		HOURS WORKED EACH DAY																			

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:									
PERSON/WORKER, ADDRESS and SECTION		APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE				Total ST Hours	Base Hourly Rate	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS			GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY												
					S	M	T	W					TH	F	S			FICA	WITH- HOLDING	STATE	LIST OTHER								
					HOURS WORKED EACH DAY				Total OYT Hours	TOTAL FRINGE BENEFIT PLAN CASH	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$																		
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											Cash Fringe																		

**Construction Contract
for
Conversion of the Crosby High School
Weight Room and Firing Range
into
Physical Education Space
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. 7900** for a construction project converting the weight room and firing range at Crosby High School into physical education space (the "Project").

WHEREAS the City accepted the Contractor's bid for **RFP No. 7900**; 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 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 converting the weight room and firing range at Crosby High School (300 Pierpont Road) into physical education space. 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. 7900;
 - 1.1.2 Addendums _ through _ to RFP No. 7900 (attached hereto);
 - 1.1.3 Contractor's Price Proposal, dated _____, 2023, consisting of one page (attached hereto);
 - 1.1.4 Contractor's Response with associated attachments to RFP No. 7900, dated _____, 2023, consisting of _ pages, (attached hereto);
 - 1.1.5 "City of Waterbury, Board of Education, RFP No. 7900, Attachment _ "Scope of Services" (also referred to as "Technical Specifications"), consisting of 298 pages and dated August 21, 2023, which are accessible through the link contained in RFP No. 7900;
 - 1.1.6 "Site Map" with List of Drawings prepared by Studio JAED, consisting of 8 pages, and specifications, dated August 21, 2023, consisting of 298 pages which are accessible through the link contained in RFP No. 7900;
 - 1.1.7 State of Connecticut Prevailing Wage Schedule dated October 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 **Attachments B** and **C**) 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. 7900;
- 1.2.5 RFP No. 7900 including City of Waterbury, Board of Education, RFP No. 7900, Attachment _ 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 the 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.

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. 7900 (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 it.

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 an 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 fifty (150) consecutive calendar days** of the City's written Notice to Proceed and shall reach Final Completion within **one hundred eighty (180) 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 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
- iii. N/A (change orders, if any).

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 Contract 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 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. 7900 shall be borne solely 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 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 known 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.

11.5. 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 OPPORTUNITY; 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 title.

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 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 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. 7900 and (ii) the Contractor's Bid response to RFP No. 7900, 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.

32. Governing Laws. This Contract, its terms and conditions and any claims arising therefrom 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 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 owed 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.

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

ATTACHMENT B

FINAL FORM CONSTRUCTION CONTRACT for use in RFP No. 7900
JPY 10.20.23

ATTACHMENT C

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11

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, PILEDRIVMEN. 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, assemble, install and repair 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, fascia, 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 required 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 notwithstanding, 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)

MAUREEN McCauley
ASSISTANT DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #1

November 7, 2023

RFP 7900 Conversion of Weight Room and Firing Range into Phys Ed Space/Crosby H.S.

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:

Changes to Drawings:

Electrical

1. Drawing E-000

- a. Changed the horn strobe to a speaker strobe in the symbol legend.
- b. Added that the existing fire alarm control panel is a Notifier NFS-3030, voice evac, and addressable.

2. Drawing E-101

- a. Changed all horn strobes to speaker strobes.

Please refer to the questions and answers below.

Question: What is the Model number of the Fire panel?

Answer: The panel is a Notifier panel M/N NFS3030. Refer to attached drawings which indicate model number, etc.

Question: Who is responsible for removing the existing weight room equipment?

Answer: Contractor shall include removal of existing weight room equipment under Item #2 Demolition on the pricing proposal sheet.

Question: Will there be a lead abatement needed for this project?

Answer: Abatement has previously been performed in this space, contractor shall include testing to ensure that there is no additional lead in the project scope.

Question: Who is the fire alarm service provider of record for the school?

Answer: FCS is the new Fire Alarm Service Provider and should be engaged for this project.

Question: Will the newly/added fire alarm devices burden the fire system?

Answer: The newly added fire alarm devices will not burden the fire alarm system.

Question: Is the fire system Addressable or conventional?

Answer: The fire system is addressable.

Question: Will touching the fire system in any way void a pre-existing warranty with the fire alarm service provider?

Answer: No, Contractor shall coordinate new scope with FCS, fire service provider.

Question: What is the point of contact for the fire service provider (name and phone number)?

Answer: ITS 1-800-487-6290

FCS 1-203-440-0550

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.

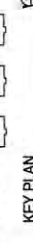
Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

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LIGHTING FIXTURE			
TYPE	LAMP	VOLTAGE	WARRANTY
A	LED DOWN LIGHT DOWN	120V	5 YEARS / 50,000 HOURS WARRANTY
B	LED DOWN LIGHT DOWN	120V	5 YEARS / 50,000 HOURS WARRANTY
2A	SPRINKLER HEAD	120V	5 YEARS / 50,000 HOURS WARRANTY

[illegible]



All Trade Industries LLC.

94 Edwin Avenue

Waterbury, Conn. 06708

General Construction

alltradeindustries.com

Phone : 203-759-5709

Fax: 203-759-0987

All Trade Industries was organized 2/10/2003

All Trade Industries legal form is an LLC.

All Trade Industries has been in Business 20 years.

Giovanni Orsini 50% Member

Fran McCormack 50% Member

ATI, we provide turnkey single-source solutions to all your capital project needs. We will conduct site visits, outline project scope, provide project timelines, supervise and monitor project while in progress, provide quality inspections during and at completion of project, conduct customer satisfaction surveys and deliver the end project on time and within budget.

Enterprise Rent a Car new location (650,000), provided demo, sitework and complete renovation to the existing building. Start 1/21 end 11/21 John Petri 203-834-5000 Regional Manager

Enterprise Truck Rental new location (450,000), provided demo, sitework and complete renovation to the existing building start 12/22 end 4/23 Kevin Kolstad 860-250-8104 Regional Manager

Cornerstone reality (350,000) New office location Start 3/21 end 10/21 Jake Albert 203-598-5083 Vice President

Information regarding failure to complete work, default and litigation:
NO



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

10/31/2023

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
Smith Brothers Insurance, LLC.
68 National Drive
Glastonbury, CT 06033

CONTACT NAME: Krystle Murray

PHONE
(A/C, No, Ext): (860) 430-3324FAX
(A/C, No): (860) 652-3236E-MAIL
ADDRESS: kmurray@smithbrothersusa.com

INSURER(S) AFFORDING COVERAGE

NAIC #

INSURER A: Continental Western Insurance

10804

INSURER B: Selective Insurance Co of NE

11867

INSURER C:

INSURER D:

INSURER E:

INSURER F:

INSURED

All Trade Industries, LLC
94 Edwin Ave
Waterbury, CT 06708

COVERAGES

CERTIFICATE NUMBER:

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	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			S 2580632	11/1/2023	11/1/2024	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			S2580632	11/1/2023	11/1/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ 0			S 2580632	11/1/2023	11/1/2024	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N If yes, describe under DESCRIPTION OF OPERATIONS below		N/A	WC9126239	11/1/2023	11/1/2024	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER 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)
Re: 435 Main Street, Farmington, CT 06032.

CERTIFICATE HOLDER

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

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

Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

Bid Bond

CONTRACTOR:

(Name, legal status and address)

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

OWNER:

(Name, legal status and address)

City of Waterbury
235 Grand Street
Waterbury, CT 06702

SURETY:

(Name, legal status and principal place of business)

Nationwide Mutual Insurance Company

1100 Locust Street, Dept. 2006

Des Moines, IA 50391-2006

Mailing Address for Notices

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

BOND AMOUNT: 10% Ten Percent of Amount Bid

PROJECT:

(Name, location or address, and Project number, if any)

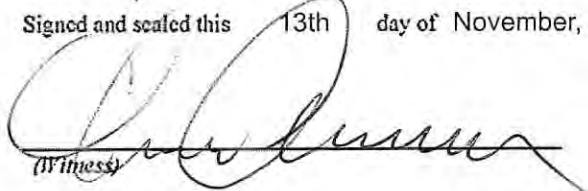
Conversion of Weight Room and Firing Range at Crosby High School into Physical Education Space - Proposal No. 7900

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 13th day of November, 2023.


(Witness)

All Trade Industries, LLC

(Principal)

(Seal)

By: 

(Title)

MEMBER

Nationwide Mutual Insurance Company

(Surety)

(Seal)

By: 

(Title) Wendy Krystopa, Attorney-in-Fact



Power of Attorney

KNOW ALL MEN BY THESE PRESENTS THAT:

Nationwide Mutual Insurance Company, an Ohio corporation

hereinafter referred to severally as the "Company" and collectively as "the Companies" does hereby make, constitute and appoint:

Wendy Krystopa

each in their individual capacity, its true and lawful attorney-in-fact, with full power and authority to sign, seal, and execute on its behalf any and all bonds and undertakings, and other obligatory instruments of similar nature, in penalties not exceeding the sum of: Unlimited

Surety Bond Number: Bid Bond
Principal: All Trade Industries, LLC
Obligee: City of Waterbury

and to bind the Company thereby, as fully and to the same extent as if such instruments were signed by the duly authorized officers of the Company; and all acts of said Attorney pursuant to the authority given are hereby ratified and confirmed.

This power of attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the board of directors of the Company:

"RESOLVED, that the president, or any vice president be, and each hereby is, authorized and empowered to appoint attorneys-in-fact of the Company, and to authorize them to execute and deliver on behalf of the Company any and all bonds, forms, applications, memorandums, undertakings, recognizances, transfers, contracts of indemnity, policies, contracts guaranteeing the fidelity of persons holding positions of public or private trust, and other writings obligatory in nature that the business of the Company may require; and to modify or revoke, with or without cause, any such appointment or authority; provided, however, that the authority granted hereby shall in no way limit the authority of other duly authorized agents to sign and countersign any of said documents on behalf of the Company."

"RESOLVED FURTHER, that such attorneys-in-fact shall have full power and authority to execute and deliver any and all such documents and to bind the Company subject to the terms and limitations of the power of attorney issued to them, and to affix the seal of the Company thereto; provided, however, that said seal shall not be necessary for the validity of any such documents."

This power of attorney is signed and sealed under and by the following bylaws duly adopted by the board of directors of the Company.

Execution of Instruments. Any vice president, any assistant secretary or any assistant treasurer shall have the power and authority to sign or attest all approved documents, instruments, contracts, or other papers in connection with the operation of the business of the company in addition to the chairman of the board, the chief executive officer, president, treasurer or secretary; provided, however, the signature of any of them may be printed, engraved, or stamped on any approved document, contract, instrument, or other papers of the Company.

IN WITNESS WHEREOF, the Company has caused this instrument to be sealed and duly attested by the signature of its officer the 20th day of August, 2021.



Antonio C. Albanese, Vice President of Nationwide Mutual Insurance Company

ACKNOWLEDGMENT

STATE OF NEW YORK COUNTY OF NEW YORK: ss

On this 20th day of August, 2021, before me came the above-named officer for the Company aforesaid, to me personally known to be the officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, deposes and says, that he is the officer of the Company aforesaid, that the seal affixed hereto is the corporate seal of said Company, and the said corporate seal and his signature were duly affixed and subscribed to said instrument by the authority and direction of said Company.



Stephanie Rubino McArthur
Notary Public, State of New York
No. 02MC6270117
Qualified in New York County
Commission Expires October 19, 2024

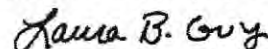


Notary Public
My Commission Expires
October 19, 2024

CERTIFICATE

I, Laura B. Guy, Assistant Secretary of the Company, do hereby certify that the foregoing is a full, true and correct copy of the original power of attorney issued by the Company; that the resolution included therein is a true and correct transcript from the minutes of the meetings of the boards of directors and the same has not been revoked or amended in any manner; that said Antonio C. Albanese was on the date of the execution of the foregoing power of attorney the duly elected officer of the Company, and the corporate seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority of said board of directors; and the foregoing power of attorney is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of said Company this 13th day of November, 2023.



Assistant Secretary

REQUEST FOR PROPOSAL NO. 7900
BY
THE CITY OF WATERBURY
DEPARTMENT OF EDUCATION
FOR
CONVERSION OF WEIGHT ROOM AND FIRING RANGE
AT
CROSBY HIGH SCHOOL INTO PHYSICAL EDUCATION SPACE

The City of Waterbury, Department of Education (hereinafter "City"), is seeking proposals from third parties ("proposer" or "contractor", depending on context) to provide all labor, materials, tools and equipment for a project converting the weight room and firing range at Crosby High School into physical education space (hereinafter "Project"), all as more particularly detailed and described herein.

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

Crosby HS Weight Room Conversion Bid Documents

A. Background and Intent

The Waterbury Board of Education ("BOE") is seeking to engage a qualified contractor to provide ALL new work for renovations to the existing Crosby High School weight room and firing range necessary to convert it into physical education space. The 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 of Connecticut Department of Education. The BOE anticipates a portion of the ESSER funding will be appropriated by the Board of Education 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; and
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 to the existing Crosby High School weight room and firing range to convert same into physical edcutationspace, all as required by the contract documents, including but not limited to the following:
 - a. All General Requirements;
 - b. All Demolition;
 - c. All Concrete Work;
 - d. All Masonry;
 - e. All Thermal and Moisture Protection
 - All required roof patching for the installation of new condensing unit on existing roof;
 - f. All Finishes;
 - g. All Heating, Ventilation and Air Conditioning Work;
 - h. All Electrical Work; and
 - i. All Fire Alarm Work.
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 **six (6) months** from issuance of the notice to proceed with the Project.

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. If a proposer did not attend the mandatory information session conducted for RFP No. 7753, then there will be a Mandatory Information Session for this RFP on October 31, 2023, at 10:00 a.m. at Crosby High School, 300 Pierpont Road, Waterbury, Connecticut. **UNLESS THE INFORMATION SESSION FOR RFP NO. 7753 WAS ATTENDED, THOSE NOT ATTENDING THE INFORMATION SESSION WILL NOT BE ELIGIBLE TO SUBMIT A PROPOSAL.**
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 November 3, 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 November 7, 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 **one hundred twenty (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 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 November 13, 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. In **Attachment C**, proposers shall also 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 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.

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 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. Proposer's 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 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](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 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

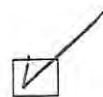
ATTACHMENT A

CITY OF WATERBURY
ANNUAL STATEMENT OF FINANCIAL INTERESTS (Calendar Year 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



(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 202³)
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 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**

☒

(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.

ALL TRADE INDUSTRIES LLC
(Name of Company, if applicable)

Giani Oyster
Signature of Individual (or Authorized Signatory)

11-13-23
Date

MEMBER
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 principals 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:

ALL TRADE INDUSTRIES
94 EDWIN AVE
WATERBURY CT.
GIORGIO ORSIMI
MEMBER

Date: 11-13-23

**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.: _____

County of New Haven

Giovanni Orsini, being first duly sworn, deposes and says that:

1. I am the **owner, partner, officer, representative, agent or** GIOVANNI ORSINI of ALLTRAE INDUSTRIES LLC (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

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			
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: GIORGIO ORSINI
Name of General Partner/ Sole Proprietor

94 EDWIN AVE
Address of Business

State of CT)
) SS

County of New Haven)

GIORGIO ORSINI being duly sworn,
Deposes and says that he/she is MANAGER of ALL TRADE INDUSTRIES and that
he/she answers to the foregoing questions and all statements therein are true and
correct.

Subscribed and sworn to before me this 13th day of November 2023

ANNE GUERRERA
NOTARY PUBLIC

(Notary Public)

My Commission Expires: My Commission Expires Jan. 31, 2027

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 CT)

) SS

County of New Haven)

GIOVANNI ORSTINI being duly sworn,
deposes and says that he/she is MEMBER of ALL TRADE INDUSTRIES and
that he/she answers to the foregoing questions and all statements therein are true and
correct.

Subscribed and sworn to before me this 13th day of Nov 2023.

ANNE GUERRERA
NOTARY PUBLIC

My Commission Expires Jan. 31, 2027

(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

LIMITED LIABILITY COMPANY RESOLUTION


I, GIORGIO ORSINI, hereby certify that I am the duly authorized and acting Member / Manager (circle one) of ALL TRADE INDUSTRIES limited liability company organized and existing under the laws of the State of CONNECTICUT, 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 13 day of NOVEMBER 2023.

"It is hereby resolved that GIORGIO ORSINI 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 All Trade Industries, LLC this 13th day of November, 2023.



Manager/Member

ATTACHMENT B

ATTACHMENT E PRICING PROPOSAL

Crosby High School Weight Room Conversion

REVISED
11-22-23

RFP#7900


1. General Conditions	\$	58,000
2. Demolition	\$	44,000
3. Concrete	\$	8,500
4. Masonry	\$	7,000
5. Doors/Frames/Hardware	\$	2,000
5. Painting	\$	22,200
6. Flooring	\$	67,000
7. Heating, Ventilation and Cooling	\$	217,500
8. Electrical	\$	197,500
9. Fire Alarm	\$	29,350
10. Allowance for Patch & Repair Cracks and holes in walls in floors	\$ 10,000.00	
TOTAL BASE BID	\$	663,050.00
Schedule of Unit Prices		
Cost per square foot for patching and repairing cracks/holes in walls beyond the \$10,000.00 allowance listed in item #10 above.	\$	/Square Foot 12.00
Cost per square foot for patching and repairing cracks/holes in Floors beyond the \$10,000.00 allowance listed in item #10 above.	\$	/Square Foot 12.00

Estimated Lead Time for Major Equipment: (how many weeks)

AFTER APPROVALS AND SIGN OFF OF
SHOP DRAWINGS, LIGHTING 10-12 WEEKS
AIR HANDLER 15-18 WEEKS AND THE DUCT
SOCK 7-10 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.

 11-22-23

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

DATE: December 21, 2023

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

FROM: Nicholas J. Albini, Chief Operating Officer 

RE: Executive Summary for the HVAC Replacement at John F. Kennedy High School with Ferguson Mechanical Company

Ferguson Mechanical Company was awarded the contract for the HVAC replacement at Kennedy High School. The contract is based on a predetermined scope of work, which includes removal and replacement of HVAC equipment (air handler units), accessories (ductwork, fireproofing, moisture protection) and associated electrical equipment at John F. Kennedy High School. Equipment ordering has long lead times due to supply chain issues.

The contract was initiated under RFP#7858 and the project is being funded through the American Rescue Plan Act/Elementary and Secondary Schools Emergency Relief funds (ARPA/ESSER). The total agreement amount is \$5,862,000 with a base of \$5,747,000 and an owner controlled contingency of \$115,000. Work shall be completed in one year.

The Education Department will have a representative present at your upcoming meeting to answer any questions you may have regarding this matter. Thank you for your consideration.

c: Mike Konopka, Dave Heavener, Jake Schick, Amy Hunihan

JPY 1.3.23

**Construction Contract
for
HVAC Replacement
at
John F. Kennedy High School
between
City of Waterbury
and
Ferguson Mechanical Company, 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 **FERGUSON MECHANICAL COMPANY, INC.**, located at 112 Northwest Drive, Plainville, Connecticut 06062, a duly registered Connecticut corporation (the "Contractor").

WHEREAS the Contractor submitted a bid to the City in response to **Request for Proposal ("RFP") No. 7858** for HVAC replacement at John F. Kennedy High School (the "Project"); and

WHEREAS the City accepted the Contractor's bid for **RFP No. 7858**; and

WHEREAS the City desires to obtain the Contractor's services pursuant to the terms set forth in this Contract for 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 "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 John F. Kennedy High School at 422 Highland Avenue 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

JPY 1.3.23

made a part hereof:

- 1.1.1 City's **RFP No. 7858**, incorporated by reference;
 - 1.1.2 Addendums 1 through 4 to **RFP No. 7858** (attached hereto);
 - 1.1.3 Contractor's Price Proposal (revised), dated December 12, 2023, consisting of 1 page (attached hereto);
 - 1.1.4 Contractor's Response with associated attachments to **RFP No. 7858**, dated November of 2023, consisting of 51 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. 7858**, 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 AI Engineers, Inc., consisting of 40 pages, dated August 8, 2023, and plans and project specifications, dated August 8, 2023, consisting of 298 pages (see Attachment A, which contains the link to the Site Map);
 - 1.1.8 State of Connecticut Prevailing Wage Schedule dated September 25, 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

JPY 1.3.23

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. 7858**;
- 1.2.5** **RFP No. 7858** including City of Waterbury, Board of Education, **RFP No. 7858, 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:

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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. 7858** (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;

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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.

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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

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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

JPY 1.3.23

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 **on or before December 1, 2024** and shall reach Final Completion **on or before December 31, 2024** ("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 ensure full completion

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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 **FIVE MILLION EIGHT**

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HUNDRED SIXTY-TWO THOUSAND DOLLARS (\$5,862,000) (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. \$5,747,000 (base payment); and
- ii. \$115,000 - 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 Contract 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

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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. 7858** 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.

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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.

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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, including the Board of Education, as well as 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 or 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

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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.

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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 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:

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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, **\$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 or 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, Department of Education and KBE Building Corporation, and all affiliated entities and each of their respective members, managers, partners, agents, officers,

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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 OPPORTUNITY; 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

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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:

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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 contract awarded to the Contractor is funded in whole or in part by state funds.

12.4.3 The Contractor shall be subject to the following set-aside requirements if the municipal public works contract, 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

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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:

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(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

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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

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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

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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.

- i. The Contractor shall meet with the Administrator no less than four (4) weeks prior to the commencement of construction on a Covered

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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; and

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

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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

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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

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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

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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.

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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

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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

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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. 7858** and (ii) the Contractor's Bid response to **RFP No. 7858**, dated November 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 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.

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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: Ferguson Mechanical Company, Inc.
112 Northwest Drive
Plainville, CT 06062

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

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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 owed 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

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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.

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- 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.

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

WITNESSES:

CITY OF WATERBURY

By: _____
Paul K. Pernerewski, Mayor

Date: _____

WITNESSES:

**FERGUSON MECHANICAL
COMPANY, INC.**

By: _____
Ryan Ferguson, President.

Date: _____

FINAL CONTRACT with Ferguson for use in
RFP 7858 Kennedy HVAC Replacement

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ATTACHMENT A

JPY 1.3.23

ATTACHMENT B

FINAL CONTRACT with Ferguson for use in
RFP 7858 Kennedy HVAC Replacement

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ATTACHMENT C

**REQUEST FOR PROPOSAL
NUMBER 7858
BY
THE CITY OF WATERBURY
DEPARTMENT OF EDUCATION
FOR
HVAC EQUIPMENT REPLACEMENT
AT
JOHN F. KENNEDY HIGH SCHOOL**

Pursuant to this Request for Proposal ("RFP"), the City of Waterbury, Department of Education (the "City" or "BOE"), is seeking proposals from third parties (the "proposers" or "contractors", depending on context) for the removal and replacement of HVAC Equipment, accessories and associated electrical equipment at John F. Kennedy High School (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:

- John F. Kennedy High School

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

[Kennedy HS AHU Replacement Contract Drawings](#)

A. Background and Intent

The City is seeking to engage a qualified contractor to provide the removal and replacement of HVAC Equipment, accessories and associated electrical equipment at John F. Kennedy High School. Waterbury Public Schools 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 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 the use of such funds.

B. 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 removal and replacement of HVAC Equipment, accessories and associated electrical equipment listed above, as required by the contract documents, included but not limited to the following:**

- a. All General Requirements
- b. All Abatement
- c. All Demolition and Removal
- d. Sealing Penetrations through Existing Concrete
- e. Sealing Penetrations through Existing Masonry
- f. All Metals
 - Support for new HVAC equipment and openings shall be a delegated design by the awarded contractor.
- g. All Wood, Plastics and Composites
- h. All Thermal and Moisture Protection
 - Flashing and roofing repair with compatible materials to existing roof.
- i. Patching spray applied fire proofing removed for new ductwork supports.
- j. All Openings
- k. All Finishes
- l. All Specialties
- m. All Equipment
- n. All Furnishings
- o. All Heating, Ventilation and Air Conditioning
 - Awarded contractor shall provide a full building Testing, Adjusting and Balancing Report for all new mechanical equipment for the Project, as well as for the exhaust fan recently installed under a

separate project -- reference drawings titled "City of Wtby Kennedy HS Exh Fan Replacement – IFC" for quantity of exhaust fans to be balanced as part of this Project.

p. 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. 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 18, 2023, at 1:00 p.m. at John F. Kennedy High School, 422 Highland Ave, Waterbury, CT. ATTENDANCE AND ON-TIME SIGN-IN AT THE INFORMATION SESSION IS MANDATORY. THOSE LATE/NOT ATTENDING WILL NOT BE ELIGIBLE TO SUBMIT A PROPOSAL.**

List of Schools:

John F. Kennedy High School	422 Highland Ave
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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 24, 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 27, 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 November 2, 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. In **Attachment C**, proposers shall also 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 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-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:

http://www.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.

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.

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 OMB 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

As also stated above, 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 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

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			
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

LIMITED LIABILITY 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

ATTACHMENT B

JPY 10.5.23

**Construction Contract
for
HVAC Replacement
at
John F. Kennedy High 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. 7858** for HVAC replacement at John F. Kennedy High School (the "Project"); and

WHEREAS the City accepted the Contractor's bid for **RFP No. 7858**; and

WHEREAS the City desires to obtain the Contractor's services pursuant to the terms set forth in this Contract for 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 "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 John F. Kennedy High School at 422 Highland Avenue 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. **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:

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- 1.1.1 City's **RFP No. 7858**, incorporated by reference;
- 1.1.2 Addendums ___ and ___ to **RFP No. 7858** (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. 7858**, 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. 7858**, 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 AI Engineers, Inc., consisting of 40 pages, dated August 8, 2023, and plans and project specifications, dated August 8, 2023, consisting of 298 pages (see Attachment A, which contains the link to the Site Map);
- 1.1.8 State of Connecticut Prevailing Wage Schedule dated September 25, 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

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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. 7858**;
- 1.2.5** **RFP No. 7858** including City of Waterbury, Board of Education, **RFP No. 7858, 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:

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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. 7858** (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;

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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.

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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

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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

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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

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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.

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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 Contract 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.

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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.

6.4. Bid Costs. All costs of the Contractor in preparing its bid for **RFP No. 7858** 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

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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

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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, including the Board of Education, as well as 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 or 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 ,

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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.

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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.

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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, **\$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 or 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.

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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, Department 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 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 OPPORTUNITY; 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.

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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.

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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 contract awarded to the Contractor is funded in whole or in part by state funds.

12.4.3 The Contractor shall be subject to the following set-aside requirements if the municipal public works contract, is funded in whole or in part by the State of

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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.

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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

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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

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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:

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- 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

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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 title.
- 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

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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

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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).

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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.

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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.

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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

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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. 7858** and (ii) the Contractor's Bid response to **RFP No. 7858**, 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.

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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.

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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 owed to the City; (ii) filed the

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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.

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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.

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- 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.

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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: _____

FINAL FORM CONTRACT for use in RFP 7858
Kennedy HVAC Replacement

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ATTACHMENT A

FINAL FORM CONTRACT for use in RFP 7858
Kennedy HVAC Replacement

JPY 10.5.23

ATTACHMENT B

FINAL FORM CONTRACT for use in RFP 7858
Kennedy HVAC Replacement

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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 cancelled, 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 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 except Builders Risk.

ATTACHMENT E

ATTACHMENT E PRICING PROPOSAL

Replace HVAC – Kennedy High School

RFP#7858

1. General Conditions	\$
2. Asbestos Abatement	\$
3. Demolition	\$
4. Metals (including delegated design of support for HVAC equipment and openings)	\$
5. Thermal/Moisture Protection	\$
6. Fire Stopping / Fire proofing	\$
7. Heating, Ventilation and Cooling	\$
8. 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)

ATTACHMENT F

ID#: 23-53063 Connecticut Department of Labor
Wage and Workplace Standards

Project Number: 7858 Project Town: Waterbury
State#: FAP#:
Project: Replace AHU's: Kennedy High School

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	45.21	29.05
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	39.92	34.47
2) Carpenters, Piledrivermen	37.61	27.61
2a) Diver Tenders	37.61	27.61
3) Divers	46.07	27.61
03a) Millwrights	38.02	28.41
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	56.25	25.15
4a) Painters: Brush and Roller	37.62	24.55
4b) Painters: Spray Only	40.62	24.55

As of: September 25, 2023

4c) Painters: Steel Only	39.62	24.55
4d) Painters: Blast and Spray	40.62	24.55
4e) Painters: Tanks, Tower and Swing	39.62	24.55
4f) Elevated Tanks (60 feet and above)	46.62	24.55
5) Electrician (Trade License required: E-1,2 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
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	42.37	40.02 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (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
----LABORERS----		
8) Group 1: General Laborers and concrete specialist	33.5	25.59
8) Group 1a: Acetylene Burners (Hours worked with a torch)	34.5	25.59
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	33.75	25.59
10) Group 3: Pipelayers	34.0	25.59
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	34.0	25.59

As of: September 25, 2023

12) Group 5: Toxic waste removal (non-mechanical systems)	35.5	25.59
13) Group 6: Blasters	35.25	25.59
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	36.5	25.59
Group 8: Traffic control signalmen	20.1	25.59
Group 9: Hydraulic Drills	34.25	25.59
Group 10: Toxic Waste Removers A or B With PPE	36.5	25.59
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	35.73	25.59 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	34.76	25.59 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	34.76	25.59 + a
15) Form Erectors	35.09	25.59 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		

As of: September 25, 2023

16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	34.76	25.59 + a
17) Laborers Topside, Cage Tenders, Bellman	34.65	25.59 + a
18) Miners	35.73	25.59 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	42.22	25.59 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	42.02	25.59 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	40.04	25.59 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	42.81	25.59 + a
----TRUCK DRIVERS----(*see note below)		
Two Axle Trucks, Helpers	32.16	30.51 + a
Three Axle Trucks; Two Axle Ready Mix	32.27	30.51 + a
Three Axle Ready Mix	32.33	30.51 + a
Four Axle Trucks	32.39	30.51 + a
Four Axle Ready-Mix	32.44	30.51 + a

As of: September 25, 2023

Heavy Duty Trailer (40 tons and over)	34.66	30.51 + a
Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	32.44	30.51 + a
Heavy Duty Trailer (up to 40 tons)	33.39	30.51 + a
Snorkle Truck	32.54	30.51 + a
----POWER EQUIPMENT 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
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 Fine Grade (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).	46.64	27.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps;	45.92	27.80 + a

As of: September 25, 2023

Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	45.92	27.80 + a
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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	45.55	27.80 + a
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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
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Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	44.67	27.80 + a
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Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	44.14	27.80 + a
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Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	41.69	27.80 + a
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Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	41.69	27.80 + a
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Group 12: Wellpoint Operator.	41.61	27.80 + a
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Group 13: Compressor Battery Operator.	40.92	27.80 + a
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Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	39.54	27.80 + a
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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 CDL license).	40.54	27.80 + a

****NOTE: SEE BELOW**

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
23) Driver Groundmen	26.5	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76

----LINE CONSTRUCTION----

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20

As of: September 25, 2023

26) Heavy Equipment Operators	37.1	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

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 journeyman instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work
~~

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: September 25, 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.

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



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 ULTIMATELY ARISE CONCERNING 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										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		DAY AND DATE						Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY																										
						S	M	T	W	TH	F	S				FICA	FEDERAL	STATE	LIST OTHER																												
				Trade License Type & Number - OSHA 10 Certification Number												Total O/T Hours	TOTAL FRINGE BENEFIT PLAN CASH																														
HOURS WORKED EACH DAY																																															
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12/9/2013 WWS-CP1												*IF REQUIRED												*SEE REVERSE SIDE												PAGE NUMBER ____OF											

***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)

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	DAY AND DATE							Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				S	M	T	W	TH	F	S	FICA				FEDERAL	STATE	OTHER			
			Trade License Type & Number - OSHA									TOTAL FRINGE BENEFIT PLAN								
			10 Certification Number	HOURS WORKED EACH DAY							Total O/T Hours	CASH								
												\$ Base Rate	1. \$							
													2. \$							
													3. \$							
													4. \$							
													5. \$							
													6. \$							
												\$ Cash Fringe	1. \$							
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													6. \$							

12/9/2013
WWS-CP2

*IF REQUIRED

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

PAGE NUMBER ____ OF

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. RESILIENT 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, fascia, 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 notwithstanding, 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)

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #1

October 27, 2023

RFP 7858 HVAC Equipment Replacement JFK High School

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.

Please refer to the questions and answers below.

Question: What is the estimated Start + Completion date?

Answer: The estimated start date is January of 2024, the estimated completion date December 31, 2024.

Question: Are permit fees waived?

Answer: No, all applicable permit fees are the responsibility of the awarded contractor.

Question: Once the units are installed is there a Maintenance period required, separate from the 1 yr warranty? If so, please advise the length of time (1 year, 18 months etc)

Answer: Maintenance period is not required.

Thank you.

Maureen McCauley

Assistant Director of Purchasing – City of Waterbury

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
CONNECTICUT

ADDENDUM #2

October 30, 2023

RFP 7858 HVAC Equipment Replacement JFK High School

NOTE:

- 1) There will be a 2nd mandatory pre-bid meeting at 9:00AM on November 10, 2023 at John F. Kennedy High School, 422 Highland Ave, Waterbury, CT for those who did not attend the 10/18/2023 meeting.
- 2) The RFI period has been re-opened and will close on November 14, 2023 at 2:00PM.
- 3) Answers to questions will be posted by 2:00PM on November 17, 2023.
- 4) The proposal due date has been changed to November 29, 2023 at 11:30AM.

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

MAUREEN McCAULEY
ASSISTANT DIRECTOR OF PURCHASING



OFFICE OF THE DIRECTOR OF PURCHASING
THE CITY OF WATERBURY
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ADDENDUM #3

November 17, 2023

RFP 7858 HVAC Equipment Replacement JFK High School

NOTE:

- 1) Answers to questions will be posted by 2:00PM on November 21, 2023.
- 2) The proposal due date remains November 29, 2023 at 11:30AM.

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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ADDENDUM #4

November 21, 2023

RFP 7858 HVAC Equipment Replacement JFK High School

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:

As discussed at Pre-Bid Walk Through, the intention of including ‘City of Wtby Kennedy HS Exh Fan Replacement – IFC’ in the bid documents is for the requirement to replace EF-25 and for the Full Building TAB report as noted in section C of the RFP. EF-25 shall be replaced as part of this project; please refer to the attached drawings attached to this addendum to be included as part of the bid documents. Per the RFP, Awarded Contractor shall provide a full Testing, Adjusting, and Balancing Report for all new mechanical equipment for the Project, as well as for the exhaust fan recently installed under a separate project – reference drawings titled “City of Wtby Kennedy HS Exh Fan Replacement – IFC” for quantity of exhaust fans to be balanced as part of this project.

GENERAL: Modifications described herein as Addendum items supersede specific parts of the Contract Documents for the above-named project. All bids and the Construction Contract shall be based on the inclusion of these modifications.

REVISIONS TO DRAWINGS AND SPECIFICATIONS:

ITEM	DESCRIPTION
1	On Drawing MD102, Mechanical Demolition Roof Part Plans, MODIFY drawing as shown clouded on attached Drawing MD102, dated 9/8/2023.
2	On Drawing M112, Mechanical Piping Plan – South Roof, MODIFY drawing as shown clouded on attached Drawing M112, dated 9/8/2023.
3	On Drawing M120, Mechanical Equipment Layout – Roof Plan, MODIFY drawing as shown clouded on attached Drawing M120, dated 9/8/2023.
4	On Drawing M602, Mechanical Schedules, MODIFY drawing as shown clouded on attached Drawing M602, dated 9/8/2023.
5	On Drawing ED102, Electrical Demolition Partial Roof Plans, MODIFY drawing as shown clouded on attached Drawing ED102, dated 9/8/2023.
6	On Drawing E102, Electrical Roof Plan, MODIFY drawing as shown clouded on attached Drawing E102, dated 9/8/2023.
7	On Drawing E601, Electrical Schedules & Risers, MODIFY drawing as shown clouded on attached Drawing E601, dated 9/8/2023.

Question: Drawing M120 calls for the mechanical contractor to have the RTU #3 roof top unit structural support to be designed and submitted for approval. This should not be the responsibility of the mechanical contractor to begin with. The roof that the unit will sit on and penetrate thru appears to be a precast, pre-stressed concrete plank roofing system. We need to know the manufacture, build date, submittals and design of the planks in order to determine what sort of structural support is needed. Please provide this information so we can pass on to a structural engineer for review and pricing,

Answer: **The awarded contractor is to provide a detailed submittal for equipment attachments. The proposals shall include a site review to confirm the locations that will require supplemental steel. Please proceed per the contract documents.**

Question: The mechanical rooms will be offline during the construction period. How will the school be heated or cooled during the construction period?

Answer: It is the intention have a phased approach to demolition and to use isolation valves to allow for some areas of the school to be heated and cooled while other zones Mechanical suites are being demolished for new work. The department of education will coordinate these phased shutdowns with the awarded contractor to minimize impacts on school operation. A Temporary equipment shall not be included in the base proposal.

Question: How long can the pool be offline while construction work is taking place?

Answer: The minimum amount of time possible. Awarded contractor shall coordinate duration with department of education.

Question: Please confirm that no temporary equipment is needed to provide ventilation while equipment is being changed out.

Answer: Temporary equipment shall not be included in the base proposal.

Question: Please confirm work is to take place during normal working hours and not 2nd/3rd shift/off hours.

Answer: Certain portions of work must be performed when school is not in session, i.e. abatement and hoisting. Work that does not interfere with the normal operation of the school can occur during normal working hours.

Question: Per the Demo Drawings, it indicates, anywhere from 4" to 12" of piping to remain off wall or AFF. Please confirm there are means of isolation on the other side of wall/slab.

Answer: Requirement for new isolation valves for all mains piping showed on M103 and M112 drawings.

Question: RTU-3 is specified as Poolpak or approved equal. Please confirm that so long as an equal meets or exceeds perform, Seresco is an approved mfg.

Answer: Approved equal manufacturers: Desert Aire, Dehumidifier Corporation of America (DCA), Air Enterprise and Ventrol.

Question: Mechanical detail 6 on M401, indicates to coordinate with Owner's Roofing contractor. Please provide this contractor's name and company.

Answer: Any registered and licensed roofing company will suffice.

Question: Please provide details of locations where supplemental steel is/might be required under the roof mounted units, included near or around duct penetrations.

Answer: The awarded contractor is to provide a detailed submittal for equipment attachments. The proposals shall include a site review to confirm the locations that will require supplemental steel. Please proceed per the contract documents.

Question: Please advise if any of the lighting within the Natatorium will need to be adjusted after new spiral duct goes in.

Answer: Existing lighting to remain, adjust new spiral ductwork to fit and indicate on coordination drawings.

Question: Can you please release the sign-in sheet from the walk through? / Can we get a list of the contractors who attended the mandatory walk through? / Please provide a copy of the sign in sheets from each pre-bid meeting.

Answer: Sign-in sheet from all walk-throughs are attached.

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

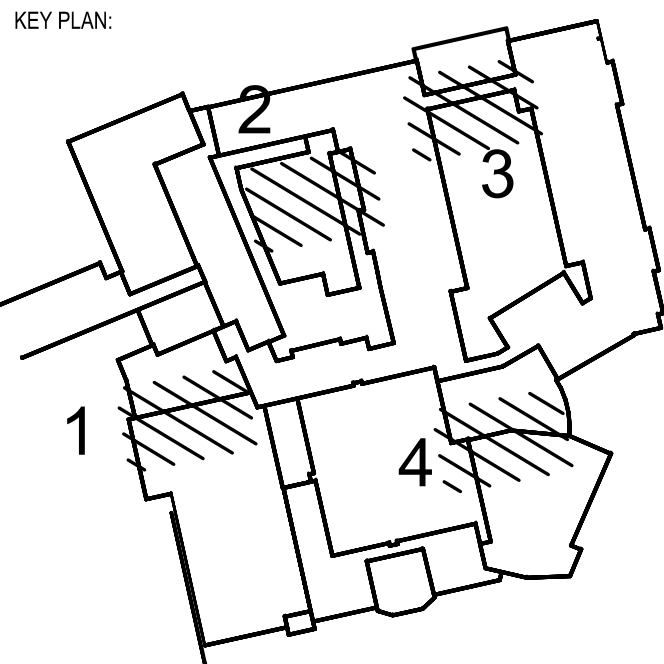
Assistant Director of Purchasing – City of Waterbury

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NO	DATE	RELEASE
	08/08/2023	100% CD
1.	09/08/2023	ADDENDUM #1

STAMP:

PROJECT NAME:
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

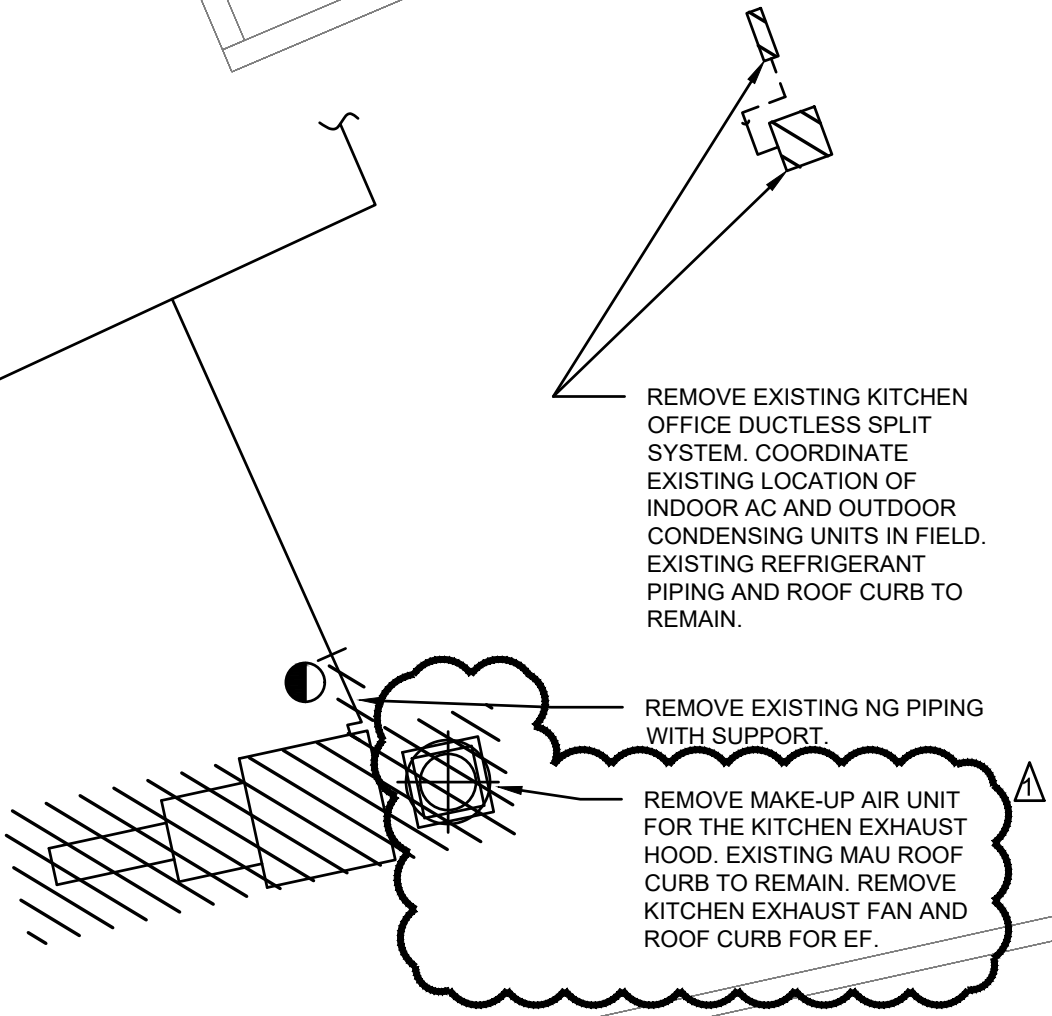
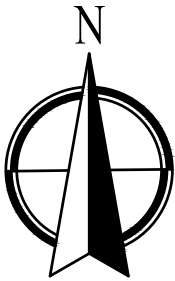
DRAWING TITLE:
MECHANICAL DEMOLITION
ROOF PART PLANS

FILE: 2022/3258OC-9
DRAWN BY: HB
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

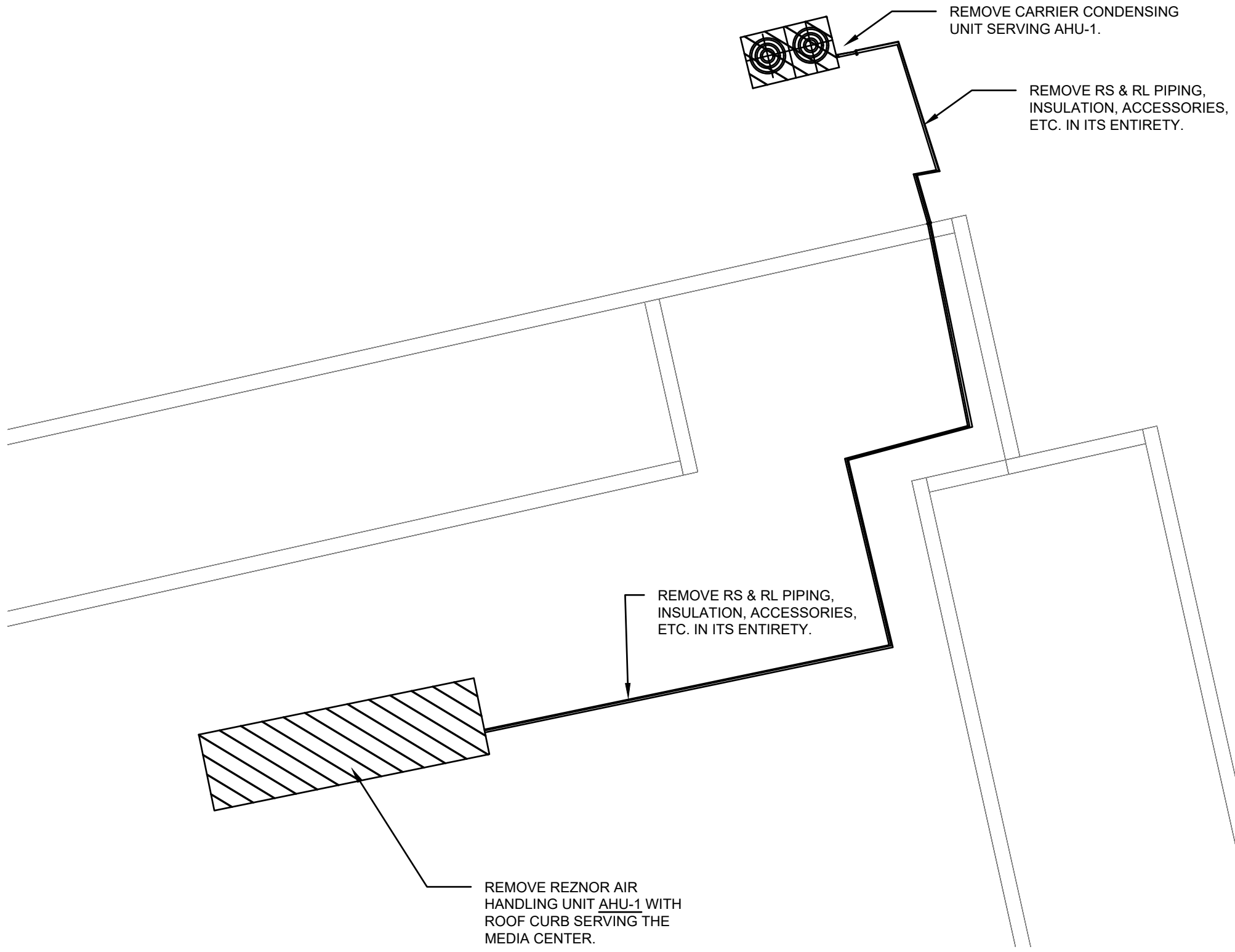
MD102

MECHANICAL DEMOLITION GENERAL NOTES:

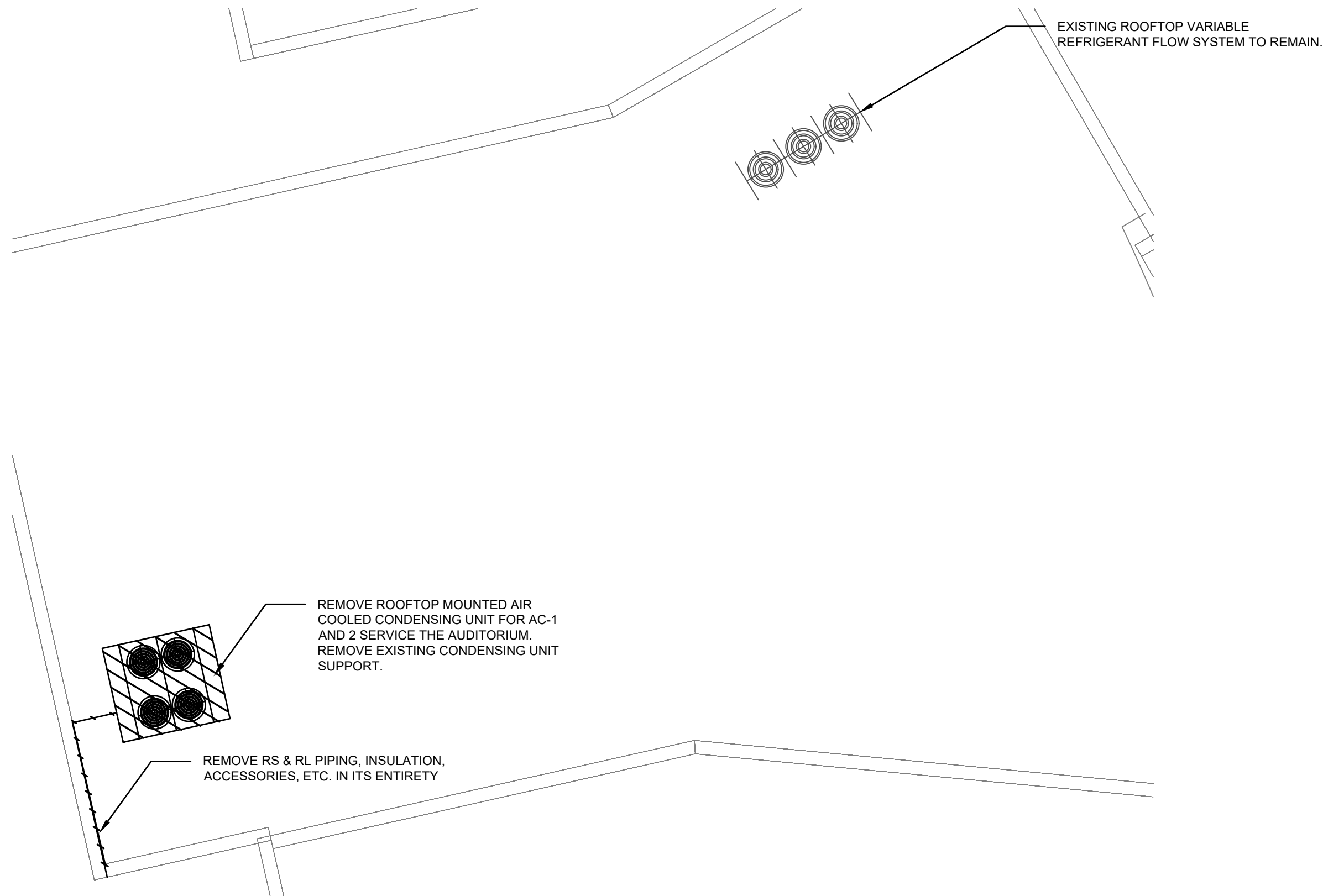
- LOCATION AND QUANTITIES OF EQUIPMENT IS BASED ON THE BEST AVAILABLE INFORMATION AT TIME OF DESIGN. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS PRIOR TO BID.
- VERIFY EXISTING CONDITIONS ON THE JOB SITE BEFORE BEGINNING ANY WORK. COORDINATE DEMOLITION AND SHUT DOWN OF THE EXISTING HVAC SYSTEMS WITH THE OWNER PRIOR TO COMMENCEMENT OF WORK.
- EXECUTE DEMOLITION IN A SAFE MANNER. EGRESS, EXITS AND FIRE PROTECTION AND ALARM EQUIPMENT REQUIREMENTS SHALL BE MAINTAINED. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION NECESSARY TO COMPLETE WORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVAL AND PROPER DISPOSAL OF DEMOLISHED ITEMS. THIS INCLUDES COSTS FOR RECYCLING OR RECLAMATION OF MATERIALS SUCH AS REFRIGERANT, AS WELL AS HAULING AND DUMPING OF ALL DEMOLISHED MATERIAL.
- RESTORE EXISTING FIRE PROOFING DUE TO DEMOLITION SCOPE OF WORK.



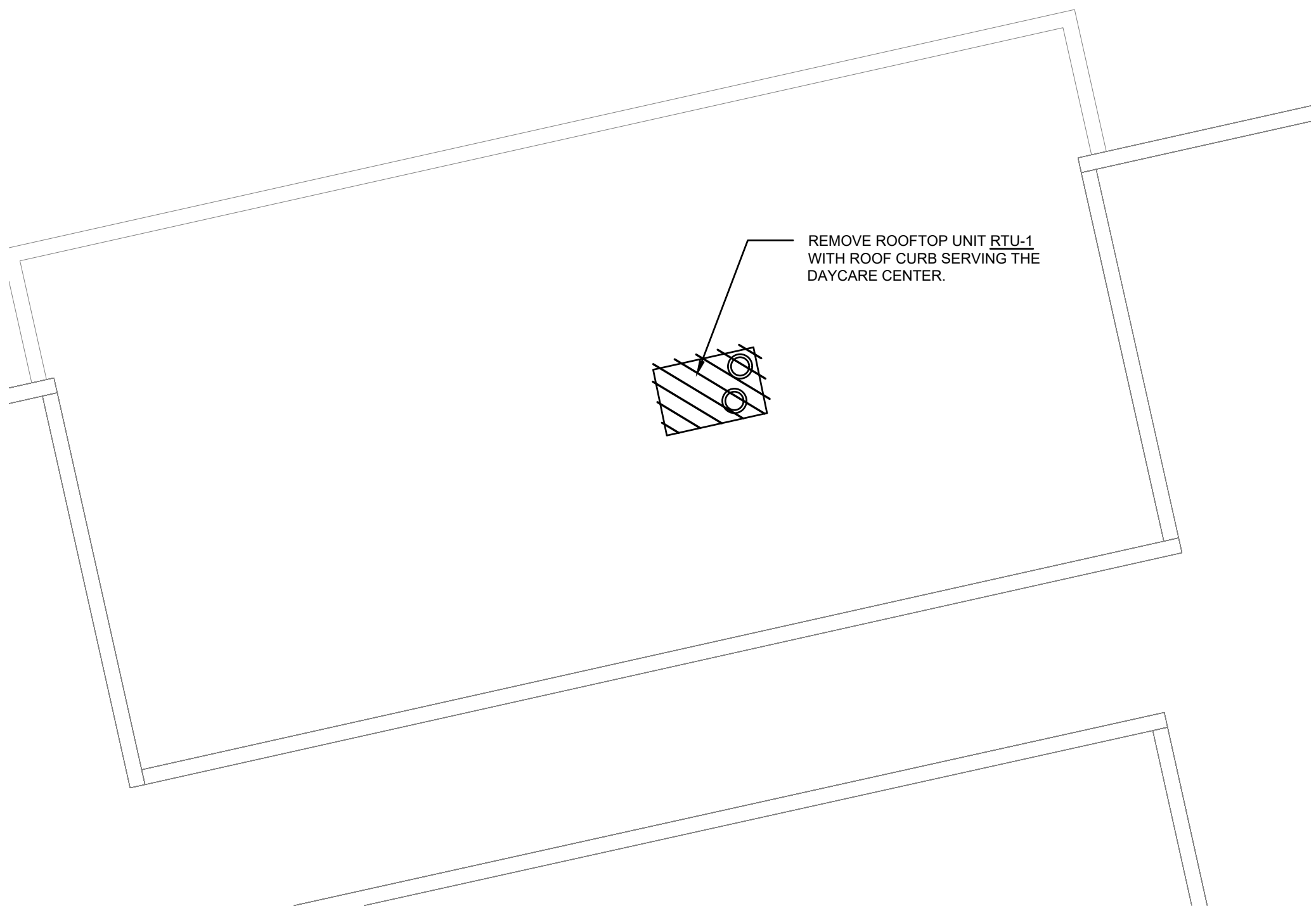
1 MECHANICAL DEMOLITION ROOF PLAN
KITCHEN
SCALE: 1/8" = 1'-0"



2 MECHANICAL DEMOLITION ROOF PLAN
MEDIA CENTER
SCALE: 1/8" = 1'-0"

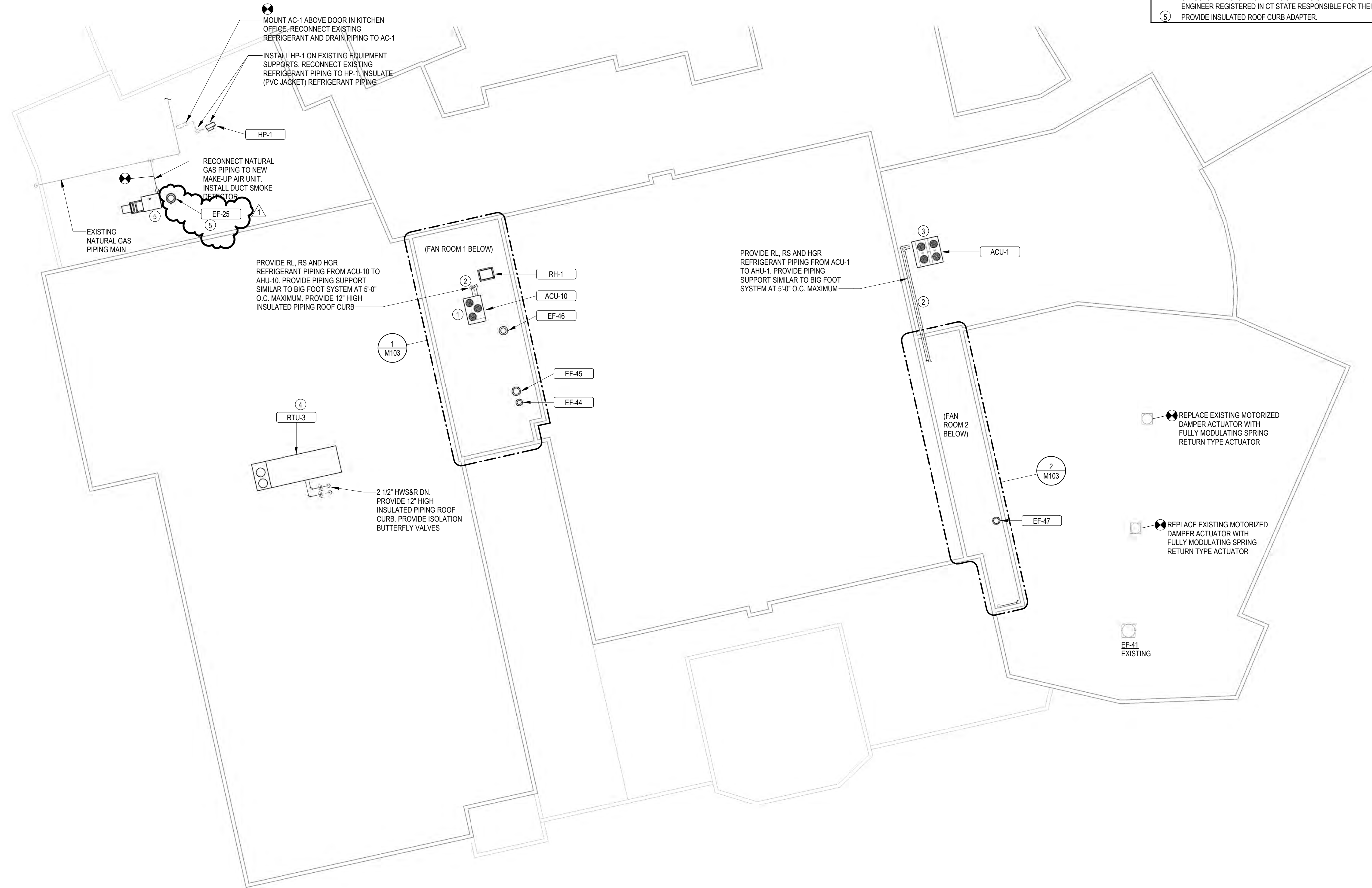


4 MECHANICAL DEMOLITION ROOF PLAN
LOWER LOBBY - FAN ROOM 2
SCALE: 1/8" = 1'-0"



3 MECHANICAL DEMOLITION ROOF PLAN
DAYCARE CENTER
SCALE: 1/8" = 1'-0"

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1
M112 MECHANICAL PIPING PLAN - SOUTH ROOF
1/16" = 1'-0"

MECHANICAL NEW WORK KEY NOTES

- 1 PROVIDE 18"HIGH, INSULATED EQUIPMENT MAUNTING SUPPORTS AS MANUFACTURER BY THYBAR CORP. OR APPROVED EQUAL. PROVIDE DETAILED SUBMITTAL FOR ACU-10 ATTACHMENT TO EQUIPMENT SUPPORTS AND TO ROOF STRUCTURE. INCLUDING ANALYSIS DATA SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CT STATE RESPONSIBLE FOR THEIR PREPARATION. IN BID CARRY QUOTE OF MONEY FOR ADDITIONAL REFRIGERANT PIPING LENGTH OF 40 FEET FOR EACH SPECIFIED PIPE.
- 2 REFRIGERANT PIPING SIZES SHALL BE BY UNIT MANUFACTURER BASED ON THE FINAL APPROVED COORDINATION DRAWINGS.
- 3 PROVIDE 18"HIGH, INSULATED EQUIPMENT MOUNTING SUPPORTS AS MANUFACTURER BY THYBAR CORP. OR APPROVED EQUAL. PROVIDE DETAILED SUBMITTAL FOR ACU-1 ATTACHMENT TO EQUIPMENT SUPPORTS AND TO ROOF STRUCTURE. INCLUDING ANALYSIS DATA SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CT STATE RESPONSIBLE FOR THEIR PREPARATION.
- 4 PROVIDE 24"HIGH, INSULATED ROOF CURB. PROVIDE STEEL TO SUPPORT ROOF CURB. PROVIDE DETAILED SUBMITTAL FOR RTU-3 ATTACHMENT TO ROOF CURB AND TO ROOF STRUCTURE. INCLUDING ANALYSIS DATA SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CT STATE RESPONSIBLE FOR THEIR PREPARATION.
- 5 PROVIDE INSULATED ROOF CURB ADAPTER.

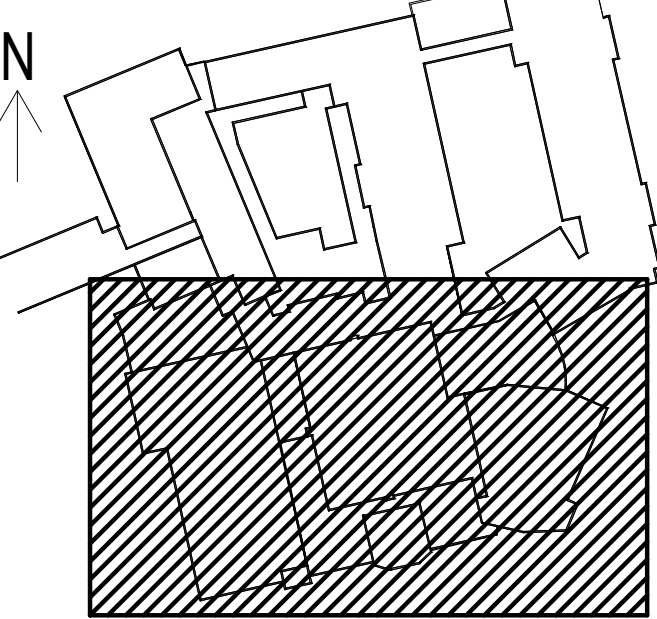
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KEY PLAN:



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KENNEDY HIGH SCHOOL
AHU REPLACEMENT

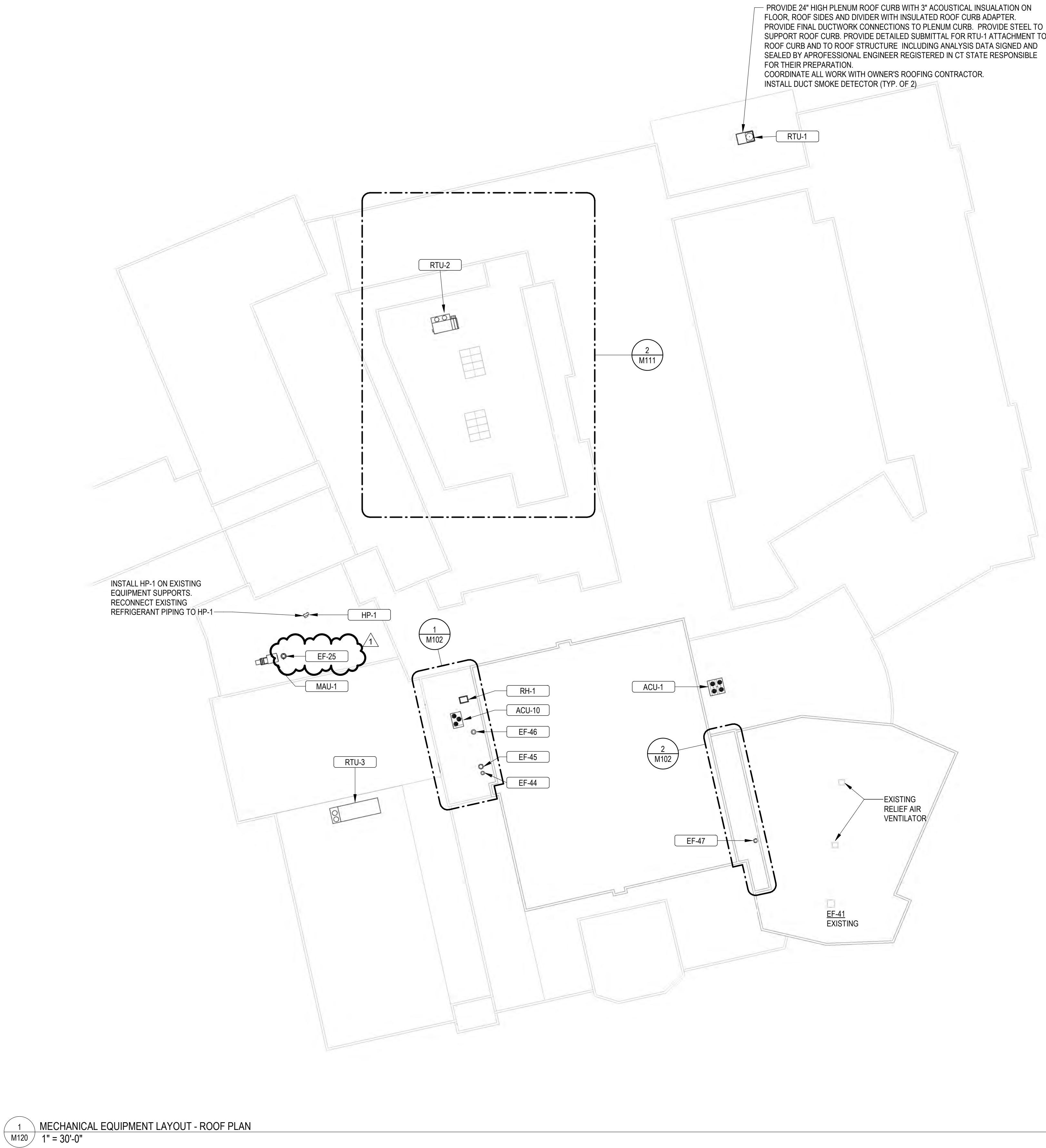
422 HIGHLAND AVE,
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL PIPING
PLAN - SOUTH ROOF

FILE: 2022/32580C-09
DRAWN BY: SA
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

M112

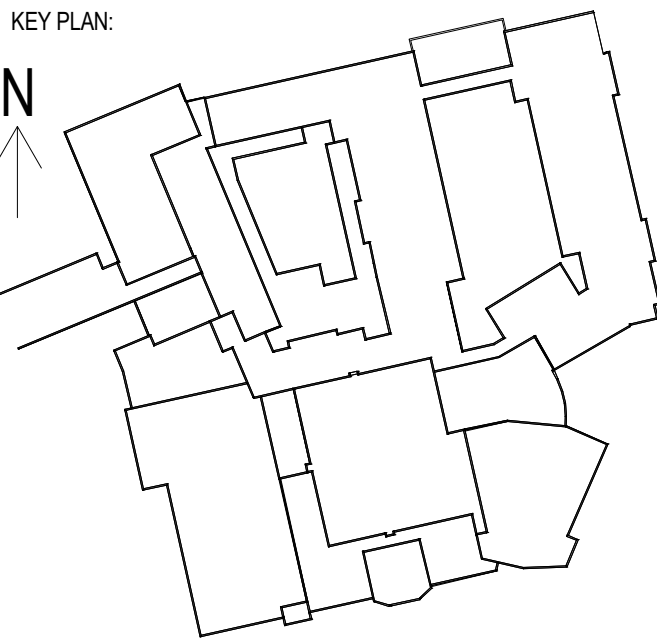
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**KENNEDY HIGH SCHOOL
AHU REPLACEMENT**

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WATERBURY, CT 06708**

DRAWING TITLE:
**MECHANICAL
EQUIPMENT LAYOUT -
ROOF PLAN**

FILE: 2022/32580C-09
DRAWN BY: SA
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

M120

LOUVER SCHEDULE									
TAG	MODEL	MANUFACTURER	TYPE	FREE AREA (SQ.FT.)	(W X H) (IN)	BLADES	FRAME	FINISH	NOTES
L-1	ESD-635	GREENHECK	STATIONARY	44.70	144 X 72	EXTRUDED ALUMINUM	EXTRUDED ALUMINUM	MILL	ALL
L-2	ESD-635	GREENHECK	STATIONARY	20.46	96 X 96	EXTRUDED ALUMINUM	EXTRUDED ALUMINUM	MILL	ALL
NOTES: 1. PROVIDE ALUMINUM BIRD SCREEN. 2. PROVIDE TYPE 1A MOTORIZED OUTSIDE AIR DAMPER WITH SPRING RETURN ACTUATOR (FAIL CLOSED). 3. PROVIDE DRAINABLE BLADES. 4. SPEED = 120 MPH. 5. LOUVER COLOR TO MATCH BUILDING EXTERIOR COLOR. 6. APPROVED EQUAL MANUFACTURERS: RUSKIN AND AMERICAN WARMING AND VENTILATION. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS.									

EXHAUST FAN SCHEDULE												
TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	FAN DATA				PHYSICAL DATA			
					CFM	TESP (IN. H2O)	DRIVE	RPM	WXL (IN)	ROOF OPENING (IN)	WEIGHT (LBS)	MOTOR BHP HP RPM V/Hz/PH
EF-25	CAPTIVEAIRE	DU240HFA	ROOF	KITCHEN	5,500	1.5	DIRECT	959	31.5 X 31.5	31 X 31	321	2.87 5 959 460/60/3
EF-44	GREENHECK	G-095-VG	ROOF	AHU-4	800	0.60	DIRECT	1,629	17 X 17	13.5 X 13.5	28	0.14 1/6 1,725 115/60/3
EF-45	GREENHECK	G-140-VG	ROOF	AHU-5	2,500	0.85	DIRECT	1,630	22 X 22	18.5 X 18.5	57	0.90 1 1,725 115/60/3
EF-46	GREENHECK	G-130-VG	ROOF	AHU-9	1,900	0.80	DIRECT	1,634	19 X 19	15.5 X 15.5	48	0.50 3/4 1,725 115/60/3
EF-47	GREENHECK	G-120-VG	ROOF	AHU-6	1,500	0.60	DIRECT	1,504	19 x 19	15.5 x 15.5	44	0.32 1/2 1,725 115/60/3
NOTES: 1. PROVIDE 24" HIGH INSULATED ALUMINUM ROOF CURB. PROVIDE CURB SEAL, HINGED CURB CAP WITH CABLES AND HOOD HASPS. 2. PROVIDE WIRED SPEED DIAL. 3. PROVIDE ALUMINUM BIRD SCREEN. 4. PROVIDE TYPE 1A MOTORIZED OUTSIDE AIR DAMPER WITH SPRING RETURN ACTUATOR (FAIL CLOSED). 5. APPROVED EQUAL MANUFACTURERS: LOREN COOK. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS. 6. PROVIDE 18" HIGH VENTILATED INSULATED ALUMINUM ROOF CURB. PROVIDE ROOF CURB ADAPTER. PROVIDE CURB SEAL, HINGED CURB CAP WITH CABLES AND HOOD HASP. NEMA 3 DISCONNECT SWITCH. NEMA PREMIUM EFFICIENCY MOTOR SHAFT WITH GROUNDING PROTECTION, GREASE TRAP WITH PIPING, CLEAN-OUT PORT, VFD FACTORY MOUNTED AND WIRED, VFD MOUNTING BRACKET FOR DU/DR 240, HEAT BAFFLE. 7. INTEGRATE EF INTO EXISTING HOOD CONTROLS AS FOLLOWS: A. THE UNIT SHOULD HAVE STANDING POWER, TAKE THE LINE AND LOAD OFF THE EXISTING EF CONTACTORS AND WIRE THEM TO BYPASS THE CONTACTOR B. A LOW VOLTAGE INTERLOCK WIRE SHALL BE RUN FROM 13/14 ON THE EXISTING MOTOR CONTACTOR TO TERMINAL 1 & 4 ON EF VFD (START/STOP SIGNAL)												

PUMP SCHEDULE												
TAG	MANUFACTURER	MODEL	OPERATION	SYSTEM SERVED	FLUID TYPE	FLOW RATE (GPM)	HEAD/FT	FLANGE SIZE (IN)	MOTOR HP	BHP	RPM	ELEC V PH.
HWP-1	TACO	KV-2009D	LEAD	STEAM TO HOT WATER	30%PG/70% WATER	67	60	2 X 2	3	1.7	1760	460 3
HWP-2	TACO	KV-2009D	STANDBY	STEAM TO HOT WATER	30%PG/70% WATER	67	60	2 X 2	3	1.7	1760	460 3
NOTES: 1) APPROVED MANUFACTURERS: ARMSTRONG AND B&G. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS.												

HEAT EXCHANGER SCHEDULE													
TAG	MANUFACTURER	MODEL	SYSTEM AND/OR SERVICE	TUBESIDE					SHELLSIDE				WEIGHT (LBS)
				FLUID	PASS	CAPACITY	FLOW	EWT	LWT	WPD	FLUID	FLOW	SAT. STEAM TEMP
						MBH	GPM	°F	°F	FT		LBS/HR	°F
HX-1	TACO	E06210-S	STEAM TO HOT WATER	30% PROPYLENE GLYCOL	2	794.9	67	155	180	1.32	STEAM	827.5	227.16
NOTES: 1) SADDLE. PROVIDE 4'-0" HIGH HX-1 SUPPORT BOLTED TO CONCRETE PAD. 2) APPROVED MANUFACTURERS: ARMSTRONG AND B&G. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS.													

EXPANSION TANK SCHEDULE							
TAG	MANUFACTURER	MODEL	SYSTEM SERVED	TANK VOLUME (GAL)	DIA. X H (IN)	CONNECTION SIZE	WEIGHT (LBS)
ET-1	TACO	CA90-125	STEAM TO HOT WATER SYSTEM	23	20 X 29.125	1" NPT	120
NOTES: 1) ASME RATED. 2) APPROVED MANUFACTURERS: ARMSTRONG AND B&G. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS.							

AIR SEPARATOR SCHEDULE								
TAG	MANUFACTURER	MODEL	SYSTEM SERVED	DIA. X H (IN)	RATED FLOW (GPM)	PIPE SIZE (IN)	CONNECTION SIZE	WEIGHT (LB)
AS-1	TACO	AC02-125AR	STEAM TO HOT WATER SYSTEM	12 X 22.125	149	2.5	2.5	40
NOTES: 1) APPROVED MANUFACTURERS: ARMSTRONG AND B&G. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS. 2) ASME RATED.								

RELIEF HOOD								
TAG	MODEL	MANUFACTURER	THROAT W X L (IN)	OVERALL W X L (IN)	CFM	STATIC PRESSURE (IN. H2O)	FINISH	WEIGHT (LBS)
RH-1	WRH	GREENHECK	36 X 24	44 X 32	4,400	0.083	MILL	100
NOTES: 1. PROVIDE 24" HIGH INSULATED ALUMINUM ROOF CURB. 2. PROVIDE 120V/1PH TYPE 1A MOTORIZED DAMPER WITH SPRING RETURN ACTUATOR (FAIL CLOSED). 3. PROVIDE ALUMINUM BIRD SCREEN. 4. ALL ALUMINUM CONSTRUCTION. INSULATED REMOVABLE COVER. ACCESS DOOR TO MOTORIZED DAMPER SECTION AND ACTUATOR. 5. APPROVED EQUAL MANUFACTURER LOREN COOK SHALL PROVIDE ALL SPECIFIED ITEMS.								

STEAM CONDENSATE PUMP SCHEDULE									
TAG	MANUFACTURER	MODEL	FLUID TYPE	FLOW RATE (GAL/MIN)	DISCHARGE PRESSURE (PSI)	MOTOR HP	RECEIVER SIZE (GAL)	ELEC DATA V PH HZ	NOTES
CP-1	ARMSTRONG	4300 SERIES 43310-JD	CONDENSATE	15	30	(2) 3/4	15	120 1 60	ALL
NOTES: 1. STAINLESS STEEL RECEIVER. 2. THE PUMP MANUFACTURER SHALL FURNISH, MOUNT ON THE PUMP UNIT, AND WIRE A U.L. LABELED NEMA-3 CONTROL CABINET WITH HINGED DOOR, CONTAINING: 2 COMBINATION MAGNETIC STARTERS (EACH HAVING 3 OVERHEAD RELAYS) WITH CIRCUIT BREAKERS AND COVER INTERLOCK FOR LOCK-OUT TAG-OUT CAPABILITY 2 "AUTOMATIC-OFF" SELECTOR SWITCHES 2 MOMENTARY CONTACT "TEST" PUSH BUTTONS 2 PILOT RUN LIGHTS 1 NUMBERED TERMINAL STRIP 1 REMOVABLE CONTROL MOUNTING PLATE EACH PUMP CONTROL CIRCUIT SHALL BE COMPLETELY INDEPENDENT OF THE OTHER. THE NEMA-3 MECHANICAL ALTERNATOR SHALL (1) CHANGE THE OPERATING SEQUENCE AUTOMATICALLY AFTER EACH CYCLE, (2) PROVIDE SIMULTANEOUS OPERATION UNDER PEAK LOAD CONDITIONS, AND (3) OPERATE THE SECOND PUMP AUTOMATICALLY, SHOULD THE ACTIVE PUMP FAIL. THE UNIT SHALL HAVE A FLOAT SWITCH ASSEMBLY NEMA-3 TO TURN ON A HIGH WATER ALARM MOUNTED IN A CONTROL PANEL WITH BELL, LIGHT, AND SILENCING RELAY WITH DRY CONTACTS TO ACCESS THE BUILDING MANAGEMENT SYSTEM ALARM. A CONTROL CIRCUIT TRANSFORMER FOR EACH CIRCUIT SHALL BE PROVIDED WHEN THE MOTOR VOLTAGE IS THREE PHASE OR CODE REQUIRES 115 VOLT CONTROLS. ALL FACTORY INSTALLED WIRING SHALL BE NUMBERED FOR EASY IDENTIFICATION AND THE NUMBERS SHALL COINCIDE WITH THOSE SHOWN ON THE WIRING DIAGRAMS. 3. SINGLE POINT POWER CONNECTION. 4. APPROVED EQUAL MANUFACTURER: BELL & GOSSETT.									

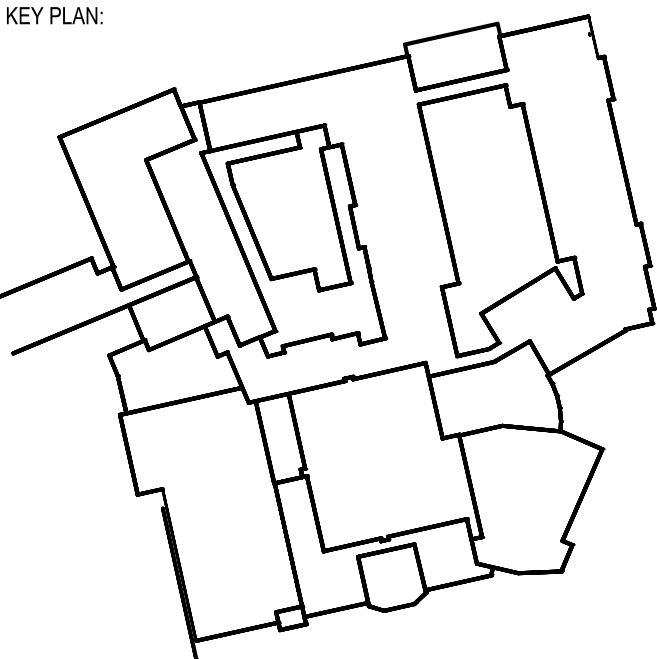
REGISTERS, GRILLES AND DIFFUSERS SCHEDULE								
TAG	MODEL	MANUFACTURER	TYPE	MOUNTING	SIZE	MATERIAL	FINISH	NOTES
A	300RL-SS	TITUS	DOUBLE DEFLECTION SUPPLY GRILLE	SURFACE	SEE PLANS	316 STAINLESS STEEL	WHITE	1,2
A1	300FL	TITUS	DOUBLE DEFLECTION SUPPLY GRILLE	SURFACE	30x12	ALUMINUM	TO MATCH EXISTING	1,3
B	50R-SS	TITUS	1"x1" CORE, EGGCRATE GRILLE	SURFACE	60x60	316 STAINLESS STEEL	WHITE	2
B1	355ZFL	TITUS	RETURN GRILLE WITH ZERO DEGREE DEFLECTION	SURFACE	60x24	ALUMINUM	TO MATCH EXISTING	2
NOTES: 1. PROVIDE WITH DAMPER. 2. APPROVED EQUAL MANUFACTURERS : PRICE, NAILOR OR HART & COOLEY								

STEAM TRAP SCHEDULE				
AHU #	MANUFACTURER	SIZE (IN)	CAPACITY (LB/H)	NOTES
AHU-1	BELL & GOSSETT	2	2,500	ALL
AHU-4	BELL & GOSSETT	1	390	ALL
AHU-5	BELL & GOSSETT	1.5	1,280	ALL
AHU-6	BELL & GOSSETT	1.5	1,280	ALL
AHU-7	BELL & GOSSETT	1.5	1,280	ALL
AHU-8	BELL & GOSSETT	1.5	1,280	ALL
AHU-9	BELL & GOSSETT	1.5	1,280	ALL
AHU-10	BELL & GOSSETT	2	2,500	ALL
END OF MAIN STEAM	BELL & GOSSETT	0.75	390	ALL
NOTES: 1. PROVIDE REMOVABLE STEAM TRAP INSULATION. 2. APPROVED EQUAL MANUFACTURERS: SPIRAX SARCO AND WATSON MC				

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Middletown, CT New York, NY Elmsford, NY
Boston, MA Cranston, RI Richmond, VA Exton, PA



CLIENT:
CITY OF WATERBURY

235 GRAND STREET
WATERBURY, CT 06702

THIS SQUARE APPEARS 1/2"x1/2"
ON FULL SIZE SHEETS

NO	DATE	RELEASE
1.	08/08/2023	100% CD
	09/08/2023	ADDENDUM #1

STAMP:

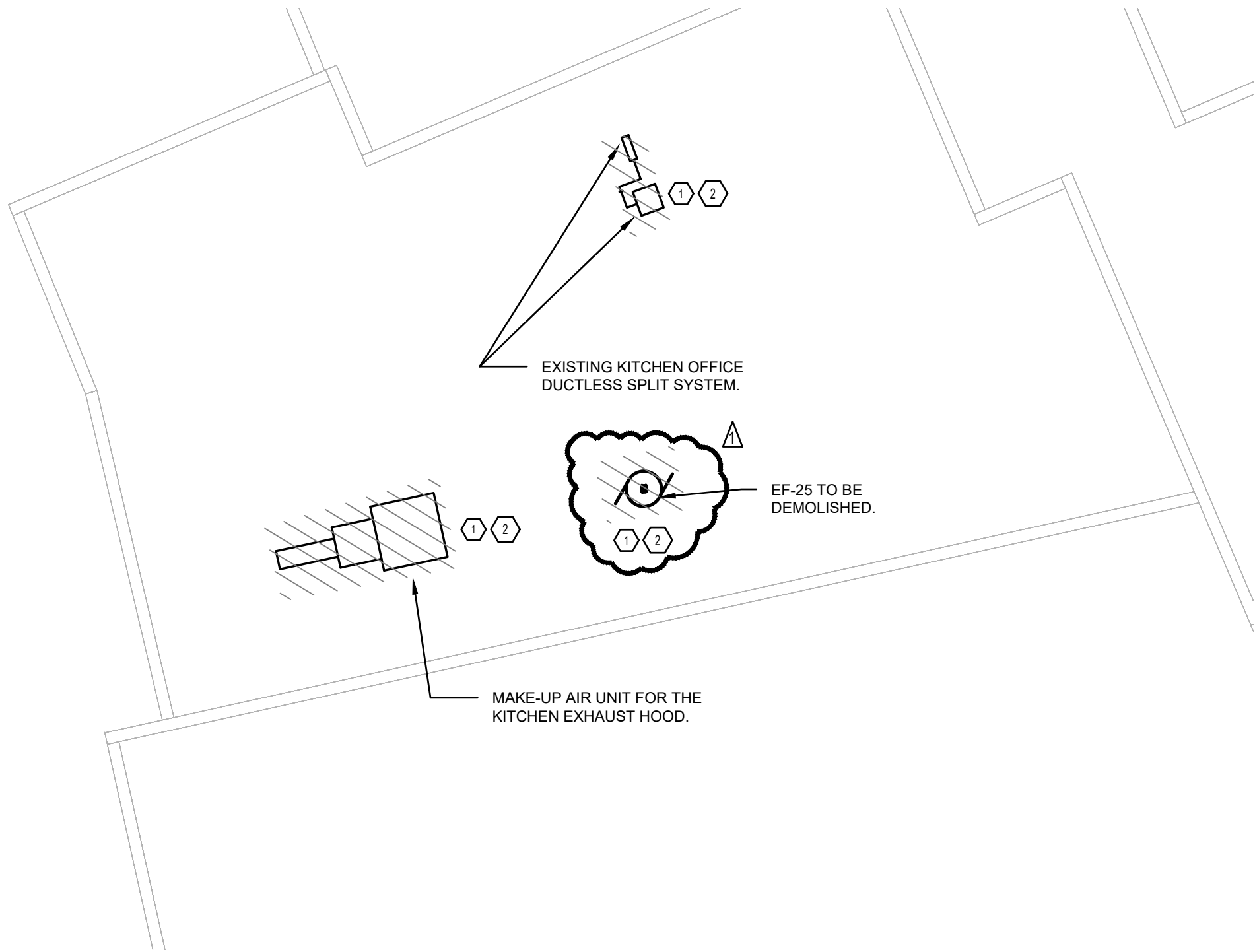
PROJECT NAME:
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

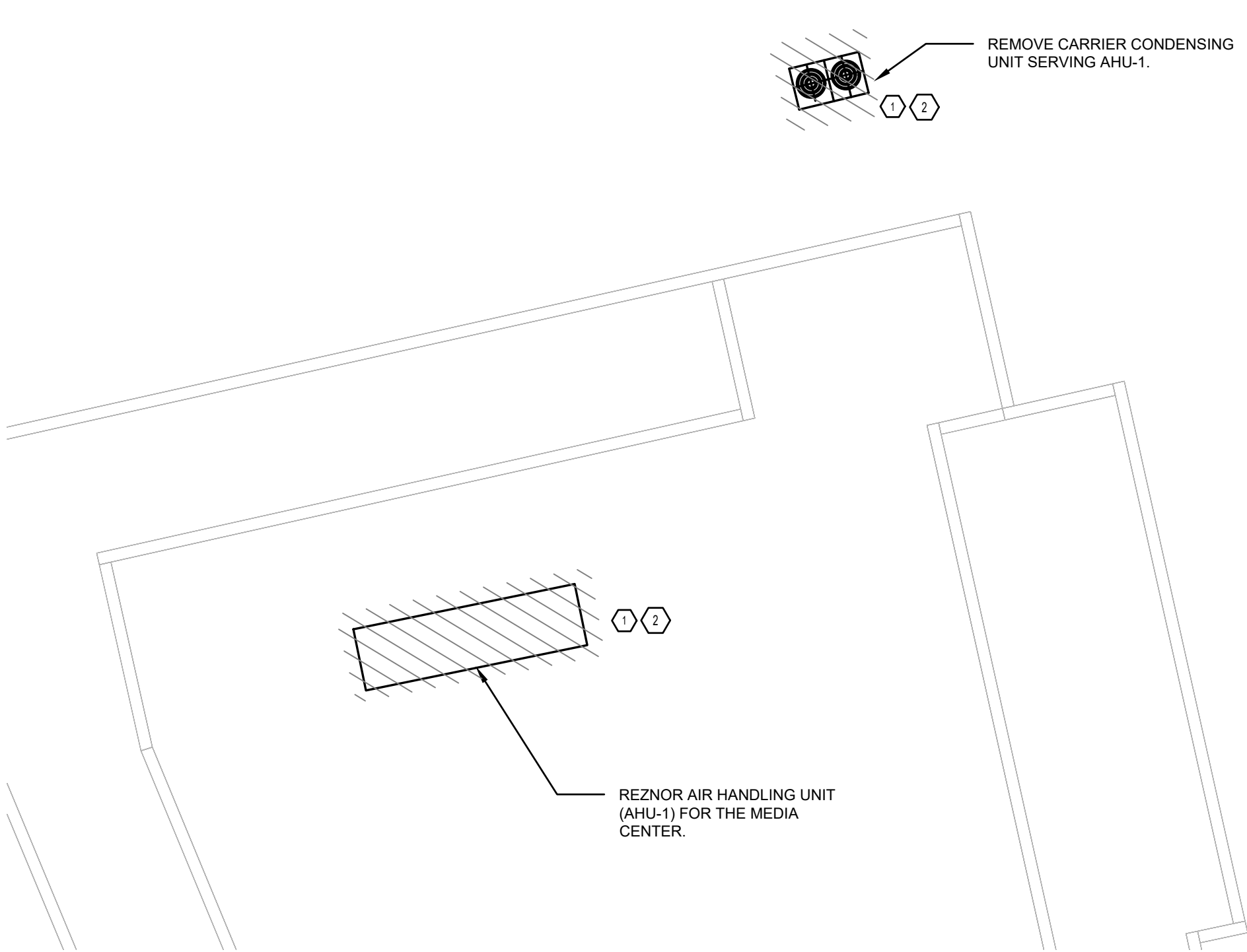
DRAWING TITLE:
MECHANICAL SCHEDULES

FILE: 2022/32580C-9
DRAWN BY: HB
CHECKED BY: OA
DATE: 08/08/2023
DRAWING NO:

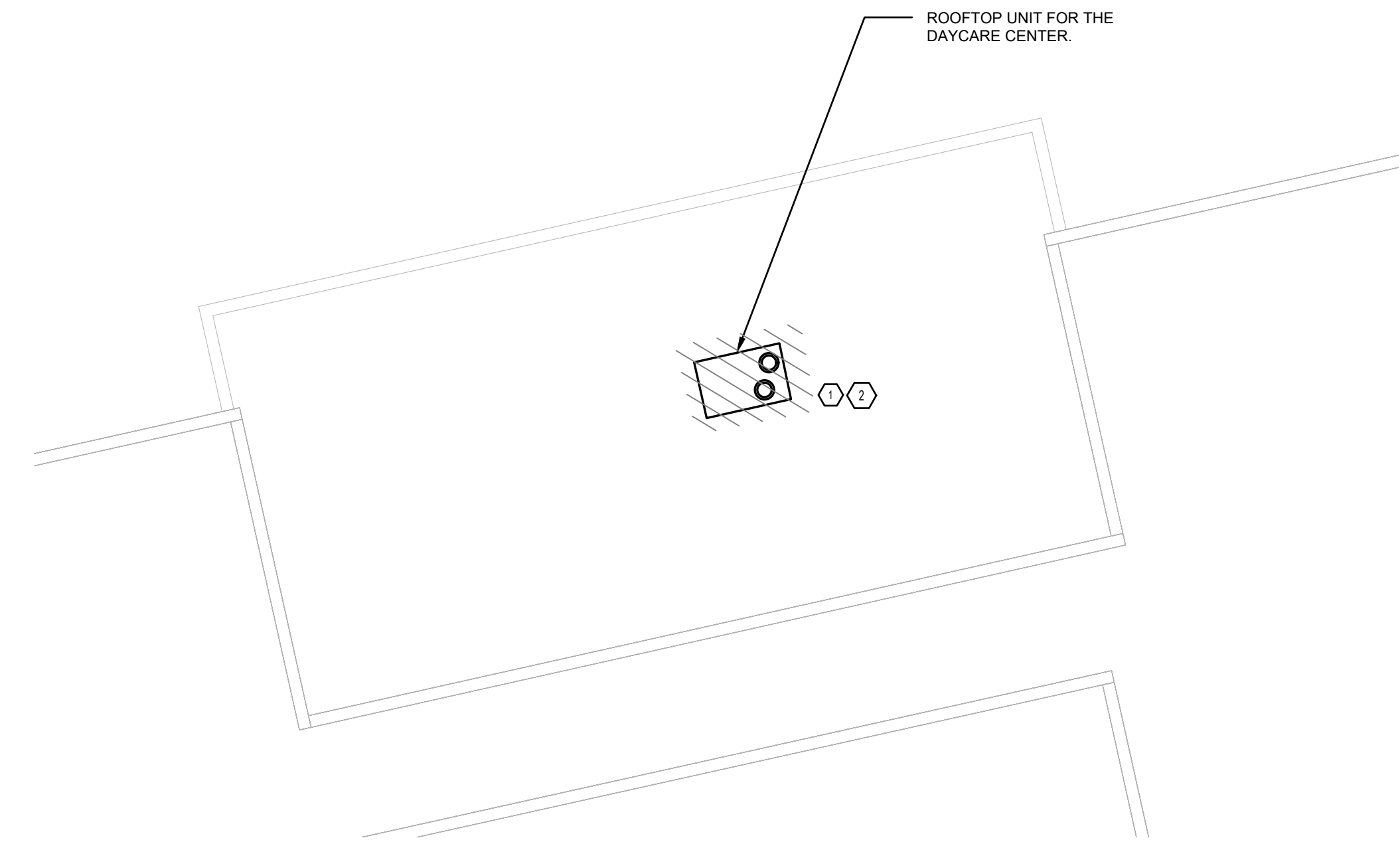
M-602



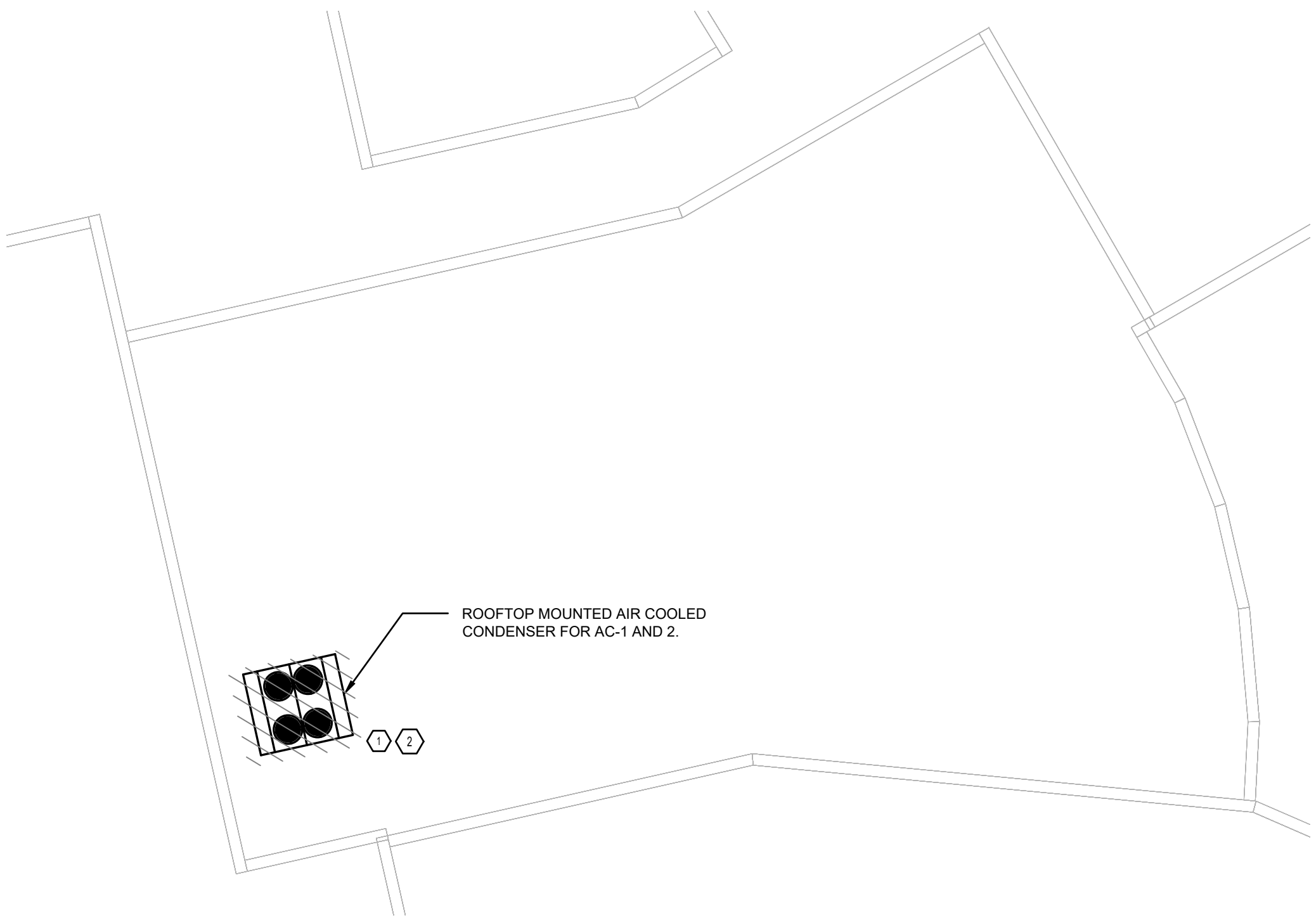
1 ELECTRICAL DEMOLITION ROOF PLAN KITCHEN
SCALE: 3/32" = 1'-0"



2 ELECTRICAL DEMOLITION ROOF PLAN MEDIA CENTER
SCALE: 3/32" = 1'-0"



3 ELECTRICAL DEMOLITION ROOF PLAN DAYCARE CENTER
SCALE: 3/32" = 1'-0"



4 ELECTRICAL DEMOLITION ROOF PLAN LOWER LOBBY - FAN ROOM 2
SCALE: 3/32" = 1'-0"

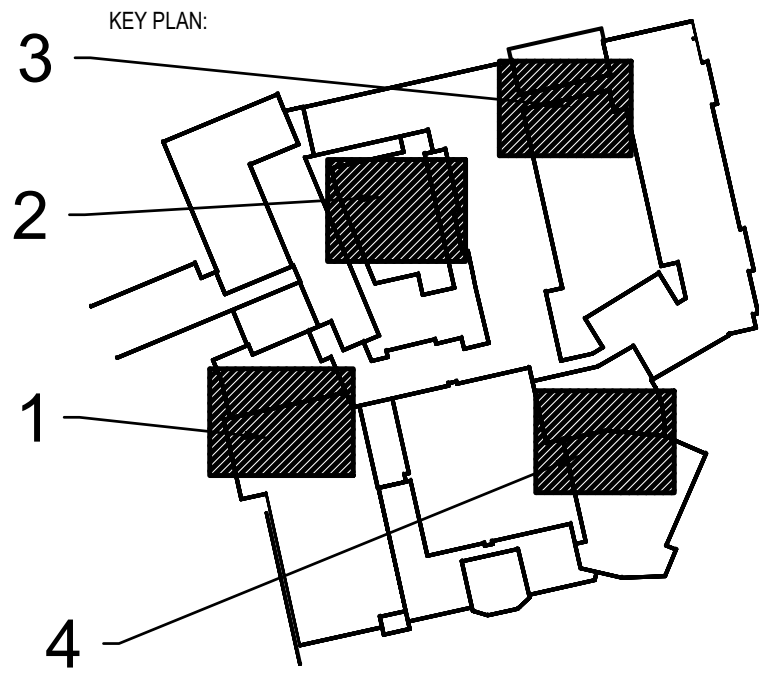
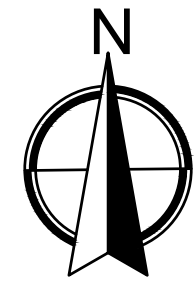
KEY NOTES

1

REMOVE EXISTING DEDICATED MECHANICAL EQUIPMENT DISCONNECT SWITCH, ASSOCIATED CONDUIT & WIRING BACK TO ELECTRICAL SOURCE. CONTRACTOR TO TRACE CIRCUIT AND VERIFY LOCATION AND ROUTING IN FIELD FOR REMOVAL. APPROXIMATE FEEDER LENGTH 200' (TYP).

2

CONTRACTOR TO TRACE OUT CIRCUITS IN THE DEMOLITION PHASE TO CONFIRM PANEL BOARD CIRCUIT FOR HVAC EQUIPMENT. LABEL CIRCUIT AT BOTH THE EQUIPMENT AND DISCONNECT AND ON THE REVISED PANEL BOARD SCHEDULE.



CLIENT:
CITY OF WATERBURY

235 GRAND STREET
WATERBURY, CT 06702

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NO	DATE	RELEASE
1.	08/08/2023	100% CD
	09/08/2023	ADDENDUM #1

STAMP:

PROJECT NAME:
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

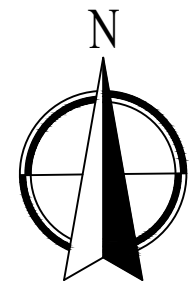
422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
ELECTRICAL DEMOLITION
PARTIAL ROOF PLANS

FILE: 2022/3258OC-9
DRAWN BY: ZR
CHECKED BY: JP
DATE: 08/08/2023
DRAWING NO:

ED102

0 8' 16' 32'
SCALE: 3/32" = 1'-0"



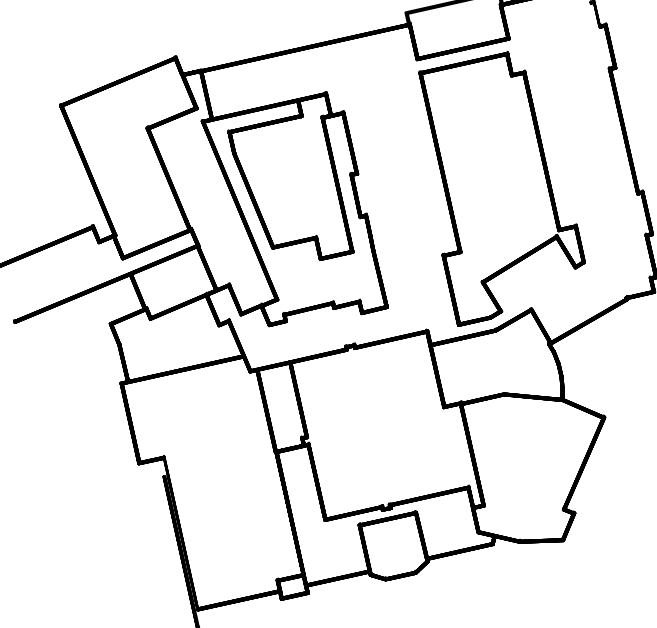
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Boston, MA Cranston, RI Richmond, VA Exton, PA

KEY PLAN:



CLIENT:
CITY OF WATERBURY

235 GRAND STREET
WATERBURY, CT 06702

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ON FULL SIZE SHEETS

NO	DATE	RELEASE
	08/08/2023	100% CD
1.	09/08/2023	ADDENDUM #1

STAMP:

PROJECT NAME:
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

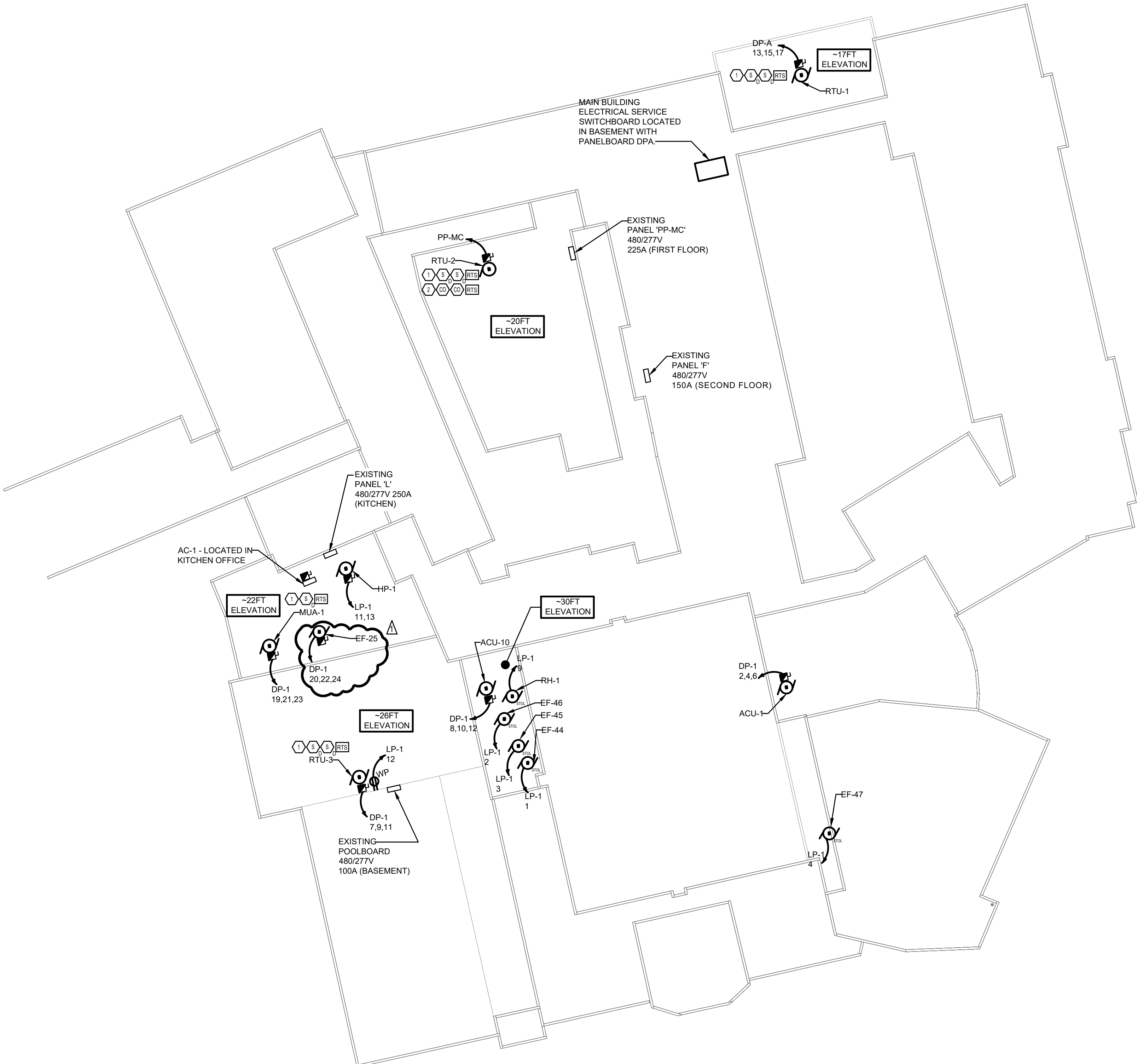
DRAWING TITLE:
ELECTRICAL ROOF PLAN

FILE: 2022/32580C-9
DRAWN BY: ZR
CHECKED BY: JP
DATE: 08/08/2023
DRAWING NO:

E102

KEY NOTES

- PROVIDE DUCT SMOKE DETECTOR WITH REMOTE TEST SWITCH (LOCATED IN SPACE BELOW UNIT AT 72" AFF) FOR EACH SUPPLY AND RETURN DUCT. LOCATE THE EXISTING INITIATING FIRE ALARM LOOP IN CEILING BELOW, AND EXTEND LOOP TO DEVICES WITH 3/4"C. QTY. 2 #16 AWG TWISTED UNSHIELDED PAIRS. COORDINATE PROGRAM OF FIRE ALARM DEVICES WITH THE FIRE ALARM SERVICE PROVIDER (ITS - 203-265-8100)
- PROVIDE CARBON MONOXIDE DETECTOR WITHIN THE FIRST ROOM OR AREA SERVED BY THE FIRST AIR SUPPLY REGISTER BY EACH MAIN DUCT LEAVING THE AIR HANDLING UNIT. WIRE CO DETECTOR TO NEAREST FIRE ALARM LOOP. PROVIDE 3/4"C. QTY. 2 #16 AWG TWISTED PAIR CABLES FROM MAIN FACP LOCATED IN MAIN OFFICE, PROGRAM FIRE ALARM CONTROL PANEL TO ACTIVATE A SUPERVISORY SIGNAL FOR NEW CO DETECTORS.



NOTE:
PANELS DP-1 AND LP-1 ARE LOCATED IN FAN ROOM #1. SEE DRAWING E101.
ELECTRICAL ROOF PLAN
SCALE: 1"=30'-0"

1

0 15 30 60
SCALE: 1" = 30'

KENNEDY MOTOR CIRCUIT SCHEDULE														
TAG	SOURCE PANEL	OCP DEVICE	FEEDER SIZE	APPROX. FEEDER LENGTH IN FT.	LOCAL FUSED DISCONNECT SWITCH	MOTOR STARTER		LOAD					PHASE	KEY NOTES
						TYPE	MCA	MOCP	HP	FLA	VOLTS			
AHU-1S	FAN ROOM 2 - FEEDER TAP/DISCONNECT SWITCH	20A/3P	3#12, 1#12G, 3/4"C.	50	30A/20A	BY DIV. 23 - VFD	16	20	10	14	480	3	B	
AHU-1R	FAN ROOM 2 - FEEDER TAP/DISCONNECT SWITCH	20A/3P	3#12, 1#12G, 3/4"C.	50	30A/20A	BY DIV. 23 - VFD	16	20	10	14	480	3	B	
AHU-4	FAN ROOM 1 - FEEDER TAP/DISCONNECT SWITCH	15A/3P	3#12, 1#12G, 3/4"C.	100	30A/15A	BY DIV. 23 - VFD	2.85	15	1	2.32	480	3	B	
AHU-5	FAN ROOM 1 - FEEDER TAP/DISCONNECT SWITCH	15A/3P	3#12, 1#12G, 3/4"C.	70	30A/15A	BY DIV. 23 - VFD	10.47	15	5	8.42	480	3	B	
AHU-6	FAN ROOM 2 - FEEDER TAP/DISCONNECT SWITCH	15A/3P	3#12, 1#12G, 3/4"C.	70	30A/15A	BY DIV. 23	7.89	15	-	6.36	480	3	B	
AHU-7	FAN ROOM 2 - FEEDER TAP/DISCONNECT SWITCH	20A/3P	3#12, 1#12G, 3/4"C.	50	30A/20A	BY DIV. 23 - VFD	13.97	20	7.5	11.22	480	3	B	
AHU-8	FAN ROOM 2 - FEEDER TAP/DISCONNECT SWITCH	20A/3P	3#12, 1#12G, 3/4"C.	70	30A/20A	BY DIV. 23 - VFD	13.97	20	7.5	11.22	480	3	B	
AHU-9	FAN ROOM 1 - FEEDER TAP/DISCONNECT SWITCH	15A/3P	3#12, 1#12G, 3/4"C.	50	30A/15A	BY DIV. 23 - VFD	10.47	15	5	8.42	480	3	B	
AHU-10	FAN ROOM 1 - FEEDER TAP/DISCONNECT SWITCH	45A/3P	3#8, 1#10G, 3/4"C.	50	80A/45A	BY DIV. 23 - VFD	26.47	45	15	21.22	480	3	B	
MAU-1	FAN ROOM 1 - DP-1	15A/3P	3#12, 1#12G, 3/4"C.	250	30A/15A	BY DIV. 23 - VFD	9.6	15	5	6.8	480	3	A	
RTU-1	DP-A	70A/3P	3#4, 1#8G, 1"C.	150	100A/70A	BY DIV. 23 - VFD	67	70	3	43.4	480	3	A	
RTU-2	PP-MC	60A/3P	3#4, 1#8G, 1"C.	100	100A/60A	BY DIV. 23 - VFD	52.2	60	3	48.5	480	3	A	
RTU-3	FAN ROOM 1 - DP-1	125A/3P	3#2, 1#6G, 1-1/4"C.	150	By Div 23	BY DIV. 23 - VFD	106	125	20	98.4	480	3	C	
ACU-1	FAN ROOM 1 - DP-1	100A/3P	3#2, 1#8G, 1-1/4"C.	175	100A/100A	BY DIV. 23 - VFD	87	100	-	80	480	3	A	
ACU-10	FAN ROOM 1 - DP-1	80A/3P	3#4, 1#8G, 1"C.	100	100A/80A	BY DIV. 23 - VFD	63	80	-	57	480	3	A	
HWP-1	FAN ROOM 1 - DP-1			100	30A/15A	Combination Disconnect/FVNR starter with BMS interface contacts.	-	15	3	4.8	480	3		
		15A/3P	3#12, 1#12G, 3/4"C.										A	
HWP-2	FAN ROOM 1 - DP-1 (STANDBY)			100	30A/15A	Combination Disconnect/FVNR starter with BMS interface contacts.	-	15	3	4.8	480	3		
		15A/3P	3#12, 1#12G, 3/4"C.										A	
EF-44	FAN ROOM 1 - LP-1	15A/1P	2#12, 1#12G, 3/4"C.	50	30A/15A	BY DIV. 23	3	15	1/6	2.2	120	1	A,C	
EF-45	FAN ROOM 1 - LP-1	25A/1P	2#12, 1#12G, 3/4"C.	50	30A/25A	BY DIV. 23	14	25	1	11.5	120	1	A,C	
EF-46	FAN ROOM 1 - LP-1	15A/1P	2#12, 1#12G, 3/4"C.	50	30A/15A	BY DIV. 23	11	15	3/4	8.8	120	1	A,C	
EF-47	FAN ROOM 1 - LP-1	15A/1P	2#12, 1#12G, 3/4"C.	50	30A/15A	BY DIV. 23	8	15	1/2	6.4	120	1	A,C	
HP-1/AC-1	FAN ROOM 1 - LP-1	15A-2P	2#12, 1#12G, 3/4"C.	100	30A/15A	BY DIV. 23	10	15		0.5	208	1	A,C	
CP-1	FAN ROOM 1 - LP-2	20A-1P	2#12, 1#12G, 3/4"C.	175	30A/20A	BY DIV. 23			(2) 3/4"		120	1	A,C	
EF-25	FAN ROOM 1 - DP-1	15A/3P	3#12, 1#12G, 3/4"C.	250	30A/15A	BY DIV. 23	-	-	5	7.2	480	3	A,C	

General Notes:

1) OCP DEVICES AND LOCAL DISC. SWITCHES, FVNR STARTERS, WIRING AND CONDUIT SHALL BE NEW(FURNISHED AND INSTALLED BY DIVISION 26) FROM SOURCE TO EQUIPMENT.

2) ALL VFD's SHALL BE FURNISHED BY DIVISION 23 AND INSTALLED BY DIV. 26. POWER WIRING FROM SOURCE TO VFD BY DIV. 26. POWER WIRING BETWEEN VFD/STARTERS AND MOTORS BY DIV. 26. CONTROL WIRING BY DIVISION 23.

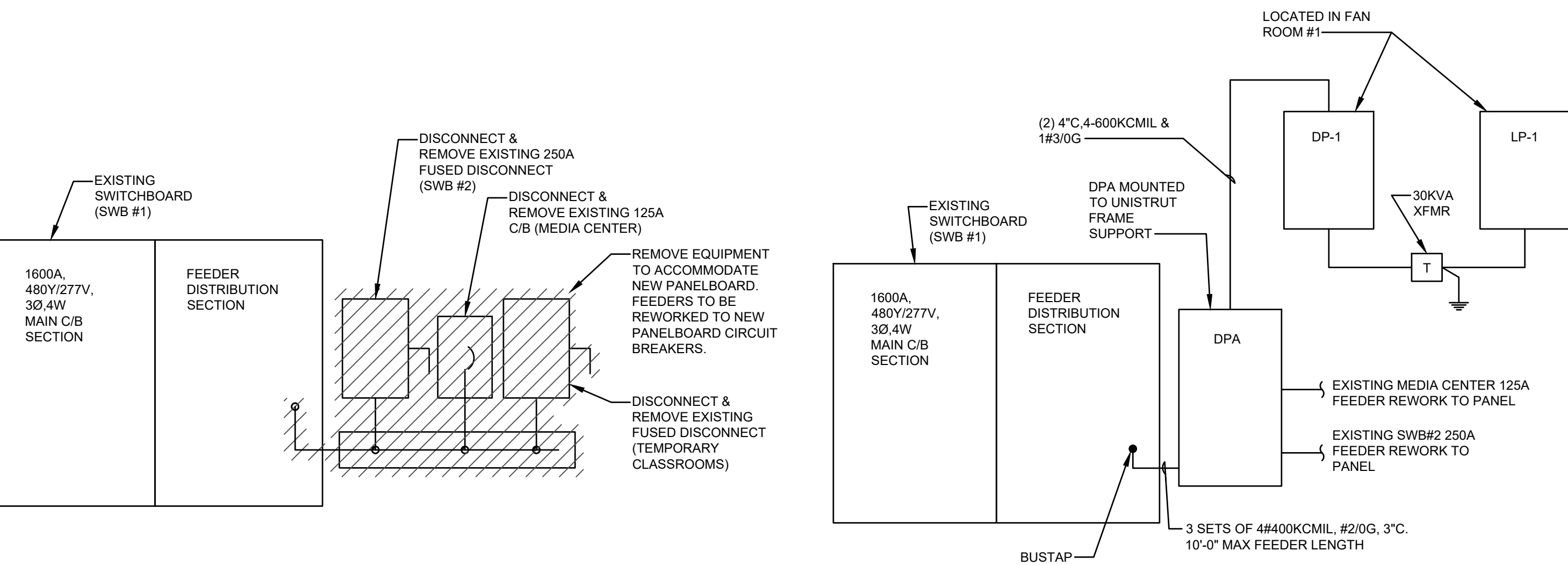
KEY NOTES:

A THE "OCP DEVICE" SHALL BE A CIRCUIT BREAKER.

B THE "OCP DEVICE" SHALL BE FUSED DISCONNECT SWITCH.

C LOCAL DISCONNECT SWITCHES FURNISHED BY DIVISION 23 SHALL BE AN INTEGRAL COMPONENT OF THE EQUIPMENT.

TRANSFORMER SCHEDULE					
KVA RATING	PRIMARY 480V, 3PH, 3W (DELTA)		SECONDARY 208/120V, 3PH, 4W (WYE)		GEC
	OCPD	PRIMARY FEEDER	OCPD	SECONDARY FEEDER	
30	60	3#4, 1#10G, 1"C.	100	4#1, 1#6G, 1-1/2"C.	1#6



1 DEMO - SWB#1 POWER DIAGRAM - BASEMENT
SCALE: NTS

2 SWB#1 POWER DIAGRAM - BASEMENT
SCALE: NTS

PANELBOARD "DPA"										
			LOCATION: BASEMENT			BUS AMPS:		1000		
			MOUNTING: SURFACE			MAIN TYPE:		MCB		
			VOLTAGE: 480Y/277			MINIMUM AIC:		65000		
			PHASE: 3							
			WIRE: 4							
#	CIRCUIT DESCRIPTION	BREAKER AMPS	LOAD KVA	PHASE LOAD - KVA			LOAD KVA	BREAKER AMPS	CIRCUIT DESCRIPTION	#
1	SWB#2	250	64.90	97.40			32.50	125	MEDIA CENTER	2
3			64.90		97.40		32.50			4
5			64.90			97.40	32.50			6
7			86.00	86.00						8
9	PANEL DP-1	600	86.00		86.00		100	SPARE		10
11			86.00			86.00				12
13	RTU-1	70	17.16	17.16					SPACE	14
15			17.16		17.16				SPACE	16
17			17.16			17.16			SPACE	18
TOTAL LOAD PER PHASE:				200.6	200.6	200.6				
TOTAL LOAD ON PANEL (KVA):				601.7						
TOTAL LOAD ON PANEL (A):				724						

PANELBOARD "DP-1"										
		LOCATION: FAN ROOM 1				BUS AMPS:		600		
		MOUNTING: SURFACE				MAIN TYPE:		MCB		
		VOLTAGE: 480Y/277V				MINIMUM AIC:		22000		
		PHASE: 3								
		WIRE: 4								
#	CIRCUIT DESCRIPTION	BREAKER AMPS	LOAD KVA	PHASE LOAD - KVA			LOAD KVA	BREAKER AMPS	CIRCUIT DESCRIPTION	#
				A	B	C				
1	30KVA TRANSFORMER	60	10.00	34.08			24.08	100	ACU-1	2
3			10.00		34.08		24.08			4
5			10.00			34.08	24.08			6
7	RTU-3	125	29.34	46.77			17.43	80	ACU-10	8
9			29.34		46.77		17.43			10
11			29.34			46.77	17.43			12
13	HWP-1	15	1.32	2.64			1.32	15	HWP-2	14
15			1.32		2.64		1.32			16
17			1.32			2.64	1.32			18
19	MAU-1	15	2.65	4.64			1.99	15	EF-25	20
21			2.65		4.64		1.99			22
23			2.65			4.64	1.99			24
25	SPACE			-					SPACE	26
27	SPACE				-				SPACE	28
29	SPACE					-			SPACE	30
31	SPACE				-				SPACE	32
33	SPACE					-			SPACE	34
35	SPACE						-		SPACE	36
37	SPACE				-				SPACE	38
39	SPACE					-			SPACE	40
41	SPACE						-		SPACE	42
TOTAL LOAD PER PHASE:				88.1	88.1	88.1				
TOTAL LOAD ON PANEL (KVA):				264.4						
TOTAL LOAD ON PANEL (A):				318						

PANELBOARD "LP-1"										
LOCATION:		FAN ROOM 1			BUS AMPS:		100			
MOUNTING:		SURFACE			MAIN TYPE:		MCB			
VOLTAGE:		208Y/120V			MINIMUM AIC:		10000			
PHASE:		3								
WIRE:		4								
#	CIRCUIT DESCRIPTION	BREAKER AMPS	LOAD KVA	A	B	C	LOAD KVA	BREAKER AMPS	CIRCUIT DESCRIPTION	#
1	EF-44	15	0.36	1.68			1.32	15	EF-46	2
3	EF-45	25	1.48		2.44		0.96	15	EF-47	4
5	CONTROL POWER (A)	20	0.24			0.48	0.24	20	CONTROL POWER (A)	4
7	CONTROL POWER (A)	20	0.24	0.48			0.24	20	CONTROL POWER (A)	8
9	RH-1 (A)	20	0.95		2.06		1.11	20	CP-1	10
11	HP-1/AC-1	15	1.01			1.19	0.18	20	RECEPT WP (RTU-3)	12
13			1.01	1.01				20	SPARE	14
15	SPACE				-				SPACE	16
17	SPACE					-			SPACE	18
TOTAL LOAD PER PHASE:				3.2	4.5	1.7				
TOTAL LOAD ON PANEL (KVA):				9.3						
TOTAL LOAD ON PANEL (A):				26						
NOTES: (A) PROVIDE 3/4"C, 2#12AWG & 1#12G										

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Company Information

Date:	Wednesday, October 18, 2023
RFP #:	7858: Replacement of HVAC (AHU) at Kennedy HS

Representative:	Troy Karwowski
Company Name:	SAV-MOR
City, State, Zip Code	Southington, CT 06489
Tel:	860-621-9959
Fax:	860-621-9919
Email:	troy@savmorect.com

Representative:	Justyn Crawley
Company Name:	MJDaly LLC
City, State, Zip Code	Waterbury
Tel:	860-811-5104
Fax:	
Email:	Jcrawley@mjdalyllc.com

Representative:	
Company Name:	
City, State, Zip Code	
Tel:	
Fax:	
Email:	

Representative:	
Company Name:	
City, State, Zip Code	
Tel:	
Fax:	
Email:	

Company Information

Date:	Friday, November 10, 2023
RFP #:	7858: Replace AHU at Kennedy High School

Representative:	ACTION Air Systems
Company Name:	KEVIN MICHAUD
City, State, Zip Code:	MANCHESTER CT
Tel:	860 645 8838
Fax:	860 645 0226
Email:	KEVIN@ACTIONAIRSYSTEMS.COM

Representative:	BRIAN ARSENAULT
Company Name:	PRO-MECH
City, State, Zip Code:	BLOOMFIELD CT 06002
Tel:	860 243 3952
Fax:	11
Email:	PROMECHPAUL@COMCAST.NET

Representative:	Ryan Smith
Company Name:	Ferguson Mech
City, State, Zip Code:	Plainville CT 06029
Tel:	860-517-3234 860-331-9969
Fax:	
Email:	rsmith@ferguson-ct.com

Representative:	Linda McKim
Company Name:	Ferguson Elec.
City, State, Zip Code:	Plainville CT
Tel:	860-517-3221
Fax:	
Email:	lmckim@ferguson-ct.com



MECHANICAL SPECIFICATIONS

KENNEDY HIGH SCHOOL AHU REPLACEMENT

PROJECT No. 3258OC-09

Prepared by:

AI Engineers

919 Middle Street

Middletown, CT 06457



100% Construction Documents – August 8, 2023

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230517-	SLEEVES AND SLEEVE SEALS FOR HVAC PIPING
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237433-	ROOFTOP UNIT RTU-1
237434-	ROOFTOP UNIT RTU-2
237435-	ROOFTOP UNIT RTU-3
237436-	MAKEUP AIR UNIT MAU-1

SECTION 230513 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on alternating-current power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

- A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
 - 1. Motor controllers.
 - 2. Torque, speed, and horsepower requirements of the load.
 - 3. Ratings and characteristics of supply circuit and required control sequence.
 - 4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

- A. Comply with NEMA MG 1 unless otherwise indicated.

2.2 MOTOR CHARACTERISTICS

- A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.
- B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

- A. Description: NEMA MG 1, Design B, medium induction motor.
- B. Efficiency: Premium efficient, as defined in NEMA MG 1.
- C. Service Factor: 1.15.
- D. Multispeed Motors: Variable torque.
 - 1. For motors with 2:1 speed ratio, consequent pole, single winding.
 - 2. For motors with other than 2:1 speed ratio, separate winding for each speed.
- E. Multispeed Motors: Separate winding for each speed.
- F. Rotor: Random-wound, squirrel cage.
- G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
- H. Temperature Rise: Match insulation rating.
- I. Insulation: Class F.
- J. Code Letter Designation:
 - 1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
 - 2. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.
- K. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 ADDITIONAL REQUIREMENTS FOR POLYPHASE MOTORS

- A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
- B. Motors Used with Variable-Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.
 - 1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width-modulated inverters.
 - 2. Premium-Efficient Motors: Class B temperature rise; Class F insulation.
 - 3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
 - 4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.
- C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

2.5 SINGLE-PHASE MOTORS

- A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
 - 1. Permanent-split capacitor.
 - 2. Split phase.
 - 3. Capacitor start, inductor run.
 - 4. Capacitor start, capacitor run.
- B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
- C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- D. Motors 1/20 HP and Smaller: Shaded-pole type.
- E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 230513

SECTION 230516 - EXPANSION FITTINGS AND LOOPS FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Packed expansion joints.
 - 2. Alignment guides and anchors.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Welding certificates.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For expansion joints to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe and Pressure-Vessel Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Compatibility: Products shall be suitable for piping service fluids, materials, working pressures, and temperatures.
- B. Capability: Products to absorb 200 percent of maximum axial movement between anchors.

2.2 PACKED EXPANSION JOINTS

A. Flexible, Ball-Joint Packed Expansion Joints:

1. Standards: ASME Boiler and Pressure Vessel Code: Section II, "Materials"; ASME B31.9, "Building Services Piping," for materials and design of pressure-containing parts and bolting.
2. Material: Carbon-steel assembly with asbestos-free composition packing.
3. Design: Provide 360-degree rotation and angular deflection.
4. Minimum Pressure Rating: 250 psig at 400 deg F.
5. Angular Deflection for NPS 6 and Smaller: 30 degree minimum.
6. Angular Deflection for NPS 8 and Larger: 15 degree minimum.
7. Seal Type: Two carbon steel and graphite seals suitable for continuous operation at temperature up to 650 deg F.
8. Internal Ball: Plated with minimum 1-mil chrome cover.
9. Ball Socket: One- or two-piece design with integral socket/retainer.
 - a. Stuffing Box: Incorporates containment seals and compression seals for containment of injectable packing.
 - b. Packing Cylinders: Provides packing under full line pressure with check valves to prevent blowback.
10. End Connections for NPS 2 and Smaller: Threaded.
11. End Connections for NPS 2-1/2 and Larger: Flanged.

B. Slip-Joint Packed Expansion Joints:

1. Standard: ASTM F1007.
2. Material: Carbon steel with asbestos-free PTFE packing.
3. Design: With internal guide and injection ports for repacking under full system pressure. Housing shall be furnished with drain ports and lifting ring. Include drip connection if used for steam piping.
4. Configuration: Single joint, Single joint with base and double joint with base class(es), unless otherwise indicated.
5. Slip Tube for sizes NPS 1-1/2 through NPS 16: Schedule 80.
6. Slip Tube for sizes NPS 18 through NPS 24: Schedule 60.
7. Sliding Surface: 2 mil thick chrome finish.
8. End Connections: Flanged or welded ends to match piping system.

2.3 ALIGNMENT GUIDES AND ANCHORS

A. Alignment Guides:

1. Description: Steel, factory-fabricated alignment guide, with bolted two-section outer cylinder and base for attaching to structure; with two-section guiding slider for bolting to pipe.

B. Anchor Materials:

1. Steel Shapes and Plates: ASTM A36/A36M.
2. Bolts and Nuts: ASME B18.10 or ASTM A183, steel hex head.
3. Washers: ASTM F844, steel, plain, flat washers.
4. Mechanical Fasteners: Insert-wedge-type stud with expansion plug anchor for use in hardened portland cement concrete, with tension and shear capacities appropriate for application.
 - a. Stud: Threaded, zinc-coated carbon steel.
 - b. Expansion Plug: Zinc-coated steel.
 - c. Washer and Nut: Zinc-coated steel.
5. Chemical Fasteners: Insert-type stud, bonding-system anchor for use with hardened portland cement concrete, with tension and shear capacities appropriate for application.
 - a. Bonding Material: ASTM C881/C881M, Type IV, Grade 3, two-component epoxy resin suitable for surface temperature of hardened concrete where fastener is to be installed.
 - b. Stud: ASTM A307, zinc-coated carbon steel with continuous thread on stud, unless otherwise indicated.
 - c. Washer and Nut: Zinc-coated steel.

PART 3 - EXECUTION

3.1 INSTALLATION OF EXPANSION JOINTS

- A. Install expansion joints of sizes matching sizes of piping in which they are installed.

3.2 INSTALLATION OF PIPE LOOPS AND SWING CONNECTIONS

- A. Install pipe loops cold-sprung in tension or compression as required to partly absorb tension or compression produced during anticipated change in temperature.
- B. Connect risers and branch connections to mains with at least five pipe fittings, including tee in main.
- C. Connect risers and branch connections to terminal units with at least four pipe fittings, including tee in riser.
- D. Connect mains and branch connections to terminal units with at least four pipe fittings, including tee in main.

3.3 INSTALLATION OF ALIGNMENT GUIDES AND ANCHORS

- A. Install alignment guides to guide expansion and to avoid end-loading and torsional stress.

- B. Install guide(s) on each side of pipe expansion fittings and loops. Install guides nearest to expansion joint not more than four pipe diameters from expansion joint.
- C. Attach guides to pipe, and secure guides to building structure.
- D. Install anchors at locations to prevent stresses from exceeding those permitted by ASME B31.9 and to prevent transfer of loading and stresses to connected equipment.
- E. Anchor Attachments:
 - 1. Anchor Attachment to Steel Pipe: Attach by welding. Comply with ASME B31.9 and ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
 - 2. Anchor Attachment to Copper Tubing: Attach with pipe hangers. Use MSS SP-69, Type 24; U bolts bolted to anchor.
- F. Fabricate and install steel anchors by welding steel shapes, plates, and bars. Comply with ASME B31.9 and AWS D1.1/D1.1M.
 - 1. Anchor Attachment to Steel Structural Members: Attach by welding.
 - 2. Anchor Attachment to Concrete Structural Members: Attach by fasteners. Follow fastener manufacturer's written instructions.
- G. Use grout to form flat bearing surfaces for guides and anchors attached to concrete.

END OF SECTION 230516

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Sleeves.
 - 2. Stack-sleeve fittings.
 - 3. Sleeve-seal systems.
 - 4. Sleeve-seal fittings.
 - 5. Grout.
 - 6. Silicone sealants.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 SLEEVES

- A. Cast-Iron Pipe Sleeves: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop collar.
- B. Steel Pipe Sleeves: ASTM A53/A53M, Type E, Grade B, Schedule 40, anti-corrosion coated or zinc coated, with plain ends and integral welded waterstop collar.
- C. Galvanized-Steel Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

2.2 STACK-SLEEVE FITTINGS

- A. Description: Manufactured, Dura-coated, Duco-coated or galvanized cast-iron sleeve with integral cast flashing flange for use in waterproof floors and roofs. Include clamping ring, bolts, and nuts for membrane flashing.
1. Underdeck Clamp: Clamping ring with setscrews.

2.3 SLEEVE-SEAL SYSTEMS

- A. Description:
1. Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
 2. Designed to form a hydrostatic seal of 20-psig.
 3. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size.
 4. Pressure Plates: Carbon steel.
 5. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, ASTM B633 of length required to secure pressure plates to sealing elements.

2.4 GROUT

- A. Description: Nonshrink, recommended for interior and exterior sealing openings in nonfire-rated walls or floors.
- B. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- C. Design Mix: 5000-psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

2.5 SILICONE SEALANTS

- A. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 25, use NT.
- B. Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T and NT. Grade P Pourable (self-leveling) formulation is for opening in floors and other horizontal surfaces that are not fire rated.
- C. Silicone Foam: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.
 - 1. Sleeves are not required for core-drilled holes.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 - 1. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.
 - 2. Using grout or silicone sealant, seal space outside of sleeves in slabs and walls without sleeve-seal system.
- D. Install sleeves for pipes passing through interior partitions.
 - 1. Cut sleeves to length for mounting flush with both surfaces.
 - 2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
 - 3. Seal annular space between sleeve and piping or piping insulation; use sealants appropriate for size, depth, and location of joint.
- E. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke-Barrier Penetrations: Maintain indicated fire or smoke rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials.

3.2 STACK-SLEEVE-FITTING INSTALLATION

- A. Install stack-sleeve fittings in new slabs as slabs are constructed.
 - 1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
 - 2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section 076200 "Sheet Metal Flashing and Trim."
 - 3. Install section of cast-iron soil pipe to extend sleeve to 3 inches above finished floor level.
 - 4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.

5. Using waterproof silicone sealant, seal space between top hub of stack-sleeve fitting and pipe.

- B. Fire-Resistance-Rated, Horizontal Assembly, and Smoke Barrier Penetrations: Maintain indicated fire or smoke rating of floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials.

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.
- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal-system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

- A. Install sleeve-seal fittings as new walls and slabs are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout or silicone sealant, seal space around outside of sleeve-seal fittings.

3.5 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 1. Leak Test: After allowing for a full cure, test sleeves and sleeve seals for leaks. Repair leaks and retest until no leaks exist.
- B. Sleeves and sleeve seals will be considered defective if they do not pass tests and inspections.

3.6 SLEEVE AND SLEEVE-SEAL SCHEDULE

- A. Use sleeves and sleeve seals for the following piping-penetration applications:
 1. Exterior Concrete Walls Above Grade:
 - a. Piping Smaller Than NPS 6: Cast-iron sleeves, Steel pipe sleeves or Sleeve-seal fittings.

- b. Piping NPS 6 and Larger: Cast-iron pipe sleeves, Steel pipe sleeves or Sleeve-seal fittings.
- 2. Concrete Slabs-on-Grade:
 - a. Piping Smaller Than NPS 6: Cast-iron pipe sleeves with sleeve-seal system, Steel pipe sleeves with sleeve-seal system or Sleeve-seal fittings.
 - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
 - b. Piping NPS 6 and Larger: Cast-iron pipe sleeves with sleeve-seal system, Steel pipe sleeves with sleeve-seal system or Sleeve-seal fittings.
 - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
- 3. Concrete Slabs Above Grade:
 - a. Piping Smaller Than NPS 6: Steel pipe sleeves, PVC-pipe sleeves, Stack-sleeve fittings, Sleeve-seal fittings, Molded-PE or -PP sleeves or Molded-PVC sleeves.
 - b. Piping NPS 6 and Larger: Steel pipe sleeves, PVC-pipe sleeves or Stack-sleeve fittings.
- 4. Interior Partitions:
 - a. Piping Smaller Than NPS 6: Steel pipe sleeves.
 - b. Piping NPS 6 and Larger: Galvanized-steel sheet sleeves.

END OF SECTION 230517

SECTION 230519 - METERS AND GAUGES FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Bimetallic-actuated thermometers.
 - 2. Liquid-in-glass thermometers.
 - 3. Duct-thermometer mounting brackets.
 - 4. Thermowells.
 - 5. Dial-type pressure gages.
 - 6. Gage attachments.
 - 7. Test plugs.
 - 8. Test-plug kits.
 - 9. Sight flow indicators.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 - 1. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of meter and gage.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For meters and gages to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 BIMETALLIC-ACTUATED THERMOMETERS

- A. Standard: ASME B40.200.
- B. Case: Liquid-filled sealed type(s); stainless steel with 3-inch nominal diameter.
- C. Dial: Nonreflective aluminum with permanently etched scale markings and scales in deg F.
- D. Connector Type(s): Union joint, adjustable angle, rigid, back or rigid, bottom, with unified-inch screw threads.
- E. Connector Size: 1/2 inch, with ASME B1.1 screw threads.
- F. Stem: 0.25 or 0.375 inch in diameter; stainless steel.
- G. Window: Plain glass or plastic.
- H. Ring: Stainless steel.
- I. Element: Bimetal coil.
- J. Pointer: Dark-colored metal.
- K. Accuracy: Plus or minus 1.5 percent of scale range.

2.2 LIQUID-IN-GLASS THERMOMETERS

- A. Metal-Case, Compact-Style, Liquid-in-Glass Thermometers:
 - 1. Standard: ASME B40.200.
 - 2. Case: Cast aluminum; 6-inch nominal size.
 - 3. Case Form: Back angle or Straight unless otherwise indicated.
 - 4. Tube: Glass with magnifying lens and blue or red organic liquid.
 - 5. Tube Background: Nonreflective aluminum with permanently etched scale markings graduated in deg F.
 - 6. Window: Glass or plastic.
 - 7. Stem: Aluminum or brass and of length to suit installation.
 - a. Design for Air-Duct Installation: With ventilated shroud.
 - b. Design for Thermowell Installation: Bare stem.
 - 8. Connector: 3/4 inch, with ASME B1.1 screw threads.
 - 9. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.
- B. Metal-Case, Industrial-Style, Liquid-in-Glass Thermometers:

1. Standard: ASME B40.200.
2. Case: Cast aluminum; 7-inch nominal size unless otherwise indicated.
3. Case Form: Adjustable angle, Back angle or Straight unless otherwise indicated.
4. Tube: Glass with magnifying lens and blue or red organic liquid.
5. Tube Background: Nonreflective aluminum with permanently etched scale markings graduated in deg F.
6. Window: Glass or plastic.
7. Stem: Aluminum and of length to suit installation.
 - a. Design for Air-Duct Installation: With ventilated shroud.
 - b. Design for Thermowell Installation: Bare stem.
8. Connector: 1-1/4 inches, with ASME B1.1 screw threads.
9. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.

2.3 DUCT-THERMOMETER MOUNTING BRACKETS

- A. Description: Flanged bracket with screw holes, for attachment to air duct and made to hold thermometer stem.

2.4 THERMOWELLS

- A. Thermowells:
 1. Standard: ASME B40.200.
 2. Description: Pressure-tight, socket-type fitting made for insertion in piping tee fitting.
 3. Material for Use with Copper Tubing: CNR or CUNI.
 4. Material for Use with Steel Piping: CRES or CSA.
 5. Type: Stepped shank unless straight or tapered shank is indicated.
 6. External Threads: NPS 1/2, ASME B1.20.1 pipe threads.
 7. Internal Threads: 1/2, with ASME B1.1 screw threads.
 8. Bore: Diameter required to match thermometer bulb or stem.
 9. Insertion Length: Length required to match thermometer bulb or stem.
 10. Lagging Extension: Include on thermowells for insulated piping and tubing.
 11. Bushings: For converting size of thermowell's internal screw thread to size of thermometer connection.
- B. Heat-Transfer Medium: Mixture of graphite and glycerin.

2.5 DIAL-TYPE PRESSURE GAGES

- A. Direct-Mounted, Metal-Case, Dial-Type Pressure Gages:
 1. Standard: ASME B40.100.

2. Case: Liquid-filled, Sealed, Open-front, pressure relief or Solid-front, pressure relief type(s); cast aluminum or drawn steel; 4-1/2-inch nominal diameter.
3. Pressure-Element Assembly: Bourdon tube unless otherwise indicated.
4. Pressure Connection: Brass, with NPS 1/2, ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
5. Movement: Mechanical, with link to pressure element and connection to pointer.
6. Dial: Nonreflective aluminum with permanently etched scale markings graduated in psi.
7. Pointer: Dark-colored metal.
8. Window: Glass or plastic.
9. Ring: Metal.
10. Accuracy: Grade B, plus or minus 2 percent of middle half of scale range.

2.6 GAGE ATTACHMENTS

- A. Snubbers: ASME B40.100, brass; with NPS 1/2, ASME B1.20.1 pipe threads and piston or porous-metal-type surge-dampening device. Include extension for use on insulated piping.
- B. Siphons: Loop-shaped section of brass stainless-steel pipe with NPS 1/2 pipe threads.
- C. Valves: Brass ball or Brass or stainless-steel needle, with NPS 1/2, ASME B1.20.1 pipe threads.

2.7 TEST PLUGS

- A. Description: Test-station fitting made for insertion in piping tee fitting.
- B. Body: Brass or stainless steel with core inserts and gasketed and threaded cap. Include extended stem on units to be installed in insulated piping.
- C. Thread Size: NPS 1/2, ASME B1.20.1 pipe thread.
- D. Minimum Pressure and Temperature Rating: 500 psig at 200 deg F.
- E. Core Inserts: Chlorosulfonated polyethylene synthetic and EPDM self-sealing rubber.

2.8 TEST-PLUG KITS

- A. Furnish one test-plug kit(s) containing two thermometer(s), one pressure gage and adapter, and carrying case. Thermometer sensing elements, pressure gage, and adapter probes shall be of diameter to fit test plugs and of length to project into piping.
- B. Low-Range Thermometer: Small, bimetallic insertion type with 1- to 2-inch diameter dial and tapered-end sensing element. Dial range shall be at least 25 to 125 deg F.
- C. High-Range Thermometer: Small, bimetallic insertion type with 1- to 2-inch diameter dial and tapered-end sensing element. Dial range shall be at least 0 to 220 deg F.

- D. Pressure Gage: Small, Bourdon-tube insertion type with 2- to 3-inch diameter dial and probe. Dial range shall be at least 0 to 200 psig.
- E. Carrying Case: Metal or plastic, with formed instrument padding.

2.9 SIGHT FLOW INDICATORS

- A. Description: Piping inline-installation device for visual verification of flow.
- B. Construction: Bronze or stainless-steel body, with sight glass and ball, flapper, or paddle wheel indicator, and threaded or flanged ends.
- C. Minimum Pressure Rating: 125 psig or as required.
- D. Minimum Temperature Rating: 200 deg F.
- E. End Connections for NPS 2 and Smaller: Threaded.
- F. End Connections for NPS 2-1/2 and Larger: Flanged.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install thermowells with socket extending one-third of pipe diameter and in vertical position in piping tees.
- B. Install thermowells of sizes required to match thermometer connectors. Include bushings if required to match sizes.
- C. Install thermowells with extension on insulated piping.
- D. Fill thermowells with heat-transfer medium.
- E. Install direct-mounted thermometers in thermowells and adjust vertical and tilted positions.
- F. Install duct-thermometer mounting brackets in walls of ducts. Attach to duct with screws.
- G. Install direct-mounted pressure gages in piping tees with pressure gage located on pipe at the most readable position.
- H. Install valve and snubber in piping for each pressure gage for fluids (except steam).
- I. Install valve and syphon fitting in piping for each pressure gage for steam.
- J. Install test plugs in piping tees.
- K. Install flow indicators in piping systems in accessible positions for easy viewing.

- L. Install permanent indicators on walls or brackets in accessible and readable positions.
- M. Install connection fittings in accessible locations for attachment to portable indicators.
- N. Install thermometers in the following locations:
 - 1. Inlet and outlet of each hydronic zone.
 - 2. Inlet and outlet of each hydronic boiler.
 - 3. Two inlets and two outlets of each chiller.
 - 4. Inlet and outlet of each hydronic coil in air-handling units.
 - 5. Two inlets and two outlets of each hydronic heat exchanger.
 - 6. Inlet and outlet of each thermal-storage tank.
 - 7. Outside-, return-, supply-, and mixed-air ducts.
- O. Install pressure gages in the following locations:
 - 1. Discharge of each pressure-reducing valve.
 - 2. Inlet and outlet of each chiller chilled-water and condenser-water connection.
 - 3. Suction and discharge of each pump.

3.2 CONNECTIONS

- A. Install thermometers and gages adjacent to machines and equipment to allow space for service and maintenance of meters, gages, machines, and equipment.

3.3 ADJUSTING

- A. After installation, calibrate meters according to manufacturer's written instructions.

3.4 THERMOMETER SCHEDULE

- A. Thermometers at inlet and outlet of each hydronic zone shall be one of the following:
 - 1. Liquid-filled Sealed, bimetallic-actuated type.
 - 2. Compact Industrial-style, liquid-in-glass type.
 - 3. Test plug with chlorosulfonated polyethylene synthetic or EPDM self-sealing rubber inserts.
- B. Thermometers at inlet and outlet of each hydronic coil in air-handling units and built-up central systems shall be one of the following:
 - 1. Liquid-filled Sealed, bimetallic-actuated type.
 - 2. Compact Industrial-style, liquid-in-glass type.
 - 3. Test plug with chlorosulfonated polyethylene synthetic or EPDM self-sealing rubber inserts.

- C. Thermometers at inlets and outlets of each hydronic heat exchanger shall be one of the following:
 - 1. Liquid-filled Sealed, bimetallic-actuated type.
 - 2. Compact Industrial-style, liquid-in-glass type.
 - 3. Test plug with chlorosulfonated polyethylene synthetic or EPDM self-sealing rubber inserts.
- D. Thermometer stems shall be of length to match thermowell insertion length.

3.5 THERMOMETER SCALE-RANGE SCHEDULE

- A. Scale Range for Chilled-Water Piping: 0 to 100 deg F.
- B. Scale Range for Heating, Hot-Water Piping: 20 to 240 deg F.
- C. Scale Range for Steam and Steam-Condensate Piping: 20 to 240 deg F.
- D. Scale Range for Air Ducts: 0 to 250 deg F.

3.6 PRESSURE-GAGE SCHEDULE

- A. Pressure gages at discharge of each pressure-reducing valve shall be one of the following:
 - 1. Liquid-filled Sealed Open-front, pressure-relief or Solid-front, pressure-relief, direct or remote-mounted, metal case.
 - 2. Sealed, direct mounted.
 - 3. Test plug with chlorosulfonated polyethylene synthetic or EPDM self-sealing rubber inserts.
- B. Pressure gages at inlet and outlet of each chiller chilled-water and condenser-water connection shall be one of the following:
 - 1. Liquid-filled Sealed Open-front, pressure-relief or Solid-front, pressure-relief, direct or remote-mounted, metal case.
 - 2. Sealed, direct mounted.
 - 3. Test plug with chlorosulfonated polyethylene synthetic or EPDM self-sealing rubber inserts.
- C. Pressure gages at suction and discharge of each pump shall be one of the following:
 - 1. Liquid-filled Sealed Open-front, pressure-relief or Solid-front, pressure-relief, direct or remote-mounted, metal case.
 - 2. Sealed, direct mounted.
 - 3. Test plug with chlorosulfonated polyethylene synthetic or EPDM self-sealing rubber inserts.

3.7 PRESSURE-GAGE SCALE-RANGE SCHEDULE

- A. Scale Range for Chilled-Water Piping: 0 to 100 psi.
- B. Scale Range for Heating, Hot-Water Piping: 0 to 100 psi.
- C. Scale Range for Steam Piping: 0 to 30 psi or 0-100 psi.

END OF SECTION 230519

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Metal framing systems.
4. Thermal-hanger shield inserts.
5. Fastener systems.
6. Pipe stands.
7. Equipment supports.

- B. Related Requirements:

1. Section 233113 "Metal Ducts" for duct hangers and supports.
2. Section 232113 "Hydronic Piping" for piping hangers and supports.
3. Section 232213 – "Steam and Condensate Piping" for piping hangers and supports.
4. Section 232300 – "Refrigerant Piping" for piping hangers and supports.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following; include Product Data for components:
 1. Equipment supports.

1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

1.5 QUALITY ASSURANCE

- A. Structural-Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code, Section IX.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design trapeze pipe hangers and equipment supports.
- B. Structural Performance: Hangers and supports for HVAC piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
 - 1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
 - 2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
 - 3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

2.2 METAL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Galvanized Metallic Coatings: Pre-galvanized, hot-dip galvanized, or electro-galvanized.
 - 3. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
 - 4. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel or stainless steel.
- B. Stainless Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.
- C. Copper Pipe and Tube Hangers:
 - 1. Description: MSS SP-58, Types 1 through 58, copper-plated steel, factory-fabricated components.

2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-plated steel or stainless steel.

2.3 TRAPEZE PIPE HANGERS

- A. Description: MSS SP-58, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.4 METAL FRAMING SYSTEMS

- A. MFMA Manufacturer Metal Framing Systems:

1. Description: Shop- or field-fabricated, pipe-support assembly made of steel channels, accessories, fittings, and other components for supporting multiple parallel pipes.
2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
3. Channels: Continuous slotted carbon-steel, stainless steel, Type 304, stainless steel, Type 316 or extruded-aluminum channel with inturned lips.
4. Channel Width: Selected for applicable load criteria.
5. Channel Nuts: Formed or stamped nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
6. Hanger Rods: Continuous-thread rod, nuts, and washer made of galvanized steel or stainless steel.
7. Metallic Coating: No coating, Plain, Pregalvanized G90, Electroplated zinc, Hot-dip galvanized or Gold (yellow zinc dichromate) galvanized.
8. Paint Coating: Green epoxy, acrylic, or urethane.
9. Plastic Coating: PVC.

2.5 FIBERGLASS STRUT SYSTEMS

- A. Description: Structural-grade, factory-formed, glass-fiber-resin channels and angles for supporting multiple parallel pipes.
1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 2. Channels: Continuous slotted fiberglass-reinforced plastic channel with inturned lips.
 3. Channel Width: Selected for applicable load criteria.
 4. Fittings and Accessories: Products provided by channel and angle manufacturer and designed for use with those items.
 5. Fitting and Accessory Materials: Same as those for channels and angles, except metal items may be stainless steel.
 6. Rated Strength: Selected to suit applicable load criteria.
 7. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2.6 THERMAL-HANGER SHIELD INSERTS

- A. Insulation-Insert Material for Cold Piping: ASTM C552, Type II cellular glass with 100-psi or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psi minimum compressive strength and vapor barrier.
- B. Insulation-Insert Material for Hot Piping: Water-repellent-treated, ASTM C533, Type I calcium silicate with 100-psi, ASTM C552, Type II cellular glass with 100-psi or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psi minimum compressive strength.
- C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.7 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Expansion Anchors: Insert-wedge-type anchors for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
 - 1. Indoor Applications: Zinc-coated or stainless steel.
 - 2. Outdoor Applications: Stainless steel.

2.8 PIPE STANDS

- A. General Requirements for Pipe Stands: Shop- or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.
- B. Compact Pipe Stand:
 - 1. Description: Single base unit with integral-rod roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
 - 2. Base: Single, vulcanized rubber, molded polypropylene, or polycarbonate.
 - 3. Hardware: Galvanized steel or polycarbonate.
 - 4. Accessories: Protection pads.
- C. Low-Profile, Single Base, Single-Pipe Stand:

1. Description: Single base with vertical and horizontal members, and pipe support, for roof installation without membrane protection.
2. Base: Single, vulcanized rubber, molded polypropylene, or polycarbonate.
3. Vertical Members: Two, galvanized or stainless-steel, continuous-thread 1/2-inch rods.
4. Horizontal Member: Adjustable horizontal, galvanized or stainless-steel pipe support channels.
5. Pipe Supports: Roller, Strut clamps, Clevis hanger or Swivel hanger.
6. Hardware: Galvanized or Stainless steel.
7. Accessories: Protection pads.
8. Height: 12 inches above roof.

D. High-Profile, Single Base, Single-Pipe Stand:

1. Description: Single base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
2. Base: Single vulcanized rubber or molded polypropylene.
3. Vertical Members: Two, galvanized or stainless-steel, continuous-thread 1/2-inch rods.
4. Horizontal Member: One, adjustable height, galvanized- or stainless-steel pipe support slotted channel or plate.
5. Pipe Supports: Roller, Clevis hanger or Swivel hanger.
6. Hardware: Galvanized or Stainless steel.
7. Accessories: Protection pads, 1/2-inch continuous-thread galvanized-steel rod or 1/2-inch continuous-thread stainless steel rod.
8. Height: 36 inches above roof.

E. High-Profile, Multiple-Pipe Stand:

1. Description: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
2. Bases: Two or more; vulcanized rubber or molded polypropylene.
3. Vertical Members: Two or more, galvanized or stainless-steel channels.
4. Horizontal Members: One or more, adjustable height, galvanized or stainless-steel pipe support.
5. Pipe Supports: Roller, Strut clamps, Clevis hanger or Swivel hanger.
6. Hardware: Galvanized or Stainless steel.
7. Accessories: Protection pads, 1/2-inch continuous-thread rod.
8. Height: 36 inches above roof.

F. Curb-Mounted-Type Pipe Stands: Shop- or field-fabricated pipe supports made from structural-steel shapes, continuous-thread rods, and rollers, for mounting on permanent stationary roof curb.

2.9 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.10 OUTDOOR EQUIPMENT STANDS

- 1. Description: Individual foot supports with elevated adjustable channel cross bars and clamps/fasteners/bolts for ground or roof supported outdoor equipment components, without roof membrane penetration, in a pre-fabricated system that can be modularly-assembled on site.
- 2. Foot Material: Rubber or polypropylene.
- 3. Rails Material: Hot dip galvanized carbon steel.
- 4. Wind/Sliding Load Resistance: Up to 100 mph minimum.

2.11 MATERIALS

- A. Aluminum: ASTM B221.
- B. Carbon Steel: ASTM A1011/A1011M.
- C. Structural Steel: ASTM A36/A36M, carbon-steel plates, shapes, and bars; galvanized.
- D. Stainless Steel: ASTM A240/A240M.
- E. Threaded Rods: Continuously threaded. Zinc-plated or galvanized steel for indoor applications and stainless steel for outdoor applications. Mating nuts and washers of similar materials as rods.
- F. Grout: ASTM C1107/C1107M, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

3.2 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-58. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
 - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
 - 2. Field fabricate from ASTM A36/A36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.
- C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled strut systems.
- D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- E. Fastener System Installation:
 - 1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
 - 2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- F. Pipe Stand Installation:
 - 1. Pipe Stand Types except Curb-Mounted Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
 - 2. Curb-Mounted-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb.
- G. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- I. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- J. Install lateral bracing with pipe hangers and supports to prevent swaying.
- K. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

- L. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- M. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- N. Insulated Piping:
 - 1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
 - 2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 - 3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 - 4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
 - b. NPS 4: 12 inches long and 0.06 inch thick.
 - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
 - d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
 - e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.
 - 5. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
 - 6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.3 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.4 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.6 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780/A780M.

3.7 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-58 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports, metal trapeze pipe hangers and metal framing systems and attachments for general service applications.
- F. Use stainless steel pipe hangers and fiberglass pipe hangers and fiberglass strut systems and stainless steel or corrosion-resistant attachments for hostile environment applications.
- G. Use copper-plated pipe hangers and copper or stainless steel attachments for copper piping and tubing.
- H. Use padded hangers for piping that is subject to scratching.
- I. Use thermal-hanger shield inserts for insulated piping and tubing.
- J. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
 - 2. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
 - 3. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
 - 4. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
 - 5. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
 - 6. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction might occur.
 - 7. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS 24, from single rod if horizontal movement caused by expansion and contraction might occur.
- K. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
 - 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.
- L. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
 - 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
 - 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.

4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
 5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.
- M. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 6. C-Clamps (MSS Type 23): For structural shapes.
 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
 11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
 12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb.
 - b. Medium (MSS Type 32): 1500 lb.
 - c. Heavy (MSS Type 33): 3000 lb.
 13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
 14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
 15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- N. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- O. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
 2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
 3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
 4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
 5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from hanger.
 6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.
 7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from trapeze support.
 8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
 - a. Horizontal (MSS Type 54): Mounted horizontally.
 - b. Vertical (MSS Type 55): Mounted vertically.
 - c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.
- P. Comply with MSS SP-58 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.
- Q. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.
- R. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 230529

SECTION 230548 - VIBRATION AND SEISMIC CONTROLS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Elastomeric isolation pads.
2. Elastomeric isolation mounts.
3. Restrained elastomeric isolation mounts.
4. Open-spring isolators.
5. Housed-spring isolators.
6. Restrained-spring isolators.
7. Housed-restrained-spring isolators.
8. Pipe-riser resilient supports.
9. Resilient pipe guides.
10. Air-spring isolators.
11. Restrained-air-spring isolators.
12. Elastomeric hangers.
13. Spring hangers.
14. Snubbers.
15. Restraint channel bracings.
16. Restraint cables.
17. Seismic-restraint accessories.
18. Mechanical anchor bolts.
19. Adhesive anchor bolts.
20. Vibration isolation equipment bases.
21. Restrained isolation roof-curb rails.

B. Related Requirements:

1. Section 210548 "Vibration and Seismic Controls for Fire Suppression" for devices for fire-suppression equipment and systems.
2. Section 220548 "Vibration and Seismic Controls for Plumbing" for devices for plumbing equipment and systems.

1.3 DEFINITIONS

- A. IBC: International Building Code.

- B. ICC-ES: ICC-Evaluation Service.
- C. OSHPD: Office of Statewide Health Planning & Development (for the State of California).

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
 - 2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of vibration isolation device and seismic-restraint component required.
 - a. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by an agency acceptable to authorities having jurisdiction.
 - b. Annotate to indicate application of each product submitted and compliance with requirements.
 - 3. Interlocking Snubbers: Include ratings for horizontal, vertical, and combined loads.
- B. Shop Drawings:
 - 1. Detail fabrication and assembly of equipment bases. Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.
 - 2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.
- C. Delegated-Design Submittal: For each vibration isolation and seismic-restraint device.
 - 1. Include design calculations and details for selecting vibration isolators, seismic restraints, and vibration isolation bases complying with performance requirements, design criteria, and analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 2. Design Calculations: Calculate static and dynamic loading due to equipment weight, operation, and seismic forces required to select vibration isolators and seismic restraints and for designing vibration isolation bases.
 - a. Coordinate design calculations with wind load calculations required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.
 - 3. Riser Supports: Include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on building structure, spring deflection changes, and seismic loads. Include certification that riser system was examined for excessive stress and that none exists.
 - 4. Seismic Restraint Details:

- a. Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.
- b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events. Indicate association with vibration isolation devices.
- c. Preapproval and Evaluation Documentation: By an agency acceptable to authorities having jurisdiction, showing maximum ratings of restraint items and the basis for approval (tests or calculations).

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Show coordination of vibration isolation device installation and seismic bracing for HVAC piping and equipment with other systems and equipment in the vicinity, including other supports and restraints, if any.
- B. Qualification Data: For professional engineer and testing agency.
- C. Welding certificates.
- D. Air-Mounting System Performance Certification: Include natural frequency, load, and damping test data performed by an independent agency.
- E. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air-spring mounts and restrained-air-spring mounts to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7 and that is acceptable to authorities having jurisdiction.
- B. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- D. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval OPA number from OSHPD, preapproval by ICC-ES, or preapproval by another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on

calculations. If preapproved ratings are unavailable, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic-Restraint Loading:

1. Site Class as Defined in the IBC: D.
2. Assigned Seismic Use Group as Defined in the IBC: III.
 - a. Component Importance Factor: 1.5.
 - b. Component Response Modification Factor: 2.5.
 - c. Component Amplification Factor: 2.5.
3. Design Spectral Response Acceleration at Short Periods (0.2 Second):
4. Design Spectral Response Acceleration at 1.0-Second Period:
5. Rated strengths, features, and applications shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
 - a. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they are subjected.

2.2 ELASTOMERIC ISOLATION PADS

A. Elastomeric Isolation Pads:

1. Fabrication: Single or multiple layers of sufficient durometer stiffness for uniform loading over pad area.
2. Size: Factory or field cut to match requirements of supported equipment.
3. Pad Material: Oil and water resistant with elastomeric properties.
4. Surface Pattern: Smooth, Ribbed or Waffle pattern.
5. Infused nonwoven cotton or synthetic fibers.
6. Load-bearing metal plates adhered to pads.
7. Sandwich-Core Material: Resilient and elastomeric.
 - a. Surface Pattern: Smooth, Ribbed or Waffle pattern.
 - b. Infused nonwoven cotton or synthetic fibers.

2.3 ELASTOMERIC ISOLATION MOUNTS

A. Double-Deflection, Elastomeric Isolation Mounts:

1. Mounting Plates:

- a. Top Plate: Encapsulated steel load transfer top plates, factory drilled and threaded with threaded studs or bolts.
 - b. Baseplate: Encapsulated steel bottom plates with holes provided for anchoring to support structure.
2. Elastomeric Material: Molded, oil-resistant rubber, neoprene, or other elastomeric material.

2.4 RESTRAINED ELASTOMERIC ISOLATION MOUNTS

- A. Restrained Elastomeric Isolation Mounts:
 1. Description: All-directional isolator with seismic restraints containing two separate and opposing elastomeric elements that prevent central threaded element and attachment hardware from contacting the housing during normal operation.
 - a. Housing: Cast-ductile iron or welded steel.
 - b. Elastomeric Material: Molded, oil-resistant rubber, neoprene, or other elastomeric material.

2.5 OPEN-SPRING ISOLATORS

- A. Freestanding, Laterally Stable, Open-Spring Isolators:
 1. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
 2. Minimum Additional Travel: 50 percent of the required deflection at rated load.
 3. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 4. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
 5. Baseplates: Factory-drilled steel plate for bolting to structure with an elastomeric isolator pad attached to the underside. Baseplates shall limit floor load to 500 psig.
 6. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.

2.6 HOUSED-SPRING ISOLATORS

- A. Freestanding, Laterally Stable, Open-Spring Isolators in Two-Part Telescoping Housing:
 1. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
 2. Minimum Additional Travel: 50 percent of the required deflection at rated load.
 3. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 4. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
 5. Two-Part Telescoping Housing: A steel top and bottom frame separated by an elastomeric material and enclosing the spring isolators.
 - a. Drilled base housing for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.

- b. Top housing with attachment and leveling bolt, threaded mounting holes and internal leveling device or elastomeric pad.

2.7 RESTRAINED-SPRING ISOLATORS

- A. Freestanding, Laterally Stable, Open-Spring Isolators with Vertical-Limit Stop Restraint:
 - 1. Housing: Steel housing with vertical-limit stops to prevent spring extension due to weight being removed.
 - a. Base with holes for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
 - b. Top plate with threaded mounting holes or elastomeric pad.
 - c. Internal leveling bolt that acts as blocking during installation.
 - 2. Restraint: Limit stop as required for equipment and authorities having jurisdiction.
 - 3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
 - 4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
 - 5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 - 6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.8 HOUSED-RESTRAINED-SPRING ISOLATORS

- A. Freestanding, Steel, Open-Spring Isolators with Vertical-Limit Stop Restraint in Two-Part Telescoping Housing:
 - 1. Two-Part Telescoping Housing: A steel top and bottom frame separated by an elastomeric material and enclosing the spring isolators. Housings are equipped with adjustable or non-adjustable snubbers to limit vertical movement.
 - a. Drilled base housing for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
 - b. Threaded top housing with adjustment bolt and cap screw to fasten and level equipment.
 - 2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
 - 3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
 - 4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 - 5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.9 PIPE-RISER RESILIENT SUPPORT

- A. Description: All-directional, acoustical pipe anchor consisting of two steel tubes separated by a minimum 1/2-inch- thick neoprene.

1. Vertical-Limit Stops: Steel and neoprene vertical-limit stops arranged to prevent vertical travel in both directions.
2. Maximum Load Per Support: 500 psig on isolation material providing equal isolation in all directions.

2.10 RESILIENT PIPE GUIDES

- A. Description: Telescopic arrangement of two steel tubes or post and sleeve arrangement separated by a minimum 1/2-inch- thick neoprene.
1. Factory-Set Height Guide with Shear Pin: Shear pin shall be removable and reinsertable to allow for selection of pipe movement. Guides shall be capable of motion to meet location requirements.

2.11 AIR-SPRING ISOLATORS

- A. Freestanding, Single or Multiple, Compressed-Air Bellows:
1. Bellows Assembly: Upper and lower powder-coated steel sections connected by a replaceable, flexible, nylon-reinforced neoprene bellows or similar elastomeric material.
 2. Maximum Natural Frequency: 3 Hz.
 3. Operating Pressure Range: 25 to 100 psig.
 4. Burst Pressure: At least three times manufacturer's published maximum operating pressure.
 5. Tank valves.

2.12 RESTRAINED-AIR-SPRING ISOLATORS

- A. Freestanding, Single or Multiple, Compressed-Air Bellows with Vertical-Limit Stop Restraint:
1. Housing: Steel housing with vertical-limit stops to prevent spring extension due to weight being removed.
 - a. Base with holes for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
 - b. Top plate with threaded mounting holes or elastomeric pad.
 - c. Internal leveling bolt that acts as blocking during installation.
 2. Restraint: Limit stop as required for equipment and authorities having jurisdiction.
 3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
 4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
 5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
 7. Bellows Assembly: Upper and lower powder-coated steel sections connected by a replaceable, flexible, nylon-reinforced neoprene bellows or similar elastomeric material.
 8. Maximum Natural Frequency: 3 Hz.
 9. Operating Pressure Range: 25 to 100 psig.

10. Burst Pressure: At least three times manufacturer's published maximum operating pressure.
11. Tank valves.

2.13 ELASTOMERIC HANGERS

- A. Elastomeric Mount in a Steel Frame with Upper and Lower Steel Hanger Rods:
1. Frame: Steel, fabricated with a connection for an upper threaded hanger rod and an opening on the underside to allow for a maximum of 30 degrees of angular lower hanger-rod misalignment without binding or reducing isolation efficiency.
 2. Dampening Element: Molded, oil-resistant rubber, neoprene, or other elastomeric material with a projecting bushing for the underside opening preventing steel to steel contact.

2.14 SPRING HANGERS

- A. Combination Coil-Spring and Elastomeric-Insert Hanger with Spring and Insert in Compression:
1. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.
 2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
 3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
 4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
 6. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.
 7. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.
 8. Self-centering hanger-rod cap to ensure concentricity between hanger rod and support spring coil.

2.15 SNUBBERS

- A. Description: Factory fabricated using welded structural-steel shapes and plates, anchor bolts, and replaceable resilient isolation washers and bushings.
1. Anchor bolts for attaching to concrete shall be seismic-rated, drill-in, and stud-wedge or female-wedge type.
 2. Resilient Isolation Washers and Bushings: Oil- and water-resistant neoprene.
 3. Maximum 1/4-inch air gap, and minimum 1/4-inch- thick resilient cushion.

2.16 RESTRAINT CHANNEL BRACINGS

- A. Description: MFMA-4, shop- or field-fabricated bracing assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; rated in tension, compression, and torsion forces.

2.17 RESTRAINT CABLES

- A. Restraint Cables: ASTM A 603 galvanized or ASTM A 492 stainless-steel cables. End connections made of steel assemblies with thimbles, brackets, swivel, and bolts designed for restraining cable service; with a minimum of two clamping bolts for cable engagement.

2.18 SEISMIC-RESTRAINT ACCESSORIES

- A. Hanger-Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections or Reinforcing steel angle clamped to hanger rod.
- B. Hinged and Swivel Brace Attachments: Multifunctional steel connectors for attaching hangers to rigid channel bracings and restraint cables.
- C. Bushings for Floor-Mounted Equipment Anchor Bolts: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchor bolts and studs.
- D. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices used.
- E. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.

2.19 MECHANICAL ANCHOR BOLTS

- A. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

2.20 ADHESIVE ANCHOR BOLTS

- A. Adhesive Anchor Bolts: Drilled-in and capsule anchor system containing PVC or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

2.21 VIBRATION ISOLATION EQUIPMENT BASES

- A. Steel Rails: Factory-fabricated, welded, structural-steel rails.
 - 1. Design Requirements: Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide rails.
 - a. Include supports for suction and discharge elbows for pumps.
 - 2. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Rails shall have shape to accommodate supported equipment.
 - 3. Support Brackets: Factory-welded steel brackets on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.
- B. Steel Bases: Factory-fabricated, welded, structural-steel bases and rails.
 - 1. Design Requirements: Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide bases or rails.
 - a. Include supports for suction and discharge elbows for pumps.
 - 2. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Bases shall have shape to accommodate supported equipment.
 - 3. Support Brackets: Factory-welded steel brackets on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.
- C. Concrete Inertia Base: Factory-fabricated or field-fabricated, welded, structural-steel bases and rails ready for placement of cast-in-place concrete.
 - 1. Design Requirements: Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide bases or rails.
 - a. Include supports for suction and discharge elbows for pumps.
 - 2. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Bases shall have shape to accommodate supported equipment.
 - 3. Support Brackets: Factory-welded steel brackets on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.
 - 4. Fabrication: Fabricate steel templates to hold equipment anchor-bolt sleeves and anchors in place during placement of concrete. Obtain anchor-bolt templates from supported equipment manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and equipment to receive vibration isolation and seismic control devices for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATIONS

- A. Multiple Pipe Supports: Secure pipes to trapeze member with clamps approved for application by an agency acceptable to authorities having jurisdiction.
- B. Hanger-Rod Stiffeners: Install hanger-rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to seismic forces.
- C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength is adequate to carry present and future static and seismic loads within specified loading limits.

3.3 VIBRATION CONTROL AND SEISMIC-RESTRAINT DEVICE INSTALLATION

- A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork.
- B. Installation of vibration isolators must not cause any change of position of equipment, piping, or ductwork resulting in stresses or misalignment.
- C. Equipment Restraints:
 - 1. Install seismic snubbers on HVAC equipment mounted on vibration isolators. Locate snubbers as close as possible to vibration isolators and bolt to equipment base and supporting structure.
 - 2. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.
 - 3. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction that provides required submittals for component.
- D. Piping Restraints:
 - 1. Comply with requirements in MSS SP-127.

2. Space lateral supports a maximum of 40 feet o.c., and longitudinal supports a maximum of 80 feet o.c.
 3. Brace a change of direction longer than 12 feet.
- E. Install cables so they do not bend across edges of adjacent equipment or building structure.
- F. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction that provides required submittals for component.
- G. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.
- H. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.
- I. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
- J. Drilled-in Anchors:
1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
 2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
 3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
 4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
 5. Set anchors to manufacturer's recommended torque, using a torque wrench.
 6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.
- 3.4 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION
- A. Install flexible connections in piping where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where the connections terminate with connection to equipment that is anchored to a different structural element from the one supporting the connections as they approach equipment. Comply with requirements in Section 232113 "Hydronic Piping" for piping flexible connections.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 - 1. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
 - 2. Schedule test with Owner, through Architect, before connecting anchorage device to restrained component (unless postconnection testing has been approved), and with at least seven days' advance notice.
 - 3. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members.
 - 4. Test at least four of each type and size of installed anchors and fasteners selected by Architect.
 - 5. Test to 90 percent of rated proof load of device.
 - 6. Measure isolator restraint clearance.
 - 7. Measure isolator deflection.
 - 8. Verify snubber minimum clearances.
 - 9. Test and adjust restrained-air-spring isolator controls and safeties.
- D. Remove and replace malfunctioning units and retest as specified above.
- E. Prepare test and inspection reports.

3.6 ADJUSTING

- A. Adjust isolators after piping system is at operating weight.
- B. Adjust limit stops on restrained-spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

3.7 AIR-SPRING ISOLATOR INSTALLATION

- A. Independent Isolator Installation:
 - 1. Install tank valve into each air isolator.
 - 2. Inflate each isolator to height and pressure specified on Drawings.
- B. Pressure-Regulated Isolator Installation:
 - 1. Coordinate the constant pressure-regulated air supply to air springs with the requirements for piping and connections specified in Section 221513 "General-Service Compressed-Air Piping."
 - 2. Connect all pressure regulators to a single dry, filtered air supply.

3. Inflate isolators to height and or pressure specified on Drawings.

3.8 VIBRATION ISOLATION EQUIPMENT BASES INSTALLATION

- A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork.

END OF SECTION 230548

SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Pipe labels.
3. Duct labels.
4. Valve tags.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.
- C. Equipment-Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.
- D. Valve-numbering scheme.
- E. Valve Schedules: Provide for each piping system. Include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032-inch, stainless steel, 0.025-inch, aluminum, 0.032-inch or anodized aluminum, 0.032-inch minimum thickness, with predrilled or stamped holes for attachment hardware.
2. Letter and Background Color: As indicated for specific application under Part 3.
3. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
4. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances of up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
5. Fasteners: Stainless steel rivets or self-tapping screws.

6. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

- B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

2.2 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color coded, with lettering indicating service and showing flow direction in accordance with ASME A13.1.
- B. Letter and Background Color: As indicated for specific application under Part 3.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings. Also include:
1. Pipe size.
 2. Flow-Direction Arrows: Include flow-direction arrows on main distribution piping. Arrows may be either integral with label or applied separately.
 3. Lettering Size: Size letters in accordance with ASME A13.1 for piping At least 1/2 inch for viewing distances of up to 72 inches and proportionately larger lettering for greater viewing distances.

2.3 DUCT LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
- B. Letter and Background Color: As indicated for specific application under Part 3.
- C. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- D. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- E. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances of up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- F. Fasteners: Stainless steel rivets or self-tapping screws.
- G. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- H. Duct Label Contents: Include identification of duct service using same designations or abbreviations as used on Drawings. Also include the following:

1. Duct size.
2. Flow-Direction Arrows: Include flow-direction arrows on main distribution ducts. Arrows may be either integral with label or may be applied separately.
3. Lettering Size: Size letters in accordance with ASME A13.1 for piping At least 1/2 inch for viewing distances of up to 72 inches and proportionately larger lettering for greater viewing distances.

2.4 VALVE TAGS

- A. Description: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.
 1. Tag Material: Brass, 0.04-inch, stainless steel, 0.024-inch, aluminum, 0.031-inch or anodized aluminum, 0.031-inch minimum thickness, with predrilled or stamped holes for attachment hardware.
 2. Fasteners: Brass wire, link chain or beaded chain or S-hook.
- B. Letter and Background Color: As indicated for specific application under Part 3.
- C. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
 1. Include valve-tag schedule in operation and maintenance data.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of incompatible primers, paints, and encapsulants, as well as dirt, oil, grease, release agents, and other substances that could impair bond of identification devices.

3.2 INSTALLATION, GENERAL REQUIREMENTS

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.
- D. Locate identifying devices so that they are readily visible from the point of normal approach.

3.3 INSTALLATION OF EQUIPMENT LABELS, AND LABELS

- A. Permanently fasten labels on each item of mechanical equipment.
- B. Sign and Label Colors:
 - 1. White letters on an ANSI Z535.1 safety-blue background.
- C. Locate equipment labels where accessible and visible.

3.4 INSTALLATION OF PIPE LABELS

- A. Install pipe labels showing service and flow direction with permanent adhesive on pipes.
- B. Pipe-Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Within 3 ft. of each valve and control device.
 - 2. At access doors, manholes, and similar access points that permit view of concealed piping.
 - 3. Within 3 ft. of equipment items and other points of origination and termination.
 - 4. Spaced at maximum intervals of 25 ft. along each run. Reduce intervals to 10 ft. in areas of congested piping, ductwork, and equipment.
- C. Do not apply plastic pipe labels or plastic tapes directly to bare pipes conveying fluids at temperatures of 125 deg F or higher. Where these pipes are to remain uninsulated, use a short section of insulation or use stenciled labels.
- D. Flow-Direction Arrows: Use arrows to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.
- E. Pipe-Label Color Schedule:
 - 1. Chilled-Water Piping: White letters on an ANSI Z535.1 safety-green background.
 - 2. Heating Water Piping: White letters on an ANSI Z535.1 safety-green background.
 - 3. Low-Pressure Steam Piping: Black letters on an ANSI Z535.1 safety-yellow background or White letters on an ANSI Z535.1 safety-green background.
 - 4. High-Pressure Steam Piping: Black letters on an ANSI Z535.1 safety-yellow background or White letters on an ANSI Z535.1 safety-green background.
 - 5. Steam Condensate Piping: Black letters on an ANSI Z535.1 safety-yellow background or White letters on an ANSI Z535.1 safety-green background.
 - 6. Potable and Other Water: White letters on an ANSI Z535.1 safety-green background.
 - 7. Compressed Air: White letters on an ANSI Z535.1 safety-blue background.

3.5 INSTALLATION OF DUCT LABELS

- A. Install plastic-laminated self-adhesive duct labels showing service and flow direction with permanent adhesive on air ducts.
 - 1. Provide labels in the following color codes:
 - a. For air supply ducts: White letters on blue background.
 - b. For air return ducts: White letters on blue background.
 - c. For exhaust-, outside-, relief-, return-, and mixed-air ducts: White letters on blue background.
- B. Locate label near each point where ducts enter into and exit from concealed spaces and at maximum intervals of 20 ft. where exposed or are concealed by removable ceiling system.
- C. Install tags on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, shutoff valves, and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule in the operating and maintenance manual.
- D. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in "Valve-Tag Size and Shape" Subparagraph below.
 - 1. Valve-Tag Size and Shape:
 - a. Chilled Water: 1-1/2 inches, round.
 - b. Hot Water: 1-1/2 inches, round.
 - c. Gas: 1-1/2 inches, round.
 - d. Low-Pressure Steam: 1-1/2 inches, round.
 - e. High-Pressure Steam: 1-1/2 inches, round.
 - f. Steam Condensate: 1-1/2 inches, round.
 - 2. Valve-Tag Colors:
 - a. For each piping system, use the same lettering and background coloring system on valve tags as used for the Pipe Label Schedule text and background.

END OF SECTION 230553

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Testing, Adjusting, and Balancing of Air Systems:
 - a. Constant-volume air systems.
 - b. Variable Air Volume air systems
2. Testing, Adjusting, and Balancing of Hydronic Piping Systems:
 - a. Constant-flow hydronic systems.
3. Testing, adjusting, and balancing of steam and condensate piping systems.
4. Testing, adjusting, and balancing of equipment.
5. Testing, adjusting, and balancing of existing HVAC systems and equipment.
6. HVAC-control system verification.

1.3 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.
- E. TAB Specialist: An independent entity meeting qualifications to perform TAB work.
- F. TDH: Total dynamic head.

1.4 PREINSTALLATION MEETINGS

- A. TAB Conference: Conduct a TAB conference at Project site after approval of the TAB strategies and procedures plan, to develop a mutual understanding of the details. Provide a minimum of 14 days' advance notice of scheduled meeting time and location.

1. Minimum Agenda Items:

- a. The Contract Documents examination report.
- b. The TAB plan.
- c. Needs for coordination and cooperation of trades and subcontractors.
- d. Proposed procedures for documentation and communication flow.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB specialist and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.
- B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report, as specified in Part 3.
- C. Strategies and Procedures Plan: Within 30 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures, as specified in "Preparation" Article.
- D. System Readiness Checklists: Within 60 days of Contractor's Notice to Proceed, submit system readiness checklists, as specified in "Preparation" Article.
- E. Examination Report: Submit a summary report of the examination review required in "Examination" Article.
- F. Certified TAB reports.
- G. Sample report forms.
- H. Instrument calibration reports, to include the following:
 1. Instrument type and make.
 2. Serial number.
 3. Application.
 4. Dates of use.
 5. Dates of calibration.

1.6 QUALITY ASSURANCE

- A. TAB Specialists Qualifications, Certified by AABC:
 1. TAB Field Supervisor: Employee of the TAB specialist and certified by AABC.
 2. TAB Technician: Employee of the TAB specialist and certified by AABC.
- B. TAB Specialists Qualifications, Certified by NEBB or TABB:
 1. TAB Field Supervisor: Employee of the TAB specialist and certified by NEBB or TABB.
 2. TAB Technician: Employee of the TAB specialist and certified by NEBB or TABB.

- C. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."
- D. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6.7.2.3 - "System Balancing."
- E. Code and AHJ Compliance: TAB is required to comply with governing codes and requirements of authorities having jurisdiction.

PART 2 - EXECUTION

2.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.
- B. Examine installed systems for balancing devices, such as test ports, gauge cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data, including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine ceiling plenums and underfloor air plenums used for HVAC to verify that they are properly separated from adjacent areas and sealed.
- F. Examine equipment performance data, including fan and pump curves.
 - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 - 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine test reports specified in individual system and equipment Sections.
- I. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.

- J. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.
- K. Examine temporary and permanent strainers. Verify that temporary strainer screens used during system cleaning and flushing have been removed and permanent strainer baskets are installed and clean.
- L. Examine control valves for proper installation for their intended function of isolating, throttling, diverting, or mixing fluid flows.
- M. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- N. Examine system pumps to ensure absence of entrained air in the suction piping.
- O. Examine operating safety interlocks and controls on HVAC equipment.
- P. Examine control dampers for proper installation for their intended function of isolating, throttling, diverting, or mixing air flows.
- Q. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

2.2 PREPARATION

- A. Prepare a TAB plan that includes the following:
 - 1. Equipment and systems to be tested.
 - 2. Strategies and step-by-step procedures for balancing the systems.
 - 3. Instrumentation to be used.
 - 4. Sample forms with specific identification for all equipment.
- B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:
 - 1. Airside:
 - a. Verify that leakage and pressure tests on air distribution systems have been satisfactorily completed.
 - b. Duct systems are complete with terminals installed.
 - c. Volume, smoke, and fire dampers are open and functional.
 - d. Clean filters are installed.
 - e. Fans are operating, free of vibration, and rotating in correct direction.
 - f. Variable-frequency controllers' startup is complete and safeties are verified.
 - g. Automatic temperature-control systems are operational.
 - h. Ceilings are installed.
 - i. Windows and doors are installed.
 - j. Suitable access to balancing devices and equipment is provided.

2. Hydronics:

- a. Verify leakage and pressure tests on water distribution systems have been satisfactorily completed.
- b. Piping is complete with terminals installed.
- c. Water treatment is complete.
- d. Systems are flushed, filled, and air purged.
- e. Strainers are pulled and cleaned.
- f. Control valves are functioning in accordance with the sequence of operation.
- g. Shutoff and balance valves have been verified to be 100 percent open.
- h. Pumps are started and proper rotation is verified.
- i. Pump gauge connections are installed directly at pump inlet and outlet flanges or in discharge and suction pipe prior to valves or strainers.
- j. Variable-frequency controllers' startup is complete and safeties are verified.
- k. Suitable access to balancing devices and equipment is provided.

2.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system in accordance with the procedures contained in AABC's "National Standards for Total System Balance", ASHRAE 111 or NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment casings for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

2.4 TESTING, ADJUSTING, AND BALANCING OF HVAC EQUIPMENT

- A. Test, adjust, and balance HVAC equipment indicated on Drawings, including.

2.5 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' Record drawings duct layouts.

- C. For variable-air-volume systems, develop a plan to simulate diversity.
- D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- G. Verify that motor starters are equipped with properly sized thermal protection.
- H. Check dampers for proper position to achieve desired airflow path.
- I. Check for airflow blockages.
- J. Check condensate drains for proper connections and functioning.
- K. Check for proper sealing of air-handling-unit components.

2.6 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

- A. Adjust the variable-air-volume systems as follows:
 - 1. Verify that the system static pressure sensor is located two-thirds of the distance down the duct from the fan discharge.
 - 2. Verify that the system is under static pressure control.
 - 3. Select the terminal unit that is most critical to the supply-fan airflow. Measure inlet static pressure, and adjust system static pressure control set point so the entering static pressure for the critical terminal unit is not less than the sum of the terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.
 - 4. Calibrate and balance each terminal unit for maximum and minimum design airflow as follows:
 - a. Adjust controls so that terminal is calling for maximum airflow. Some controllers require starting with minimum airflow. Verify calibration procedure for specific project.
 - b. Measure airflow and adjust calibration factor as required for design maximum airflow. Record calibration factor.
 - c. When maximum airflow is correct, balance the air outlets downstream from terminal units.
 - d. Adjust controls so that terminal is calling for minimum airflow.
 - e. Measure airflow and adjust calibration factor as required for design minimum airflow. Record calibration factor. If no minimum calibration is available, note any deviation from design airflow.
 - f. On constant volume terminals, in critical areas where room pressure is to be maintained, verify that the airflow remains constant over the full range of full cooling to full heating. Note any deviation from design airflow or room pressure.
 - 5. After terminals have been calibrated and balanced, test and adjust system for total airflow. Adjust fans to deliver total design airflows within the maximum allowable fan speed listed by fan manufacturer.

- a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
 - b. Set terminals for maximum airflow. If system design includes diversity, adjust terminals for maximum and minimum airflow, so that connected total matches fan selection and simulates actual load in the building.
 - c. Where duct conditions allow, measure airflow by main Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses close to the fan and prior to any outlets, to obtain total airflow.
 - d. Where duct conditions are unsuitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
6. Measure fan static pressures as follows:
- a. Measure static pressure directly at the fan outlet or through the flexible connection.
 - b. Measure static pressure directly at the fan inlet or through the flexible connection.
 - c. Measure static pressure across each component that makes up the air-handling system.
 - d. Report any artificial loading of filters at the time static pressures are measured.
7. Set final return and outside airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.
- a. Balance the return-air ducts and inlets.
 - b. Verify that terminal units are meeting design airflow under system maximum flow.
8. Re-measure the inlet static pressure at the most critical terminal unit, and adjust the system static pressure set point to the most energy-efficient set point to maintain the optimum system static pressure. Record set point and give to controls Contractor.
9. Verify final system conditions as follows:
- a. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to match design if necessary.
 - b. Re-measure and confirm that total airflow is within design.
 - c. Re-measure final fan operating data, speed, volts, amps, and static profile.
 - d. Mark final settings.
 - e. Test system in economizer mode. Verify proper operation and adjust if necessary. Measure and record all operating data.
 - f. Verify tracking between supply and return fans.

2.7 GENERAL PROCEDURES FOR HYDRONIC SYSTEMS

- A. Prepare test reports for pumps, coils, and other equipment. Obtain approved submittals and manufacturer-recommended testing procedures. Crosscheck the summation of required coil and equipment flow rates with pump design flow rate.
- B. Prepare schematic diagrams of systems' Record drawings piping layouts.
- C. In addition to requirements in "Preparation" Article, prepare hydronic systems for testing and balancing as follows:
 1. Check expansion tank for proper setting.
 2. Check highest vent for adequate pressure.
 3. Check flow-control valves for proper position.
 4. Locate start-stop and disconnect switches, electrical interlocks, and motor controllers.
 5. Verify that motor controllers are equipped with properly sized thermal protection.

6. Check that air has been purged from the system.
- D. Measure and record upstream and downstream pressure of each piece of equipment.
- E. Measure and record upstream and downstream pressure of pressure-reducing valves.
- F. Check settings and operation of automatic temperature-control valves, self-contained control valves, and pressure-reducing valves. Record final settings.
 1. Check settings and operation of each safety valve. Record settings.

2.8 PROCEDURES FOR CONSTANT-FLOW HYDRONIC SYSTEMS

- A. Adjust pumps to deliver total design flow.
 1. Measure total water flow.
 - a. Position valves for full flow through coils.
 - b. Measure flow by main flow meter, if installed.
 - c. If main flow meter is not installed, determine flow by pump TDH or known equipment pressure drop.
 2. Measure pump TDH as follows:
 - a. Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
 - b. Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
 - c. Convert pressure to head and correct for differences in gauge heights.
 - d. Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow, and verify that the pump has the intended impeller size.
 - e. With valves open, read pump TDH. Adjust pump discharge valve until design water flow is achieved. If excessive throttling is required to achieve desired flow, recommend pump impellers be trimmed to reduce excess throttling.
 3. Monitor motor performance during procedures, and do not operate motor in an overloaded condition.
- B. Adjust flow-measuring devices installed in mains and branches to design water flows.
 1. Measure flow in main and branch pipes.
 2. Adjust main and branch balance valves for design flow.
 3. Re-measure each main and branch after all have been adjusted.
- C. Adjust flow-measuring devices installed at terminals for each space to design water flows.
 1. Measure flow at terminals.
 2. Adjust each terminal to design flow.

3. Re-measure each terminal after it is adjusted.
 4. Position control valves to bypass the coil, and adjust the bypass valve to maintain design flow.
 5. Perform temperature tests after flows have been balanced.
- D. For systems with pressure-independent valves at terminals:
1. Measure differential pressure and verify that it is within manufacturer's specified range.
 2. Perform temperature tests after flows have been verified.
- E. For systems without pressure-independent valves or flow-measuring devices at terminals:
1. Measure and balance coils by either coil pressure drop or temperature method.
 2. If balanced by coil pressure drop, perform temperature tests after flows have been verified.
- F. Verify final system conditions as follows:
1. Re-measure and confirm that total water flow is within design.
 2. Re-measure final pumps' operating data, TDH, volts, amps, and static profile.
 3. Mark final settings.
- G. Verify that memory stops have been set.

2.9 PROCEDURES FOR STEAM AND CONDENSATE SYSTEMS

- A. Measure and record upstream and downstream pressure of each piece of equipment.
- B. Measure and record upstream and downstream steam pressure of pressure-reducing valves.
- C. Check settings and operation of automatic temperature-control valves, self-contained control valves, and pressure-reducing valves. Record final settings.
- D. Check settings and operation of each safety valve. Record settings.
- E. Verify the operation of each steam trap.

2.10 PROCEDURES FOR MOTORS

- A. Motors 1/2 HP and Larger: Test at final balanced conditions and record the following data:
 1. Manufacturer's name, model number, and serial number.
 2. Motor horsepower rating.
 3. Motor rpm.
 4. Phase and hertz.
 5. Nameplate and measured voltage, each phase.
 6. Nameplate and measured amperage, each phase.
 7. Starter size and thermal-protection-element rating.

8. Service factor and frame size.

- B. Motors Driven by Variable-Frequency Controllers: Test manual bypass of controller to prove proper operation.

2.11 PROCEDURES FOR HEAT-TRANSFER COILS

- A. Measure, adjust, and record the following data for each hydronic coil:

1. Entering- and leaving-water temperature.
2. Water flow rate.
3. Water pressure drop.
4. Dry-bulb temperature of entering and leaving air.
5. Wet-bulb temperature of entering and leaving air for cooling coils.
6. Airflow.
7. Air pressure drop.

- B. Measure, adjust, and record the following data for each electric heating coil:

1. Nameplate data.
2. Airflow.
3. Entering- and leaving-air temperature at full load.
4. Air pressure drop.
5. Voltage and amperage input of each phase at full load.
6. Calculated kilowatt at full load.
7. Fuse or circuit-breaker rating for overload protection.

- C. Measure, adjust, and record the following data for each steam coil:

1. Dry-bulb temperature of entering and leaving air.
2. Airflow.
3. Inlet steam pressure.

- D. Measure, adjust, and record the following data for each refrigerant coil:

1. Dry-bulb temperature of entering and leaving air.
2. Wet-bulb temperature of entering and leaving air.
3. Airflow.
4. Air pressure drop.
5. Entering and leaving refrigerant pressure and temperatures.

2.12 HVAC CONTROLS VERIFICATION

- A. In conjunction with system balancing, perform the following:

1. Verify HVAC control system is operating within the design limitations.
2. Confirm that the sequences of operation are in compliance with Contract Documents.
3. Verify that controllers are calibrated and function as intended.

4. Verify that controller set points are as indicated.
5. Verify the operation of lockout or interlock systems.
6. Verify the operation of valve and damper actuators.
7. Verify that controlled devices are properly installed and connected to correct controller.
8. Verify that controlled devices travel freely and are in position indicated by controller: open, closed, or modulating.
9. Verify location and installation of sensors to ensure that they sense only intended temperature, humidity, or pressure.

- B. Reporting: Include a summary of verifications performed, remaining deficiencies, and variations from indicated conditions.

2.13 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

- A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.
1. Measure and record the operating speed, airflow, and static pressure of each fan and equipment with fan(s).
 2. Measure and record flows, temperatures, and pressures of each piece of equipment in each hydronic system. Compare the values to design or nameplate information, where information is available.
 3. Measure motor voltage and amperage. Compare the values to motor nameplate information.
 4. Check the condition of filters.
 5. Check the condition of coils.
 6. Check the operation of the drain pan and condensate-drain trap.
 7. Check bearings and other lubricated parts for proper lubrication.
 8. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.
- B. TAB After Construction: Before performing testing and balancing of renovated existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished in accordance with renovation scope indicated by Contract Documents. Verify the following:
1. New filters are installed.
 2. Coils are clean and fins combed.
 3. Drain pans are clean.
 4. Fans are clean.
 5. Bearings and other parts are properly lubricated.
 6. Deficiencies noted in the preconstruction report are corrected.
- C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.
1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.

2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
3. If calculations increase or decrease the airflow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
4. Balance each air outlet.

2.14 TOLERANCES

- A. Set HVAC system's airflow rates and water flow rates within the following tolerances:
 1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent . If design value is less than 100 cfm, within 10 cfm.
 2. Air Outlets and Inlets: Plus or minus 10 percent. If design value is less than 100 cfm, within 10 cfm.
 3. Heating-Water Flow Rate: Plus or minus 10 percent. If design value is less than 10 gpm, within 10 percent.
 4. Chilled-Water Flow Rate: Plus or minus 10 percent. If design value is less than 10 gpm, within 10 percent.
- B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

2.15 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
 3. Certify validity and accuracy of field data.
- B. Final Report Contents: In addition to certified field-report data, include the following:
 1. Pump curves.
 2. Fan curves.
 3. Manufacturers' test data.
 4. Field test reports prepared by system and equipment installers.
 5. Other information relative to equipment performance; do not include Shop Drawings and Product Data.
- C. General Report Data: In addition to form titles and entries, include the following data:
 1. Title page.
 2. Name and address of the TAB specialist.
 3. Project name.

4. Project location.
 5. Architect's name and address.
 6. Engineer's name and address.
 7. Contractor's name and address.
 8. Report date.
 9. Signature of TAB supervisor who certifies the report.
 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 11. Summary of contents, including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
 12. Nomenclature sheets for each item of equipment.
 13. Data for terminal units, including manufacturer's name, type, size, and fittings.
 14. Notes to explain why certain final data in the body of reports vary from indicated values.
 15. Test conditions for fans performance forms, including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Cooling coil, wet- and dry-bulb conditions.
 - d. Heating coil, dry-bulb conditions.
 - e. Face and bypass damper settings at coils.
 - f. Fan drive settings, including settings and percentage of maximum pitch diameter.
 - g. Variable-frequency controller or Inlet vane settings for variable-air-volume systems.
 - h. Settings for pressure controller(s).
 - i. Other system operating conditions that affect performance.
 16. Test conditions for pump performance forms, including the following:
 - a. Variable-frequency controller settings for variable-flow hydronic systems.
 - b. Settings for pressure controller(s).
 - c. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
1. Quantities of outdoor, supply, return, and exhaust airflows.
 2. Water and steam flow rates.
 3. Duct, outlet, and inlet sizes.
 4. Pipe and valve sizes and locations.
 5. Terminal units.
 6. Balancing stations.
 7. Position of balancing devices.
- E. Air-Handling-Unit Test Reports: For air-handling units, include the following:

1. Unit Data:
 - a. Unit identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and unit size.
 - e. Manufacturer's serial number.
 - f. Unit arrangement and class.
 - g. Discharge arrangement.
 - h. Sheave make, size in inches, and bore.
 - i. Center-to-center dimensions of sheave and amount of adjustments in inches.
 - j. Number, make, and size of belts.
 - k. Number, type, and size of filters.
2. Motor Data:
 - a. Motor make, and frame type and size.
 - b. Horsepower and speed.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave and amount of adjustments in inches.
3. Test Data (Indicated and Actual Values):
 - a. Total airflow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan speed.
 - d. Inlet and discharge static pressure in inches wg.
 - e. For each filter bank, filter static-pressure differential in inches wg.
 - f. Preheat-coil static-pressure differential in inches wg.
 - g. Cooling-coil static-pressure differential in inches wg.
 - h. Heating-coil static-pressure differential in inches wg.
 - i. List for each internal component with pressure-drop, static-pressure differential in inches wg.
 - j. Outdoor airflow in cfm.
 - k. Return airflow in cfm.
 - l. Outdoor-air damper position.
 - m. Return-air damper position.
 - n. Vortex damper position.

F. Apparatus-Coil Test Reports:

1. Coil Data:
 - a. System identification.
 - b. Location.
 - c. Coil type.
 - d. Number of rows.
 - e. Fin spacing in fins per inch o.c.

- f. Make and model number.
 - g. Face area in sq. ft.
 - h. Tube size in NPS.
 - i. Tube and fin materials.
 - j. Circuiting arrangement.
2. Test Data (Indicated and Actual Values):
- a. Airflow rate in cfm.
 - b. Average face velocity in fpm.
 - c. Air pressure drop in inches wg.
 - d. Outdoor-air, wet- and dry-bulb temperatures in deg F.
 - e. Return-air, wet- and dry-bulb temperatures in deg F.
 - f. Entering-air, wet- and dry-bulb temperatures in deg F.
 - g. Leaving-air, wet- and dry-bulb temperatures in deg F.
 - h. Water flow rate in gpm.
 - i. Water pressure differential in feet of head or psig.
 - j. Entering-water temperature in deg F.
 - k. Leaving-water temperature in deg F.
 - l. Inlet steam pressure in psig.
- G. Fan Test Reports: For supply, return, and exhaust fans, include the following:
1. Fan Data:
- a. System identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and size.
 - e. Manufacturer's serial number.
 - f. Arrangement and class.
 - g. Sheave make, size in inches, and bore.
 - h. Center-to-center dimensions of sheave and amount of adjustments in inches.
2. Motor Data:
- a. Motor make, and frame type and size.
 - b. Horsepower and speed.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave and amount of adjustments in inches.
 - g. Number, make, and size of belts.
3. Test Data (Indicated and Actual Values):
- a. Total airflow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan speed.
 - d. Discharge static pressure in inches wg.

- e. Suction static pressure in inches wg.
- H. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:
 - 1. Report Data:
 - a. System fan and air-handling-unit number.
 - b. Location and zone.
 - c. Traverse air temperature in deg F.
 - d. Duct static pressure in inches wg.
 - e. Duct size in inches.
 - f. Duct area in sq. ft.
 - g. Indicated airflow rate in cfm.
 - h. Indicated velocity in fpm.
 - i. Actual airflow rate in cfm.
 - j. Actual average velocity in fpm.
 - k. Barometric pressure in psig.
- I. Air-Terminal-Device Reports:
 - 1. Unit Data:
 - a. System and air-handling unit identification.
 - b. Location and zone.
 - c. Apparatus used for test.
 - d. Area served.
 - e. Make.
 - f. Number from system diagram.
 - g. Type and model number.
 - h. Size.
 - i. Effective area in sq. ft.
 - 2. Test Data (Indicated and Actual Values):
 - a. Airflow rate in cfm.
 - b. Air velocity in fpm.
 - c. Preliminary airflow rate as needed in cfm.
 - d. Preliminary velocity as needed in fpm.
 - e. Final airflow rate in cfm.
 - f. Final velocity in fpm.
 - g. Space temperature in deg F.
- J. System-Coil Reports: For reheat coils and water coils of terminal units, include the following:
 - 1. Unit Data:
 - a. System and air-handling-unit identification.
 - b. Location and zone.
 - c. Room or riser served.

- d. Coil make and size.
 - e. Flowmeter type.
2. Test Data (Indicated and Actual Values):
- a. Airflow rate in cfm.
 - b. Entering-water temperature in deg F.
 - c. Leaving-water temperature in deg F.
 - d. Water pressure drop in feet of head or psig.
 - e. Entering-air temperature in deg F.
 - f. Leaving-air temperature in deg F.
- K. Pump Test Reports: Calculate impeller size by plotting the shutoff head on pump curves, and include the following:
1. Unit Data:
- a. Unit identification.
 - b. Location.
 - c. Service.
 - d. Make and size.
 - e. Model number and serial number.
 - f. Water flow rate in gpm.
 - g. Water pressure differential in feet of head or psig.
 - h. Required net positive suction head in feet of head or psig.
 - i. Pump speed.
 - j. Impeller diameter in inches.
 - k. Motor make and frame size.
 - l. Motor horsepower and rpm.
 - m. Voltage at each connection.
 - n. Amperage for each phase.
 - o. Full-load amperage and service factor.
 - p. Seal type.
2. Test Data (Indicated and Actual Values):
- a. Static head in feet of head or psig.
 - b. Pump shutoff pressure in feet of head or psig.
 - c. Actual impeller size in inches.
 - d. Full-open flow rate in gpm.
 - e. Full-open pressure in feet of head or psig.
 - f. Final discharge pressure in feet of head or psig.
 - g. Final suction pressure in feet of head or psig.
 - h. Final total pressure in feet of head or psig.
 - i. Final water flow rate in gpm.
 - j. Voltage at each connection.
 - k. Amperage for each phase.
- L. Instrument Calibration Reports:

1. Report Data:
 - a. Instrument type and make.
 - b. Serial number.
 - c. Application.
 - d. Dates of use.
 - e. Dates of calibration.

END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes insulating the following duct services:
 - 1. Indoor, concealed supply and outdoor air.
 - 2. Indoor, exposed supply and outdoor air.
 - 3. Indoor, concealed return located in unconditioned space.
 - 4. Indoor, exposed return located in unconditioned space.
 - 5. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
 - 6. Indoor, exposed exhaust between isolation damper and penetration of building exterior.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 - 2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.
 - 3. Detail application of field-applied jackets.
 - 4. Detail application at linkages of control devices.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or craft training program, certified by the Department of Labor, Bureau of Apprenticeship and Training.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Insulation material containers are to be marked with the manufacturer's name, appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.
- C. Coordinate installation and testing of heat tracing.

1.7 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation, jacket materials, adhesive, mastic, tapes, and cement material containers with appropriate markings of applicable testing agency.
 - 1. All Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 2. All Insulation Installed Indoors; Outdoors-Installed Insulation in Contact with Airstream: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 3. All Insulation Installed Indoors and Outdoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

2.2 INSULATION MATERIALS

- A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials are to be applied.
- B. Products do not contain asbestos, lead, mercury, or mercury compounds.

- C. Products that come in contact with stainless steel have a leachable chloride content of less than 50 ppm when tested in accordance with ASTM C871.
- D. Insulation materials for use on austenitic stainless steel are qualified as acceptable in accordance with ASTM C795.
- E. Glass-Fiber Blanket: Glass fibers bonded with a thermosetting resin; suitable for maximum use temperature up to 450 deg F in accordance with ASTM C411. Comply with ASTM C553, Type II, and ASTM C1290, Type I, unfaced, Type II with factory-applied vinyl jacket, Type III with factory-applied FSK jacket or Type III with factory-applied FSP jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
- F. Glass-Fiber Board Insulation: Glass fibers bonded with a thermosetting resin; suitable for maximum use temperature between 35 deg F and 250 deg F for jacketed and between 35 deg F and 450 deg F for unfaced in accordance with ASTM C411. Comply with ASTM C612, Type IA or Type IB. For duct and plenum applications, provide insulation unfaced, with factory-applied ASJ or with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

2.3 ADHESIVES

- A. Materials are compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Glass-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
- C. FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

2.4 MASTICS AND COATINGS

- A. Materials are compatible with insulation materials, jackets, and substrates.
- B. Vapor-Retarder Mastic:
 - 1. Water-Vapor Permeance: Comply with ASTM C755, Section 7.2.2, Table 2, for insulation type and service conditions.
 - 2. Service Temperature Range: Minus 20 to plus 180 deg F.
 - 3. Comply with MIL-PRF-19565C, Type II, for permeance requirements, with supplier listing on DOD QPD - Qualified Products Database.
 - 4. Color: White.
- C. Vapor-Retarder Mastic, Solvent Based, Interior Use: Suitable for indoor use on below ambient services.
 - 1. Water-Vapor Permeance: Comply with ASTM C755, Section 7.2.2, Table 2, for insulation type and service conditions.

2. Service Temperature Range: 0 to 180 deg F.
 3. Color: White.
- D. Vapor-Retarder Mastic, Solvent Based, Exterior Use: Suitable for outdoor use on below ambient services.
1. Water-Vapor Permeance: Comply with ASTM C755, Section 7.2.2, Table 2, for insulation type and service conditions.
 2. Service Temperature Range: Minus 50 to plus 220 deg F.
 3. Color: White.
- E. Description: Comply with MIL-A-3316C, Class I, Grade A and are compatible with insulation materials, jackets, and substrates.
1. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over duct insulation.
 2. Service Temperature Range: 0 to plus 180 deg F.
 3. Color: White.

2.5 SEALANTS

- A. FSK and Metal Jacket Flashing Sealants:
1. Materials are compatible with insulation materials, jackets, and substrates.
 2. Fire- and water-resistant, flexible, elastomeric sealant.
 3. Service Temperature Range: Minus 40 to plus 250 deg F.
 4. Color: Aluminum.

2.6 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
1. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C1136, Type II.

2.7 FIELD-APPLIED JACKETS

- A. Field-applied jackets comply with ASTM C921, Type I, unless otherwise indicated.
- B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.
1. In accordance with ASTM E84.
 2. Aluminum Finish: Embossed or Smooth.

2.8 TAPES

- A. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C1136.

1. Width: 3 inches.
2. Thickness: 6.5 mils.
3. Adhesion: 90 ounces force/inch in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 lbf/inch in width.
6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

2.9 SECUREMENTS

- A. Bands:

1. Stainless Steel: ASTM A167 or ASTM A240/A240M, Type 304 or Type 316; 0.015 inch thick, 1/2 inch or 3/4 inch wide with wing seal or closed seal.
2. Aluminum: ASTM B209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch or 3/4 inch wide with wing seal or closed seal.
3. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

- B. Insulation Pins and Hangers:

1. Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch or 0.135-inch diameter shank, length to suit depth of insulation indicated.
2. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch or 0.135-inch diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
3. Metal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
 - a. Baseplate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
 - b. Spindle: Copper- or zinc-coated, low-carbon steel, Aluminum or Stainless steel, fully annealed, 0.106-inch diameter shank, length to suit depth of insulation indicated.
 - c. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.

4. Self-Sticking-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
 - a. Baseplate: Galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
 - b. Spindle: Copper- or zinc-coated, low-carbon steel, Aluminum or Stainless steel, fully annealed, 0.106-inch diameter shank, length to suit depth of insulation indicated.
 - c. Adhesive-backed base with a peel-off protective cover.
5. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch thick, galvanized-steel, aluminum or stainless-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
 - a. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.
- C. Staples: Outward-clinching insulation staples, nominal 3/4-inch wide, stainless steel or Monel.
- D. Wire: 0.080-inch nickel-copper alloy, 0.062-inch soft-annealed, stainless steel or 0.062-inch soft-annealed, galvanized steel.

2.10 CORNER ANGLES

- A. PVC Corner Angles: 30 mils thick, minimum 1 by 1 inch, PVC in accordance with ASTM D1784, Class 16354-C. White or color-coded to match adjacent surface.
- B. Aluminum Corner Angles: 0.040 inch thick, minimum 1 by 1 inch, aluminum in accordance with ASTM B209, Alloy 3003, 3005, 3105, or 5005; Temper H-14.
- C. Stainless-Steel Corner Angles: 0.024 inch thick, minimum 1 by 1 inch, stainless steel in accordance with ASTM A167 or ASTM A240/A240M, Type 304 or Type 316.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
 1. Verify that systems to be insulated have been tested and are free of defects.
 2. Verify that surfaces to be insulated are clean and dry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.
- B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, compress, or otherwise damage insulation or jacket .
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Keep insulation materials dry during application and finishing. Replace insulation materials that get wet during storage or in the installation process before being properly covered and sealed in accordance with Contract Documents, unless otherwise approved by the engineer-of-record.
- G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- H. Install insulation with least number of joints practical.
- I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 - 1. Install insulation continuously through hangers and around anchor attachments.
 - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 - 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
- J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- K. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth, but not to the extent of creating wrinkles or areas of compression in the insulation.

2. Cover circumferential joints with 3-inch wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
 - a. For below ambient services, apply vapor-barrier mastic over staples.
 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.
- L. Cut insulation in a manner to avoid compressing insulation.
- M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.4 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 4. Seal jacket to wall flashing with flashing sealant.

- C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.
 - 1. Comply with requirements in Section 078413 "Penetration Firestopping."
- E. Insulation Installation at Floor Penetrations:
 - 1. Duct: For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches.
 - 2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 INSTALLATION OF GLASS-FIBER INSULATION

- A. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
 - 1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for percent coverage of duct and plenum surfaces.
 - 2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
 - 3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
 - a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
 - b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
 - c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
 - d. Do not overcompress insulation during installation.
 - e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
 - 4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1-inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

- a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
 - b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.
5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
 6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

3.6 FIELD-APPLIED JACKET INSTALLATION

- A. Where FSK jackets are indicated, install as follows:
 1. Draw jacket material smooth and tight.
 2. Install lap or joint strips with same material as jacket.
 3. Secure jacket to insulation with manufacturer's recommended adhesive.
 4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
 5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.
- B. Do not field paint aluminum or stainless-steel jackets.

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 1. Inspect ductwork, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection is limited to one location(s) for each duct system defined in the "Duct Insulation Schedule, General" Article.
- D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.8 DUCT INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:

1. Indoor, concealed supply and outdoor air.
2. Indoor, exposed supply and outdoor air.
3. Indoor, concealed return located in unconditioned space.
4. Indoor, exposed return located in unconditioned space.
5. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
6. Indoor, exposed exhaust between isolation damper and penetration of building exterior.

B. Items Not Insulated:

1. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
2. Factory-insulated flexible ducts.
3. Factory-insulated plenums and casings.
4. Flexible connectors.
5. Vibration-control devices.
6. Factory-insulated access panels and doors.

3.9 INDOOR DUCT AND PLENUM INSULATION SCHEDULE

A. Concealed, supply-air plenum insulation is one of the following:

1. Glass-Fiber Blanket: installed R-value of R-6.
2. Mechanical Rooms: Glass-Fiber Board: installed R-value of R-6.

B. Concealed, return-air plenum insulation is one of the following:

1. Glass-Fiber Blanket: installed R-value of R-6.
2. Mechanical Rooms: Glass-Fiber Board: insulation R-value of R-6.

C. Concealed, outdoor-air plenum insulation is one of the following:

1. Glass-Fiber Board: installed R-value of R-8.

D. Concealed, exhaust-air plenum insulation is one of the following:

1. Glass-Fiber Board: installed R-value of R-8.

E. Exposed, supply-air plenum insulation is one of the following:

1. Glass-Fiber Board: installed R-value of R-6.

F. Exposed, return-air plenum insulation is one of the following:

1. Glass-Fiber Board: installed R-value of R-6.

G. Exposed, outdoor-air plenum insulation is one of the following:

1. Glass-Fiber Board: installed R-value of R-8.
- H. Exposed, exhaust-air plenum insulation is one of the following:
1. Glass-Fiber Board: installed R-value of R-8.

END OF SECTION 230713

SECTION 230719 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes insulation for HVAC piping systems.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory and field applied, if any).
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 - 2. Detail insulation application at pipe expansion joints for each type of insulation.
 - 3. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
 - 4. Detail removable insulation at piping specialties.
 - 5. Detail application of field-applied jackets.
 - 6. Detail application at linkages of control devices.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or craft training program, certified by the Department of Labor, Bureau of Apprenticeship and Training.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Insulation system materials are to be delivered to the Project site in unopened containers. The packaging is to include name of manufacturer, fabricator, type, description, and size, as well as ASTM standard designation, and maximum use temperature.

1.6 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.7 SCHEDULING

- A. Schedule insulation application after pressure testing systems..

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84 by a testing agency acceptable to authority having jurisdiction. Factory label insulation, jacket materials, adhesive, mastic, tapes, and cement material containers with appropriate markings of applicable testing agency.
 - 1. All Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 2. All Insulation Installed Indoors; Outdoors-Installed Insulation in Contact with Airstream: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 3. All Insulation Installed Indoors and Outdoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

2.2 INSULATION MATERIALS

- A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials are applied.
- B. Products do not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come into contact with stainless steel have a leachable chloride content of less than 50 ppm when tested in accordance with ASTM C871.

- D. Insulation materials for use on austenitic stainless steel are qualified as acceptable in accordance with ASTM C795.
- E. Flexible Elastomeric: Closed-cell, or expanded-rubber materials; suitable for maximum use temperature between minus 70 deg F and 220 deg F. Comply with ASTM C534/C534M, Type I, for tubular materials, Type II for sheet materials.
- F. Glass-Fiber, Preformed Pipe: Glass fibers bonded with a thermosetting resin; suitable for maximum use temperature up to 850 deg F in accordance with ASTM C411. Comply with ASTM C547.
 - 1. Preformed Pipe Insulation: Type I, Grade A, unfaced with factory-applied ASJ, with factory-applied ASJ-SSL, with factory-applied ASJ+ jacket or with factory-applied PSK jacket.
 - 2. Fabricated shapes in accordance with ASTM C450 and ASTM C585.
 - 3. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
- G. Glass-Fiber, Pipe and Tank: Glass fibers bonded with a thermosetting resin; suitable for maximum use temperature between 35 deg F and 850 deg F, in accordance with ASTM C411. Comply with ASTM C1393.

2.3 INSULATING CEMENTS

- A. Glass-Fiber and Mineral Wool Insulating Cement: Comply with ASTM C195.

2.4 ADHESIVES

- A. Materials are compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Flexible Elastomeric Adhesive: Solvent-based adhesive.
 - 1. Flame-spread index is 25 or less and smoke-developed index is 50 or less as tested in accordance with ASTM E84.
 - 2. Wet Flash Point: Below 0 deg F.
 - 3. Service Temperature Range: 40 to 200 deg F.
 - 4. Color: Black .
- C. Glass-Fiber and Mineral Wool Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
- D. ASJ Adhesive and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A, for bonding insulation jacket lap seams and joints.
- E. PVC Jacket Adhesive: Compatible with PVC jacket.

2.5 MASTICS AND COATINGS

- A. Materials are compatible with insulation materials, jackets, and substrates.
- B. Vapor-Retarder Mastic, Water Based: Suitable for indoor use on below-ambient services.
 - 1. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.
 - 2. Service Temperature Range: 0 to plus 180 deg F.
 - 3. Comply with MIL-PRF-19565C, Type II, for permeance requirements, with supplier listing on DOD QPD - Qualified Products Database.
 - 4. Color: White .
- C. Vapor-Retarder Mastic, Solvent Based, Indoor Use: Suitable for indoor use on below-ambient services.
 - 1. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.
 - 2. Service Temperature Range: 0 to 180 deg F.
 - 3. Color: White .
- D. Vapor-Retarder Mastic, Solvent Based, Outdoor Use: Suitable for outdoor use on below-ambient services.
 - 1. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.
 - 2. Service Temperature Range: Minus 50 to plus 220 deg F.
 - 3. Color: White .

2.6 LAGGING ADHESIVES

- A. Adhesives comply with MIL-A-3316C, Class I, Grade A, and are compatible with insulation materials, jackets, and substrates.
 - 1. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
 - 2. Service Temperature Range: 0 to plus 180 deg F.
 - 3. Color: White.

2.7 SEALANTS

- A. Materials are as recommended by the insulation manufacturer and are compatible with insulation materials, jackets, and substrates.
- B. Joint Sealants:
 - 1. Permanently flexible, elastomeric sealant.
 - a. Service Temperature Range: Minus 150 to plus 250 deg F.
 - b. Color: White or gray.
- C. FSK and Metal Jacket Flashing Sealants:

1. Fire- and water-resistant, flexible, elastomeric sealant.
2. Service Temperature Range: Minus 40 to plus 250 deg F.
3. Color: Aluminum.

D. ASJ Flashing Sealants and PVC Jacket Flashing Sealants:

1. Fire- and water-resistant, flexible, elastomeric sealant.
2. Service Temperature Range: Minus 40 to plus 250 deg F.
3. Color: White.

2.8 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C1136, Type II.
4. ASJ+: Aluminum foil reinforced with glass scrim bonded to a kraft paper interleaving with an outer film leaving no paper exposed; complying with ASTM C1136, Types I, II, III, IV, and VII.

2.9 FIELD-APPLIED JACKETS

A. Field-applied jackets comply with ASTM C1136, Type I, unless otherwise indicated.

B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.

C. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.

1. Adhesive: As recommended by jacket material manufacturer.
2. Color: White, Color-code jackets based on system.
3. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
 - a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

D. Metal Jacket:

1. Aluminum Jacket: Comply with ASTM B209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.
 - a. Sheet and roll stock ready for shop or field sizing or Factory cut and rolled to size.

- b. Finish and thickness are indicated in field-applied jacket schedules.
- c. Moisture Barrier for Indoor Applications: 1-mil- thick, heat-bonded polyethylene and kraft paper.
- d. Moisture Barrier for Outdoor Applications: 53-mil- thick, heat-bonded polyethylene and kraft paper or 53-mil- thick polysurlyn.
- e. Factory-Fabricated Fitting Covers:
 - 1) Same material, finish, and thickness as jacket.
 - 2) Preformed two-piece or gore, 45- and 90-degree, short- and long-radius elbows.
 - 3) Tee covers.
 - 4) Flange and union covers.
 - 5) End caps.
 - 6) Beveled collars.
 - 7) Valve covers.
 - 8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

2. Stainless Steel Jacket: ASTM A240/A240M.

- a. Sheet and roll stock ready for shop or field sizing Factory cut and rolled to size.
- b. Material, finish, and thickness are indicated in field-applied jacket schedules.
- c. Moisture Barrier for Indoor Applications: 1-mil- thick, heat-bonded polyethylene and kraft paper.
- d. Moisture Barrier for Outdoor Applications: 53-mil- thick, heat-bonded polyethylene and kraft paper or 53-mil- thick polysurlyn.
- e. Factory-Fabricated Fitting Covers:
 - 1) Same material, finish, and thickness as jacket.
 - 2) Preformed two-piece or gore, 45- and 90-degree, short- and long-radius elbows.
 - 3) Tee covers.
 - 4) Flange and union covers.
 - 5) End caps.
 - 6) Beveled collars.
 - 7) Valve covers.
 - 8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

- E. Self-Adhesive Outdoor Jacket (Asphaltic): 60-mil- thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a cross-laminated polyethylene film covered with white stucco-embossed aluminum-foil facing.
- F. Self-Adhesive Indoor/Outdoor Jacket (Non-Asphaltic): Vapor barrier and waterproofing jacket for installation over insulation located aboveground outdoors or indoors. Specialized jacket has five layers of laminated aluminum and polyester film with low-temperature acrylic pressure-sensitive adhesive. Outer aluminum surface is coated with UV-resistant coating for protection from environmental contaminants.

1. Permeance: 0.00 perm as tested in accordance with ASTM F1249.
2. Flame spread/Smoke Developed: 25/50 as tested in accordance with ASTM E84.
3. Aluminum Finish: Embossed or Smooth.

2.10 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C1136.
1. Width: 3 inches .
 2. Thickness: 11.5 mils .
 3. Adhesion: 90 ounces force/inch in width.
 4. Elongation: 2 percent.
 5. Tensile Strength: 40 lbf/inch in width.
 6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; com
1. Width: 3 inches .
 2. Thickness: 6.5 mils .
 3. Adhesion: 90 ounces force/inch in width.
 4. Elongation: 2 percent.
 5. Tensile Strength: 40 lbf/inch in width.
 6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.
- C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.
1. Width: 2 inches .
 2. Thickness: 6 mils .
 3. Adhesion: 64 ounces force/inch in width.
 4. Elongation: 500 percent.
 5. Tensile Strength: 18 lbf/inch in width.
- D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
1. Width: 2 inches .
 2. Thickness: 3.7 mils .
 3. Adhesion: 100 ounces force/inch in width.
 4. Elongation: 5 percent.
 5. Tensile Strength: 34 lbf/inch in width.

2.11 SECUREMENTS

- A. Bands:

1. Stainless Steel: ASTM A240/A240M, Type 304 or Type 316; 0.015 inch thick, 1/2 inch wide with wing seal or closed seal.
 2. Aluminum: ASTM B209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with wing seal or closed seal.
- B. Staples: Outward-clinching insulation staples, nominal 3/4 inch wide, stainless steel or Monel.
- C. Wire: 0.080-inch nickel-copper alloy, 0.062-inch soft-annealed, stainless steel or 0.062-inch soft-annealed, galvanized steel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
1. Verify that systems to be insulated have been tested and are free of defects.
 2. Verify that surfaces to be insulated are clean and dry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:
1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
- C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and of thicknesses required for each item of pipe system, as specified in insulation system schedules.

- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, compress, or otherwise damage insulation or jacket.
- D. Install insulation with longitudinal seams at top and bottom (12 o'clock and 6 o'clock positions) of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during storage, application, and finishing. Replace insulation materials that get wet during storage or in the installation process before being properly covered and sealed in accordance with the Contract Documents, unless otherwise approved by the engineer of record.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 - 1. Install insulation continuously through hangers and around anchor attachments.
 - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends attached to structure with vapor-barrier mastic.
 - 3. Install insert materials and insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth, but not to the extent of creating wrinkles or areas of compression in the insulation.
 - 2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward-clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward-clinching staples along edge at 2 inches o.c.
 - 4. For below-ambient services, apply vapor-barrier mastic over staples.
 - 5. Cover joints and seams with tape, in accordance with insulation material manufacturer's written instructions, to maintain vapor seal.

6. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation.
- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches in similar fashion to butt joints.
- P. For above-ambient services, do not install insulation to the following:
1. Vibration-control devices.
 2. Testing agency labels and stamps.
 3. Nameplates and data plates.

3.4 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 4. Seal jacket to wall flashing with flashing sealant.
- C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

E. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials, except where more specific requirements are specified in various pipe insulation material installation articles below.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, Mechanical Couplings, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, mechanical couplings, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using prefabricated fitting insulation or mitered or routed fittings made from same material and density as that of adjacent pipe insulation. Each piece is butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with prefabricated fitting insulation or sectional pipe insulation of same material and thickness as that used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using prefabricated fitting insulation or sectional pipe insulation of same material, density, and thickness as that used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using prefabricated fitting insulation or sectional pipe insulation of same material, density, and thickness as that used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers, so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges, mechanical couplings, and unions using a section of oversized preformed pipe insulation to fit. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Stencil or label the outside insulation jacket of each union with the word "union" matching size and color of pipe labels.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
8. For services not specified to receive a field-applied jacket, except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and

unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing, using PVC tape.

- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation conforms to the following:
 - 1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as that of adjoining pipe insulation.
 - 2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union at least 2 times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless steel or aluminum bands. Select band material compatible with insulation and jacket.
 - 3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
 - 4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
 - 5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

- A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- B. Insulation Installation on Pipe Flanges:
 - 1. Install pipe insulation to outer diameter of pipe flange.
 - 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
 - 3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as that of pipe insulation.
 - 4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- C. Insulation Installation on Pipe Fittings and Elbows:
 - 1. Install sections of pipe insulation and miter if required in accordance with manufacturer's written instructions.

2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install prefabricated valve covers manufactured of same material as that of pipe insulation when available.
2. When prefabricated valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.7 INSTALLATION OF GLASS-FIBER AND MINERAL WOOL INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands, and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches o.c.
4. For insulation with jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive, as recommended by insulation material manufacturer, and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install prefabricated pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with glass-fiber or mineral-wool blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install prefabricated sections of same material as that of straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install prefabricated sections of same material as that of straight segments of pipe insulation when available.
2. When prefabricated sections are not available, install fabricated sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.8 INSTALLATION OF FIELD-APPLIED JACKETS

- A. Where FSK jackets are indicated, install as follows:
1. Draw jacket material smooth and tight.
 2. Install lap or joint strips with same material as jacket.
 3. Secure jacket to insulation with manufacturer's recommended adhesive.
 4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
 5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.
- B. Where PVC jackets are indicated and for horizontal applications, install with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.
1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.
- C. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless steel bands 12 inches o.c. and at end joints.

3.9 FINISHES

- A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coat Material: Interior, flat, latex-emulsion size.
- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
- C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

- D. Do not field paint aluminum or stainless steel jackets.

3.10 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections.
- B. Engage a qualified testing agency to perform tests and inspections.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- D. Perform tests and inspections with the assistance of a factory-authorized service representative.
- E. Tests and Inspections: Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection is limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- F. All insulation applications will be considered defective if they do not pass tests and inspections.
- G. Prepare test and inspection reports.

3.11 PIPING INSULATION SCHEDULE, GENERAL

- A. Insulation conductivity and thickness per pipe size comply with schedules in this Section or with requirements of authorities having jurisdiction, whichever is more stringent.
- B. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

3.12 INDOOR PIPING INSULATION SCHEDULE

- A. Condensate and Equipment Drain Water below 60 Deg F:
 - 1. All Pipe Sizes: Insulation is one of the following:
 - a. Glass-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
- B. Heating-Hot-Water Supply and Return, 200 Deg F and Below:
 - 1. Insulation is one of the following:
 - a. Glass-Fiber, Preformed Pipe, Type I: 2 inches thick.

C. Steam and Steam Condensate, Boiler Blowdown, Vents, Drains, and Safety Relief Vents 350 Deg F and Below:

1. Insulation is one of the following:

- a. Glass-Fiber, Preformed Pipe Insulation, Type I: 3 inches thick.
- b. Thermal conductivity shall be IECC compliant.

3.13 INDOOR, FIELD-APPLIED JACKET SCHEDULE

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
- B. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Refrigerant Piping, Exposed:
 - 1. Aluminum, Smooth, Corrugated or Stucco Embossed: 0.020 inch thick.

END OF SECTION 230719

SECTION 230993 – INSTRUMENTATION AND CONTROLS FOR HVAC SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Related Sections:

1. Section 23 0400 – General Conditions for Mechanical Trades
2. Section 23 05 93 - Testing, Adjusting, and Balancing
3. Section 23 0900 - Instrumentation and Control for HVAC: For equipment, devices, and system components to implement sequences of operation.
4. Section 23 09 00 - Direct-Digital Control System for HVAC: For equipment, devices, system components, and software to implement sequences of operation.
5. Section 23 31 00 – HVAC Ducts and Casings
6. Division 26 – Electrical Specifications on Drawings

1.2 DEFINITIONS

- A. Algorithm: A logical procedure for solving a recurrent mathematical problem. A prescribed set of well-defined rules or processes for solving a problem in a finite number of steps.
- B. Analog: A continuously varying signal value, such as current, flow, pressure, or temperature.
- C. BACnet Specific Definitions:
1. BACnet: Building Automation Control Network Protocol, ASHRAE 135. A communications protocol allowing devices to communicate data over and services over a network.
 2. BACnet Interoperability Building Blocks (BIBBs): BIBB defines a small portion of BACnet functionality that is needed to perform a particular task. BIBBs are combined to build the BACnet functional requirements for a device.
 3. BACnet/IP: Defines and allows using a reserved UDP socket to transmit BACnet messages over IP networks. A BACnet/IP network is a collection of one or more IP subnetworks that share the same BACnet network number.
 4. BACnet Testing Laboratories (BTL): Organization responsible for testing products for compliance with ASHRAE 135, operated under direction of BACnet International.
 5. PICS (Protocol Implementation Conformance Statement): Written document that identifies the particular options specified by BACnet that are implemented in a device.
- D. Binary: Two-state signal where a high signal level represents "ON" or "OPEN" condition and a low signal level represents "OFF" or "CLOSED" condition. "Digital" is sometimes used interchangeably with "Binary" to indicate a two-state signal.

- E. Controller: Generic term for any standalone, microprocessor-based, digital controller residing on a network, used for local or global control. Three types of controllers are indicated: Network Controller, Programmable Application Controller, and Application-Specific Controller.
- F. Control System Integrator: An entity that assists in expansion of existing enterprise system and support of additional operator interfaces to I/O being added to existing enterprise system.
- G. COV: Changes of value.
- H. DDC System Provider: Authorized representative of, and trained by, DDC system manufacturer and responsible for execution of DDC system Work indicated.
- I. Distributed Control: Processing of system data is decentralized and control decisions are made at subsystem level. System operational programs and information are provided to remote subsystems and status is reported back. On loss of communication, subsystems shall be capable of operating in a standalone mode using the last best available data.
- J. E/P: Voltage to pneumatic.
- K. Gateway: Bidirectional protocol translator that connects control systems that use different communication protocols.
- L. I/O: System through which information is received and transmitted. I/O refers to analog input (AI), binary input (BI), analog output (AO) and binary output (BO). Analog signals are continuous and represent control influences such as flow, level, moisture, pressure, and temperature. Binary signals convert electronic signals to digital pulses (values) and generally represent two-position operating and alarm status. "Digital," (DI and (DO), is sometimes used interchangeably with "Binary," (BI) and (BO), respectively.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate mechanical system controlled and control system components.
 - 1. Label with settings, adjustable range of control and limits. Submit written description of control sequence.
 - 2. Submit flow diagrams for each control system, graphically depicting control logic.
 - 3. Submit draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product include the following:
 - 1. Construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Operating characteristics, electrical characteristics, and furnished accessories indicating process operating range, accuracy over range, control signal over range,

default control signal with loss of power, calibration data specific to each unique application, electrical power requirements, and limitations of ambient operating environment, including temperature and humidity.

3. Product description with complete technical data, performance curves, and product specification sheets.
4. Installation, operation and maintenance instructions including factors effecting performance.
5. Bill of materials of indicating quantity, manufacturer, and extended model number for each unique product.

B. Software Submittal:

1. Cross-referenced listing of software to be loaded on each operator workstation, server, gateway, and DDC controller.
2. Description and technical data of all software provided, and cross-referenced to products in which software will be installed.
3. Operating system software, operator interface and programming software, color graphic software, DDC controller software, maintenance management software, and third-party software.
4. Include a flow diagram and an outline of each subroutine that indicates each program variable name and units of measure.
5. Listing and description of each engineering equation used with reference source.
6. Listing and description of each constant used in engineering equations and a reference source to prove origin of each constant.
7. Description of operator interface to alphanumeric and graphic programming.
8. Description of each network communication protocol.
9. Description of system database, including all data included in database, database capacity and limitations to expand database.
10. Description of each application program and device drivers to be generated, including specific information on data acquisition and control strategies showing their relationship to system timing, speed, processing burden and system throughout.
11. Controlled Systems: Instrumentation list with element name, type of device, manufacturer, model number, and product data. Include written description of sequence of operation including schematic diagram.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of components and set points of controls, including changes to sequences made after submission of shop drawings.
1. Provide as-built dwgs:
 - a. Five copies in pdf format
 - b. Five copies in Auto_Cad (2020 or higher) digital format

1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace products that fail in materials or workmanship within specified warranty period.

1. Failures shall be adjusted, repaired, or replaced at no additional cost or reduction in service to Owner.
2. Include updates or upgrades to software and firmware if necessary to resolve deficiencies.
 - a. Install updates only after receiving Owner's written authorization.
3. Warranty service shall occur during normal business hours and commence within 16 hours of Owner's warranty service request.
4. Warranty Period: Per Waterbury DOE requirements.

2.0 PRODUCTS

2.1 MANUFACTURERS

- A. SNE

2.2 DDC SYSTEM DESCRIPTION

- A. Microprocessor-based monitoring and control including analog/digital conversion and program logic. A control loop or subsystem in which digital and analog information is received and processed by a microprocessor, and digital control signals are generated based on control algorithms and transmitted to field devices to achieve a set of predefined conditions.
 1. DDC system shall consist of a high-speed, peer-to-peer network of distributed DDC controllers operator interfaces, and software.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 2 EXECUTION

2.1 GENERAL

- A. Provide all controls, low voltage control wiring, hardware points (analog in, analog out, binary in, binary out) and accessories as required to perform the control sequences indicated. Additionally, provide hardware points indicated regardless that such points may not be required to perform the control sequences indicated.
- B. Unless otherwise indicated, setpoints and values listed in the sequence of controls shall be adjustable by the Owner thru the DDC(direct digital controls) or BAS (Building Management System) (BAS and DDC are used interchangeably and share same meaning) graphical interface; the Owner shall not be required to edit operating code in order to change any of the setpoints and values.
- C. Heating shall only be enabled when the system is indexed to heating mode (shall occur when outside air temperature is $\leq 65^{\circ}\text{F}$).
- D. BMS Controllers and Sensors

1. BACnet
 - a. Sensors per Waterbury DOE requirements.

PART 3 EXECUTION

3.1 SEQUENCE OF OPERATIONS

- A. General:
 - a. Occupied Global Setpoint
 - a. Heating (defined as outside air temperature is $\leq 65^{\circ}\text{F}$): 70°F (adjustable).
 - b. Cooling (defined as outside air temperature is above 65°F): 75°F (adjustable).
 - b. Unoccupied Global Setpoint
 - a. Heating: 60°F (adjustable).
 - b. Cooling: 82°F (adjustable).
3. Occupancy sensors
 - a. Where BACnet occupancy sensors are in the same space as a temperature sensor:
 - a) Occupied mode
 - (1) Spaces indexed to occupied mode shall remain in occupied mode unless the occupancy sensors do not detect occupancy for 10 minutes continuously. At 10 minutes since the last detection of occupancy, the cooling and heating setpoints of the spaces shall be reset to 2°F higher and 2°F lower than the setpoint respectively.
 - (2) Once in unoccupied mode, the cooling and heating setpoints shall remain at the reset temperatures (2°F higher and lower) until the occupancy sensors detect occupancy for 5 minutes continuous. At 5 minutes continuous occupancy, the occupied setpoint shall be restored.
 - b) Unoccupied mode
 - (1) Spaces indexed to unoccupied mode shall remain in unoccupied mode unless the occupancy sensors detect occupancy for 10 minutes continuously. At 10 minutes

continuous occupancy, the occupied setpoint shall be used.

- (2) Once in the occupied mode, the setpoint shall remain at the occupied setpoint until the occupancy sensors do not detect occupancy for 5 minutes continuous. At 5 minutes since the last detection of occupancy, the unoccupied setpoints shall be restored.

B. Unoccupied Mode of Operation (all AHUs, RTU-1 and RTU-2)

1. Heating:

- a. Fan(s) shut down.
- b. OA damper fully closed.
- c. Whenever two or more spaces temperature not at unoccupied setpoint: BMS shall start fan(s) and modulate steam control valve(s) to maintain each space temperature at unoccupied set point. When all spaces are at unoccupied temperature set point the BMS shall shut down fan(s).

2. Cooling:

- a. Fan(s) shut down.
- b. OA damper fully closed.
- c. Whenever two or more spaces temperature not at unoccupied setpoint: BMS shall start fan(s) and enable DX cooling to maintain each space temperature at unoccupied set point. When all spaces are at unoccupied temperature set point the BMS shall shut down fan(s) and disable DX cooling.
 - a) The first stage of cooling shall be economizer.

C. Warm-Up and Cool - Down Mode of Operations (all AHUs, RTU-1 and RTU-2)

1. The HVAC equipment shall be indexed to warm-up and cool-down modes via the BAS, optimal start/stop shall be programmed in for all equipment so that equipment start and start times are determined based on outside air conditions and system learns based on past building history. The operator station software configuration shall allow the Owner to easily select the occupied and unoccupied hours by individual zone, global by air handler, or global by building. The BAS shall trend the outside air temperature with respect to the warm up and cool down times, and shall optimize the warm up and cool down times such that the spaces reach occupied temperature by the time selected.
 - a. Warm-up (morning) whenever two or more spaces temperature not at occupied setpoint: Units shall operate in the warm-up mode until the all spaces reach the occupied temperature setpoint, at which point the unit shall be indexed to the occupied mode.
 - a) Fan(s) shall run continuously.

- b. Cool-down (morning): whenever two or more spaces temperature not at occupied setpoint: Units shall operate in the cool-down mode until the all spaces reach the occupied temperature setpoint, at which point the unit shall be indexed to the occupied mode.
 - a) The first stage of cooling shall be economizer.
 - b) Fan(s) shall run continuously.

D. Occupied Mode of Operation (all AHUs, RTU-1 and RTU-2)

1. Heating (all AHUs, RTU-1 and RTU-2):

- a. Fan(s) run(s) continuously.
- b. OA damper opened to its minimum ventilation position.
- c. Steam control valve(s): BMS shall modulate steam control valve(s) to maintain supply air reset temperature base on input from space temperature sensor.
 - a) Provide two space temperature sensors for AHU-1, AHU-7, AHU-8 and AHU-10 to modulate steam control valves in sequence via BMS to maintain supply air reset temperature base on average signal input from two space temperature sensors.
 - b) RTU-1 and RTU-2: Existing sequence of operations to be reused for supply air reset temperature.

2. Heating MAU

- a. Existing SOO to remain.
- b. Provide additional controls as specified on contract drawings.

3. Cooling (AHU-1, AHU-10, RTU-1 and RTU-2):

- a. Fan(s) run(s) continuously.
- b. OA damper opened to its minimum ventilation position.
- c. DX cooling: BMS shall enable/modulate/stage/disable DX cooling:
 - a) AHU-1 and AHU-10: To maintain supply air reset temperature base on average signal input from two space temperature sensors.
 - b) RTU-1 and RTU-2: Existing sequence of operations to be reused for supply air reset temperature.
 - c) The first stage of cooling shall be economizer.

4. AHU-1,6,7 and 8 dedicated existing roof mounted exhaust fans

- a. Dedicated existing roof mounted exhaust fans:
 - a) Disable existing wired speed dial.
 - b) Provide Greenheck HOA controller.

- b. AHU-7 and 8 dedicated existing wall mounted exhaust fans
 - a. Provide controls to operate existing wall mounted exhaust fans during 100% OA mode of operation of AHU-7 and 8.
- c. AHU-6: Provide BACnet occupancy sensor tied to BMS.
- d. Dedicated existing roof mounted exhaust fans SOO:
 - a) Exhaust fans run continuously at minimum speed to provide 50% of designed EA flow.
 - b) AHU-6 dedicated exhaust fan: Upon signal from occupancy sensor exhaust fan speed shall increase to provide designed EA flow.
- 5. AHU-4,5 and 9 dedicated existing roof mounted exhaust fans
 - a. Dedicated existing roof mounted exhaust fans shall run continuously to provide designed EA flow.
- 6. AHU-4,5,6 and 9 supply fan(s)
 - a. Supply fan(s) shall run continuously to provide designed SA flow.
- 7. AHU-1,7,8,10 and RTU-1 supply fan(s)
 - a. Supply fan(s) shall run continuously.
 - b. Provide single zone VAV system controls and SOO.
 - c. AHU-1: Both supply fans shall speed up and slow down at same speed.
 - a) Upon failure of one supply fan then other remaining supply fan shall provide specified SOO.
- 8. RTU-2 supply fan
 - a. Supply fan shall run continuously.
 - b. Disable operation and SOO of existing bypass VAV box.
 - c. Provide duct static pressure and its reset controls.
 - d. Provide multi zone VAV system controls and SOO.
 - a) Modify existing AHU SOO.
- E. BAS shall enable economizer cooling as first stage of cooling for AHUs with DX cooling and RTU-1 and RTU-2 as follows:
 - 1. Economizer cooling shall be enabled when all of the following are true:
 - a. The outside air temperature is less than 72°F.
 - b. The outside air temperature is less than the return air temperature.
 - c. The outside air enthalpy is less than the return air enthalpy.

2. The BAS system operator shall, via single click editing, be easily able to select any or all of items a. thru c. of the previous paragraph for economizer enabling, for individual air handling systems/rtus and for air handling/rtus systems globally. Additionally, the BAS system operator shall be easily able to globally change the setpoints for items a. and c. of the previous paragraph.
3. Economizer cooling shall be integrated; economizer cooling shall continue to operate during stages of mechanical cooling as long as all three of the conditions indicated in paragraph 1 are true (or as selected by the system operator per paragraph 2).
4. When both mechanical cooling is anticipated to be required the next day (by trending the outside air enthalpy), and economizer cooling is available during the unoccupied cycle, economizer cooling shall be operated during the unoccupied cycle to pre-cool the spaces served by the air handler/rtus to 78°F 9adjustable).
5. BAS shall terminate the economizer whenever supply air temperature is < 50°F (adjustable).
6. Provide fault detection and diagnostics (FDD) system.
7. AHU-10 gravity relief air ventilator
 - a. During economizer mode of operation of AHU-10 damper at gravity relief air ventilator shall fully open.
8. AHU-4,5,6 and 9 economizer and existing roof mounted exhaust fans
 - a. During economizer mode of operation of AHU-4,5,6 and 9 damper at dedicated economizer exhaust fan shall fully open and dedicated exhaust fan shall start and run continuously. Dedicated existing roof mounted fan shall operate at design speed.
 - a) Whenever economizer is not available the economizer exhaust fan shall shut down and EA damper fully closed.
9. AHU-1 existing roof mounted exhaust fan and gravity relief air ventilators
 - a. During economizer mode of operation of AHU-1 dampers at dedicated gravity relief air ventilators shall fully open. Dedicated existing roof mounted fan shall operate at design speed.
 - a) Whenever economizer is not available the existing exhaust fan shall shut down and dampers at dedicated gravity relief air ventilators shall fully close.
10. AHU-7and 8 existing roof and wall mounted exhaust fans
 - a. During economizer mode of operation of AHU-7 and 8 dedicated existing roof and wall mounted exhaust fans shall start (if not already running) and run continuously. Dedicated existing roof and wall mounted exhaust fans shall operate at design speed.

- a) Whenever economizer is not available the existing wall mounted exhaust fan shall shut down and EA damper fully closed.
- F. Demand Ventilation Control (DVC) via CO2 sensor(s) (all AHUs, RTU-1 and RTU-2)
- 1. BMS shall monitor return air (RA) duct mounted CO2 sensor provided by this contractor). Whenever RA CO2 set point is 750ppm (adjustable) above ambient CO2 level then BMS shall:
 - a. Override minimum ventilation outdoor air (OA) damper position and modulate between damper's minimum and maximum specified positions to maintain RA CO2 level at set point. When RA CO2 level at set point for 10 minutes (adjustable) BMS shall modulate OA damper to its original minimum ventilation set point. OA damper minimum and maximum ventilation positions shall be determined in field with assistance by balancing contractor.
 - 2. AHU-7 and 8 existing roof mounted exhaust fans
 - a. Whenever dedicated AHU OA damper at maximum DVC position then BMS shall:
 - a) Override current minimum existing exhaust fans' speed and operate exhaust fans at design EA flows. When dedicated AHU OA damper at minimum DVC position then BMS shall operate existing exhaust fans' speed to provide minimum design EA flow.
 - 3. AHU-1 existing roof mounted exhaust fan
 - a. Whenever AHU OA damper at maximum DVC position then BMS shall:
 - a) BMS shall start existing exhaust fan if not already running to operate exhaust fan at design EA flow. When AHU OA damper at minimum DVC position then BMS shall operate existing exhaust fan at minimum speed.
- G. Relative humidity control via RA RH sensor(s) (AHU-1, AHU-10, RTU-1 and RTU-2)
- 1. BMS shall monitor return air (RA) duct mounted RH sensor provided by this contractor). Whenever RA RH% is >57% (adjustable) then BMS shall enable dehumidification mode of operation via hot gas reheat at each unit to maintain RA RH% at set point of 50% (adjustable).
- H. Duct smoke detectors (all AHUs and RTUs)
- 1. Hard wire smoke detectors to equipment starter.
 - a. Upon signal from and duct mounted smoke detector the BMS shall:

- a) Shut down fans
- b) Fully close OA damper
- c) Generate alarm at front end.
- d) Equipment restart: Manual.

I. Duct high static pressure sensor (all AHUs and RTUs)

- 1. Hard wire smoke detectors to equipment starter.
 - a. Upon signal from duct high static pressure sensor the BMS shall:
 - a) Shut down fans
 - b) Fully close OA damper
 - c) Generate alarm at front end.
 - d) Equipment restart: Manual.

J. Split AC system

- 1. BMS shall monitor AC and CU status and generate alarms at front end upon their failure.

K. Steam condensate pump package

- 1. BMS shall monitor each pump status and generate alarms at front end upon their failure.

3.2 RTU-3 SEQUENCE OF OPERATIONS

A. Refer to paragraph 3.1 for additional requirements for RTU-3 SOO.

B. System Startup

- 1. Power is turned on or the system is restarted
- 2. After a short initial delay to allow the sensors to stabilize, the blower starts and operates continuously
- 3. Based on sensor feedback, the system shall begin or resume operation based on the sequence below

C. Airside Configuration

- 1. The system continuously delivers the specified supply air volume to the natatorium
- 2. The minimum exhaust air volume is set to meet the schedule.
- 3. The minimum outdoor air volume is set to meet the schedule.

D. Dehumidification Mode

- 1. The return air relative humidity is above the humidity setpoint
- 2. Return air dewpoint is above dewpoint setpoint.
- 3. The compressor enters the Compressor Start sequence

4. If the system cannot maintain the relative humidity below setpoint, the second compressor circuit will start
5. Compressor waste heat is rejected into a glycol fluid loop which feeds the reheat coils and the air conditioning air-cooled heat exchanger in parallel.
6. The reheat coils are fully modulating (0-100%). The reheat output will modulate to maintain the space temperature at set point year-round. Reheat coils that are on off or only give heat from one circuit are not acceptable since they do not closely match the requirement of the space and cause swings in space conditions.

E. Air Conditioning Mode

1. The return air temperature is above the room temperature setpoint
2. The compressor starts, if not already operating in Dehumidification Mode
3. Excess compressor hot gas is diverted to a fluid-cooled heat exchanger. Up to 100% of compressor heat is rejected into the glycol fluid loop which is pumped outdoors to an outdoor air-cooled heat exchanger for 100% heat rejection at summer design ambient conditions
4. 100% of compressor heat is rejected at the outdoor air-cooled heat exchanger on a summer design day. On off-peak days, the air reheat output will modulate to maintain the space temperature at the set point
5. If the system cannot maintain the return air temperature setpoint, the second compressor will start

F. Space Heating Mode

1. The return air temperature is below the room temperature setpoint
2. The microprocessor space heating output signal (0-10 volts) is sent to the heating coil controller. The signal output will regulate based on the return air temperature

G. Exhaust Air Heat Recovery Mode

1. The minimum outdoor air damper and minimum exhaust fan(s) are tied to the system's occupancy schedule and will operate as programmed
2. Once the outdoor air temperature falls below the heat recovery setpoint (65 °F by default; field-adjustable) the glycol pump shall circulate a glycol mixture between the exhaust air and the outdoor air heat recovery coils, recovering heat from the space condition exhaust air and using it to preheat the incoming outside air

H. Freeze Protection

1. The supply air temperature falls below the freezestat setpoint
2. Exhaust fan(s) are stopped and outdoor air damper(s) are fully closed
3. When the freezestat alarm is tripped, it must be manually cleared by the operator

I. BACnet control points

Type and Name	Notes
AI, Return Air Humidity	Humidity of the air returned from the controlled space.

AI, Return Air Temperature	Temperature of the air returned from the controlled space.
AI, Return Air Dew Point	Dew point of the air returned from the controlled space.
AI, Wall Temperature	Dew point temperature measured on a wall. ATC contractor shall provide sensor and install on wall in the controlled space. It is used to detect dew on walls and will automatically lower the humidity setpoint to ensure unit running in dehumidification mode.
AI, Room Temperature	Temperature of the air in the controlled space if a sensor is installed in the space and wired to unit.
AI, Room Humidity	Humidity of the air in the controlled space if a sensor is installed in the space and wired to unit.
AI, Room Temperature Occupied Setpoint	Desired room temperature when day time mode is Occupied. Range: 55 - 95 °F
AI, Humidity Occupied Setpoint	Desired humidity when day time mode is Occupied. Range: 35 - 85 %
AV, Room Temperature Unoccupied Setpoint	Desired room temperature when day time mode is Unoccupied. Range: 55 - 95 °F
AV, Humidity Unoccupied Setpoint	Desired humidity when daytime mode is Unoccupied. Range: 35 - 85 %
AV, Remote Control Temp	This point can be used to provide a remote sensor used for control. Customer can read from a remote sensor and write to this point, or for more elaborate implementations, read several sensors and write an average sensor value to this point.
AV, Remote Control RH	This point can be used to provide a remote sensor used for control. Customer can read from a remote sensor and write to this point, or for more elaborate implementations, read several sensors and write an average sensor value to this point.
BV, Dehumidification Mode	Active when unit is dehumidifying the controlled space.
BV, A/C Mode	Active when unit is cooling the controlled space.

BV, Heating Mode	Active when unit is heating the controlled space.
BV, A/C Override	<p>Use this command input to force A/C. This overrides any other room temperature control decision made by the system.</p> <p>This feature is intended for cases where an external thermostat is used to control the space. The signal from the thermostat can then be used to force a A/C demand when thermostat goes into cooling mode.</p>
BV, Heat Override	<p>Use this command input to force space heating. This overrides any other room temperature control decision made by the system.</p> <p>This feature is intended for cases where an external thermostat is used to control the space. The signal from the thermostat can then be used to force a heating demand when thermostat goes into heating mode.</p> <p>This command input is disabled by default.</p>

J. HX-1 and Heating Pumps

1. Whenever RTU-3 is in the heating mode of operation then BMS shall:
 - a. Enable heating system
 - b. Start lead pump
 - a) Upon failure of lead pump the BMS shall start standby pump.
 - b) Rotate pumps operation on biweekly schedule.
 - c. Steam control valves: BMS shall modulate steam control valves in sequence to maintain supply air reset temperature base on input from space temperature sensor.

END OF SECTION 230993

SECTION 232113 - HYDRONIC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Copper tube and fittings.
2. Steel pipe and fittings.
3. Joining materials.
4. Transition fittings.
5. Dielectric fittings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of the following:

1. Pipe and tube.
2. Fittings.
3. Joining materials.
4. Transition fittings.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Piping layout, or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.
- B. Qualification Data: For Installer.
- C. Welding certificates.
- D. Field quality-control reports.
- E. Preconstruction Test Reports:
 1. Water Analysis: Submit a copy of the water analysis to illustrate water quality available at Project site.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installers of Pressure-Sealed Joints: Installers shall be certified by pressure-seal joint manufacturer as having been trained and qualified to join piping with pressure-seal pipe couplings and fittings.

B. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Pipe Welding: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code: Section IX.

1. Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation.
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on water quality.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Hydronic piping components and installation shall be capable of withstanding the following minimum working pressure and temperature unless otherwise indicated:

1. Hot-Water Heating Piping: 100 psig at 200 deg F .
2. Glycol Cooling-Water Piping: 150 psig at 150 deg F .
3. Condensate-Drain Piping: 180 deg F .

2.2 COPPER TUBE AND FITTINGS

A. Drawn-Temper Copper Tube: ASTM B88 Type L and ASTM B88.

B. Annealed-Temper Copper Tube: ASTM B88 Type L.

C. Wrought-Copper, Solder-Joint Fittings: ASME B16.22.

D. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

E. Cast Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.

- F. Wrought Copper Unions: ASME B16.22.
- G. Copper-Tube, Mechanically Formed Tee Fitting: For forming T-branch on copper water tube.
 - 1. Description: Tee formed in copper tube in accordance with ASTM F2014.

2.3 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A53/A53M, black steel with plain ends; welded and seamless, Grade B, and wall thickness as indicated in "Piping Applications" Article.
- B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125 and 250 as indicated in "Piping Applications" Article.
- C. Malleable-Iron Threaded Fittings: ASME B16.3, Classes 150 and 300 as indicated in "Piping Applications" Article.
- D. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in "Piping Applications" Article.
- E. Cast-Iron Pipe Flanges and Flanged Fittings: ASME B16.1, Classes 25, 125, and 250; raised ground face, and bolt holes spot faced as indicated in "Piping Applications" Article.
- F. Wrought-Steel Fittings: ASTM A234/A234M, wall thickness to match adjoining pipe.
- G. Wrought Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 - 1. Material Group: 1.1.
 - 2. End Connections: Butt welding.
 - 3. Facings: Raised face.
- H. Steel Pipe Nipples: ASTM A733, made of same materials and wall thicknesses as pipe in which they are installed.

2.4 JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

- C. Solder Filler Metals: ASTM B32, lead-free alloys. Include water-flushable flux according to ASTM B813.
- D. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel.
- E. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- F. Solvent Cements for CPVC Piping: ASTM F493.
- G. Solvent Cements for PVC Piping: ASTM D2564. Include primer according to ASTM F656.

2.5 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
 - 1. Description:
 - a. Standard: ASSE 1079.
 - b. Pressure Rating: 125 psig minimum at 180 deg F.
 - c. End Connections: Solder-joint copper alloy and threaded ferrous.
- C. Dielectric Flanges:
 - 1. Description:
 - a. Standard: ASSE 1079.
 - b. Factory-fabricated, bolted, companion-flange assembly.
 - c. Pressure Rating: 125 psig minimum at 180 deg F.
 - d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.
- D. Dielectric-Flange Insulating Kits:
 - 1. Description:
 - a. Nonconducting materials for field assembly of companion flanges.
 - b. Pressure Rating: 150 psig .
 - c. Gasket: Neoprene or phenolic.
 - d. Bolt Sleeves: Phenolic or polyethylene.
 - e. Washers: Phenolic with steel backing washers.
- E. Dielectric Nipples:
 - 1. Description:

- a. Standard: IAPMO PS 66.
- b. Electroplated steel nipple, complying with ASTM F1545.
- c. Pressure Rating: 300 psig at 225 deg F.
- d. End Connections: Male threaded or grooved.
- e. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

- A. Hot-water heating piping, aboveground, NPS 2 and smaller, shall be any of the following:
 - 1. Type L drawn-temper copper tubing, wrought-copper fittings, and soldered, brazed or pressure-seal joints.
 - 2. Schedule 40, Grade B steel pipe; Class 125, cast-iron flanges and flange fittings; and threaded joints.
- B. Hot-water heating piping, aboveground, NPS 2-1/2 and larger pipe, shall be any of the following:
 - 1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
- C. Glycol cooling-water piping, aboveground, NPS 2 and smaller pipe size, shall be any of the following:
 - 1. Type L, drawn-temper copper tubing, wrought-copper fittings, and soldered, brazed or pressure-seal joints.
 - 2. Schedule 40 steel pipe; Class 125, cast-iron flanges and flange fittings; and threaded joints.
- D. Glycol cooling-water piping, aboveground, NPS 2-1/2 and larger pipe size, shall be any of the following:
 - 1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
- E. Condensate-Drain Piping, Copper: Type M Type DWV, drawn-temper copper tubing, wrought-copper fittings, and soldered joints.
- F. Blowdown-Drain Piping: Same materials and joining methods as for piping specified for the service in which blowdown drain is installed.
- G. Air-Vent Piping:
 - 1. Inlet: Same as service
 - 2. Outlet: Type K, annealed-temper copper tubing with soldered or flared joints.

- H. Safety-Valve-Inlet and -Outlet Piping for Hot-Water Piping: Same materials and joining methods as for piping specified for the service in which safety valve is installed

3.2 INSTALLATION OF PIPING

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Select system components with pressure rating equal to or greater than system operating pressure.
- K. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- L. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- M. Install piping at a uniform grade of 0.2 percent upward in direction of flow.
- N. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
- O. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.
- P. Install unions in piping, NPS 2 pipe size and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.

- Q. Install flanges in piping, NPS 2-1/2 pipe size and larger, at final connections of equipment and elsewhere as indicated.
- R. Install shutoff valve immediately upstream of each dielectric fitting.
- S. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for identifying piping.
- T. Install sleeves for piping penetrations of walls, ceilings, and floors.
- U. Install sleeve seals for piping penetrations of concrete walls and slabs.

3.3 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Soldered Joints: Apply ASTM B813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B32.
- D. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8/A5.8M.
- E. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- F. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
- G. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.4 INSTALLATION OF DIELECTRIC FITTINGS

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 pipe size and Smaller: Use dielectric nipples or unions.
- C. Dielectric Fittings for NPS 2-1/2 to NPS 4 pipe size range: Use dielectric flanges, flange kits or nipples.

- D. Dielectric Fittings for NPS 5 pipe size and Larger: Use dielectric flange kits.

3.5 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements for seismic-restraint devices specified in Section 230548 "Vibration and Seismic Controls for HVAC."
- B. Comply with requirements in Section 230529 "Hangers and Supports for HVAC Piping and Equipment" for hangers, supports, and anchor devices.
- C. Install hangers for copper tubing and steel piping, with maximum horizontal spacing and minimum rod diameters, to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- D. Support horizontal piping within 12 inches dimension of each fitting and coupling.
- E. Support vertical runs of copper tubing and steel piping to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.6 TERMINAL EQUIPMENT CONNECTIONS

- A. Sizes for supply and return piping connections shall be per contract documents.
- B. Install control valves in accessible locations close to connected equipment.
- C. Install bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- D. Install ports for pressure gauges and thermometers at coil inlet and outlet connections. Comply with requirements in Section 230519 "Meters and Gages for HVAC Piping."

3.7 IDENTIFICATION

- A. Identify system components. Comply with requirements for identification materials and installation in Section 230553 "Identification for HVAC Piping and Equipment."

3.8 FIELD QUALITY CONTROL

- A. Prepare hydronic piping according to ASME B31.9 and as follows:
 - 1. Leave joints, including welds, uninsulated and exposed for examination during test.
 - 2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
 - 3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.

4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
5. Install safety valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.

B. Perform the following tests on hydronic piping:

1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
3. Isolate expansion tanks and determine that hydronic system is full of water.
4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times the "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
6. Prepare written report of testing.

C. Perform the following before operating the system:

1. Open manual valves fully.
2. Inspect pumps for proper rotation.
3. Set makeup pressure-reducing valves for required system pressure.
4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
5. Set temperature controls so all coils are calling for full flow.
6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, cooling towers, to specified values.
7. Verify lubrication of motors and bearings.
8. Prepare written report of testing.

END OF SECTION 232113

SECTION 232213 - STEAM AND CONDENSATE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Steel pipe and fittings.
 - 2. Joining materials.
- B. Related Requirements:
 - 1. Section 232216 "Steam and Condensate Heating Piping Specialties" for strainers, flash tanks, special-duty valves, steam traps, thermostatic air vents and vacuum breakers, and steam and condensate meters.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of the following:
 - 1. Steel pipe and fittings.
 - 2. Joining materials.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Piping layout, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Suspended ceiling components.
 - 2. Other building services.
 - 3. Structural members.
- B. Qualification Data: For Installer.
- C. Welding certificates.
- D. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Fiberglass Pipe and Fitting Installers: Installers of fiberglass pipe and fittings shall be certified by the manufacturer of pipes and fittings as having been trained and qualified to join fiberglass piping with manufacturer-recommended adhesive.

B. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Pipe Welding: Qualify procedures and operators according to the following:

1. ASME Compliance: Comply with ASME B31.1, "Power Piping," and ASME B31.9, "Building Services Piping," for materials, products, and installation.
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

PART 2 - PRODUCTS

2.1 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A53/A53M, black steel, plain ends, welded and seamless, Grade B, and Schedule as indicated in piping applications articles.
- B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125, 150, and 300 as indicated in piping applications articles.
- C. Malleable-Iron Threaded Fittings: ASME B16.3; Classes 150 and 300 as indicated in piping applications articles.
- D. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in piping applications articles.
- E. Cast-Iron Threaded Flanges and Flanged Fittings: ASME B16.1, Classes 125 and 250 as indicated in piping applications articles; raised ground face, and bolt holes spot faced.
- F. Wrought-Steel Fittings: ASTM A234/A234M, wall thickness to match adjoining pipe.
- G. Wrought-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 1. Material Group: 1.1.
 2. End Connections: Butt welding.
 3. Facings: Raised face.
- H. Steel Pipe Nipples: ASTM A733, made of ASTM A53/A53M, black steel of same Type, Grade, and Schedule as pipe in which installed.

2.2 STAINLESS STEEL PIPE AND FITTINGS

- A. Stainless Steel Pipe: ASTM A312/A312M, plain ends, seamless; stainless steel of types and schedules as indicated in piping application articles.
- B. Stainless Steel Socket Weld Fittings: Stainless steel, wrought or forged, of types and classes as indicated in piping application articles.
- C. Stainless Steel Flanges and Flanged Fittings: ASME B16.5, Class 150, wrought, raised face weld neck, including gaskets, bolts, and nuts of material to match pipe.

2.3 JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.
 - a. Full-Face Type: For flat-face flanges.
 - b. Narrow-Face Type: For raised-face flanges.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel or stainless steel of type to match pipe unless otherwise indicated.
- C. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- D. Welding Materials: Comply with Section II, Part C, of ASME Boiler and Pressure Vessel Code for welding materials appropriate for wall thickness and for chemical analysis of pipe being welded.
- E. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

PART 3 - EXECUTION

3.1 LP STEAM PIPING APPLICATIONS

- A. LP Steam Piping, NPS 2 and Smaller: Schedule 80, Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- B. LP Steam Piping, NPS 2-1/2 through NPS 12: Schedule 40, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, flanges, and flange fittings; and welded and flanged joints.
- C. Condensate piping above grade, NPS 2 and smaller, shall be either of the following:
 - 1. Schedule 80, Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.

- D. Condensate piping above grade, NPS 2-1/2 and larger:
 - 1. Schedule 80, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, flanges, and flange fittings; and welded and flanged joints.

3.2 HP STEAM PIPING APPLICATIONS

- A. HP Steam Piping, NPS 2 and Smaller: Schedule 40, Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- B. HP Steam Piping, NPS 2-1/2 through NPS 12: Schedule 40, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, flanges, and flange fittings; and welded and flanged joints.
- C. Condensate piping above grade, NPS 2 and smaller, shall be either of the following:
 - 1. Schedule 80, Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- D. Condensate piping above grade, NPS 2-1/2 and larger, shall be either of the following:
 - 1. Schedule 80, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, flanges, and flange fittings; and welded and flanged joints.

3.3 ANCILLARY PIPING APPLICATIONS

- A. Blowdown-Drain Piping: Same materials and joining methods as for piping specified for the service in which blowdown drain is installed.
- B. Vacuum-Breaker Piping: Outlet, same as service where installed.
- C. Safety-Valve-Inlet and -Outlet Piping: Same materials and joining methods as for piping specified for the service in which safety valve is installed.

3.4 INSTALLATION OF PIPING

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless otherwise indicated.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.

- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Install piping to allow application of insulation.
- I. Select system components with pressure rating equal to or greater than system operating pressure.
- J. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- K. Install drains, consisting of a tee fitting, NPS 3/4 full port-ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- L. Install steam supply piping at a minimum uniform grade of 0.2 percent downward in direction of steam flow.
- M. Install condensate return piping at a minimum uniform grade of 0.4 percent downward in direction of condensate flow.
- N. Reduce pipe sizes using eccentric reducer fitting installed with level side down.
- O. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to top of main pipe.
- P. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.
- Q. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.
- R. Install shutoff valve immediately upstream of each dielectric fitting.
- S. Install strainers on supply side of control valves, pressure-reducing valves, traps, and elsewhere as indicated. Install NPS 3/4 nipple and full port ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2.
- T. Comply with requirements in Section 230516 "Expansion Fittings and Loops for HVAC Piping" for installation of expansion loops, expansion joints, anchors, and pipe alignment guides.
- U. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for identifying piping.
- V. Install drip legs at low points and natural drainage points such as ends of mains, bottoms of risers, and ahead of pressure regulators, and control valves.

1. On straight runs with no natural drainage points, install drip legs at intervals not exceeding 300 feet.
2. Size drip legs same size as main. In steam mains NPS 6 and larger, drip leg size can be reduced, but to no less than NPS 4.

- W. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- X. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- Y. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230518 "Escutcheons for HVAC Piping."

3.5 INSTALLATION OF STEAM AND CONDENSATE PIPING SPECIALTIES

- A. Comply with requirements in Section 232216 "Steam and Condensate Heating Piping Specialties" for installation requirements for strainers, flash tanks, special-duty valves, steam traps, thermostatic air vents and vacuum breakers, and steam and condensate meters.

3.6 INSTALLATION OF HANGERS AND SUPPORTS

- A. Install the following pipe attachments:
 1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet long.
 2. Adjustable roller hangers and spring hangers for individual horizontal piping 20 feet or longer.
 3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
 4. Spring hangers to support vertical runs.
- B. Install hangers for steel steam supply piping and steel steam condensate piping, with maximum horizontal spacing and minimum rod diameters, to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- C. Install hangers for fiberglass piping, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- D. Support horizontal piping within 12 inches of each fitting.
- E. Support vertical runs of steel steam supply piping and steel steam condensate piping to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

- F. Support vertical runs of fiberglass piping to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.7 PIPE JOINT CONSTRUCTION

- A. Ream ends of pipes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
- E. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- F. Fiberglass Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.8 TERMINAL EQUIPMENT CONNECTIONS

- A. Size for supply and return piping connections shall be the same as or larger than equipment connections.
- B. Install traps and control valves in accessible locations close to connected equipment.
- C. Install bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- D. Install vacuum breakers downstream from control valve, close to coil inlet connection.
- E. Install a drip leg at coil outlet.

3.9 FIELD QUALITY CONTROL

- A. Prepare steam and condensate piping according to ASME B31.1, "Power Piping," and ASME B31.9, "Building Services Piping," and as follows:

1. Leave joints, including welds, uninsulated and exposed for examination during test.
 2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
 3. Flush system with clean water. Clean strainers.
 4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- D. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
 2. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength.
 3. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
- E. Prepare test and inspection reports.

END OF SECTION 232213

SECTION 232216 - STEAM AND CONDENSATE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes the following piping specialties for LP and HP steam and condensate piping:
 - 1. Strainers.
 - 2. Safety valves.
 - 3. Pressure-reducing valves.
 - 4. Steam traps.
 - 5. Thermostatic air vents and vacuum breakers.
 - 6. Steam and steam condensate valves.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of the following:
 - 1. Pressure-reducing and safety valve.
 - 2. Steam trap.
 - 3. Air vent and vacuum breaker.
 - 4. Steam and steam condensate valves.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For valves, safety valves, pressure-reducing valves, steam traps, air vents, vacuum breakers, and meters to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Pipe Welding: Qualify procedures and operators according to the following:
 - 1. ASME Compliance: Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp flash tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

PART 2 - PRODUCTS

A. Stop-Check Valves:

1. Body and Bonnet: Malleable iron.
2. End Connections: Flanged.
3. Disc: Cylindrical with removable liner and machined seat.
4. Stem: Brass alloy.
5. Operator: Outside screw and yoke with cast-iron handwheel.
6. Packing: Polytetrafluoroethylene-impregnated packing with two-piece packing gland assembly.
7. Pressure Class: 250.

2.2 STRAINERS

A. Y-Pattern Strainers:

1. Body: ASTM A 126, Class B cast iron, with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for strainers NPS 2 and smaller; flanged ends for strainers NPS 2-1/2 and larger.
3. Strainer Screen: Stainless-steel, mesh strainer, or perforated stainless-steel basket.
4. Tapped blowoff plug.
5. CWP Rating: 250-psig working steam pressure.

2.3 SAFETY VALVES

A. Bronze or Brass Safety Valves: ASME labeled.

1. Disc Material: Forged copper alloy.
2. End Connections: Threaded inlet and outlet.
3. Spring: Fully enclosed steel spring with adjustable pressure range and positive shutoff, factory set and sealed.
4. Pressure Class: 250.
5. Drip-Pan Elbow: Cast iron and having threaded inlet and outlet with threads complying with ASME B1.20.1.
6. Size and Capacity: As required for equipment according to ASME Boiler and Pressure Vessel Code.

B. Cast-Iron Safety Valves: ASME labeled.

1. Disc Material: Forged copper alloy with bronze nozzle.
2. End Connections: Raised-face flanged inlet and threaded or flanged outlet connections.
3. Spring: Fully enclosed cadmium-plated steel spring with adjustable pressure range and positive shutoff, factory set and sealed.
4. Pressure Class: 250.
5. Drip-Pan Elbow: Cast iron and having threaded inlet, outlet, and drain, with threads complying with ASME B1.20.1.
6. Exhaust Head: Cast iron and having threaded inlet and drain, with threads complying with ASME B1.20.1.
7. Size and Capacity: As required for equipment according to ASME Boiler and Pressure Vessel Code.

2.4 PRESSURE-REDUCING VALVES

- A. ASME labeled.
- B. Size, Capacity, and Pressure Rating: Factory set for inlet and outlet pressures indicated.
- C. Description: Pilot-actuated, diaphragm type, with adjustable pressure range and positive shutoff.
- D. Body: Cast iron.
- E. End Connections: Threaded connections for valves NPS 2 and smaller and flanged connections for valves NPS 2-1/2 and larger.
- F. Trim: Hardened stainless steel.
- G. Head and Seat: Replaceable, main head stem guide fitted with flushing and pressure-arresting device cover over pilot diaphragm.
- H. Gaskets: Non-asbestos materials.

2.5 STEAM TRAPS

- A. Float and Thermostatic Traps:
 - 1. Body and Bolted Cap: ASTM A 126, cast iron.
 - 2. End Connections: Threaded.
 - 3. Float Mechanism: Replaceable, stainless steel.
 - 4. Head and Seat: Hardened stainless steel.
 - 5. Trap Type: Balanced pressure.
 - 6. Thermostatic Bellows: Stainless steel or monel.
 - 7. Thermostatic air vent capable of withstanding 45 deg F of superheat and resisting water hammer without sustaining damage.
 - 8. Vacuum Breaker: Thermostatic with phosphor bronze bellows, and stainless-steel cage, valve, and seat.
 - 9. Maximum Operating Pressure: 125 psig.
- B. Inverted Bucket Traps:
 - 1. Body and Cap: Cast iron.
 - 2. End Connections: Threaded.
 - 3. Head and Seat: Stainless steel.
 - 4. Valve Retainer, Lever, and Guide Pin Assembly: Stainless steel.
 - 5. Bucket: Brass or stainless steel.
 - 6. Strainer: Integral stainless-steel inlet strainer within the trap body.
 - 7. Air Vent: Stainless-steel thermostatic vent.
 - 8. Pressure Rating: 250 psig.

2.6 THERMOSTATIC AIR VENTS AND VACUUM BREAKERS

- A. Thermostatic Air Vents:

1. Body: Cast iron, bronze, or stainless steel.
2. End Connections: Threaded.
3. Float, Valve, and Seat: Stainless steel.
4. Thermostatic Element: Phosphor bronze bellows in a stainless-steel cage.
5. Pressure Rating: 300 psig.
6. Maximum Temperature Rating: 350 deg.

B. Vacuum Breakers:

1. Body: Cast iron, bronze, or stainless steel.
2. End Connections: Threaded.
3. Sealing Ball, Retainer, Spring, and Screen: Stainless steel.
4. O-Ring Seal: EPR.
5. Pressure Rating: 300 psig.
6. Maximum Temperature Rating: 350 deg F.

2.7 FLEXIBLE CONNECTORS

A. Stainless-Steel Bellows, Flexible Connectors:

1. Body: Stainless-steel bellows with woven, flexible, bronze, wire-reinforced, protective jacket.
2. End Connections: Threaded or flanged to match equipment connected.
3. Performance: Capable of 3/4-inch misalignment.
4. CWP Rating: 150 psig.
5. Maximum Operating Temperature: 250 deg F.

PART 3 - EXECUTION

3.1 VALVE APPLICATIONS

- A. Install shutoff duty valves at branch connections to steam supply mains, at steam supply connections to equipment, and at the outlet of steam traps.
- B. Install safety valves on pressure-reducing stations and elsewhere as required by ASME Boiler and Pressure Vessel Code. Install safety-valve discharge piping, without valves, to nearest floor drain or as indicated on Drawings. Comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1, for installation requirements.

3.2 PIPING INSTALLATION

- A. Install piping to permit valve servicing.
- B. Install drains, consisting of a tee fitting, NPS 3/4 full port-ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.

- C. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.
- D. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.
- E. Install shutoff valve immediately upstream of each dielectric fitting.
- F. Install strainers on supply side of control valves, pressure-reducing valves, traps, and elsewhere as indicated. Install NPS 3/4 nipple and full port ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2.
- G. Flash Tank:
 - 1. Pitch condensate piping down toward flash tank.
 - 2. If more than one condensate pipe discharges into flash tank, install a check valve in each line.
 - 3. Install thermostatic air vent at tank top.
 - 4. Install safety valve at tank top.
 - 5. Install full-port ball valve, and swing check valve on condensate outlet.
 - 6. Install inverted bucket or float and thermostatic trap at low-pressure condensate outlet, sized for three times the calculated heat load.
 - 7. Install pressure gage on low-pressure steam outlet according to Section 230519 "Meters and Gages for HVAC Piping."

3.3 STEAM-TRAP INSTALLATION

- A. Install steam traps in accessible locations as close as possible to connected equipment.
- B. Install full-port ball valve, strainer, and union upstream from trap; install union, check valve, and full-port ball valve downstream from trap unless otherwise indicated.

3.4 PRESSURE-REDUCING VALVE INSTALLATION

- A. Install pressure-reducing valves in accessible location for maintenance and inspection.
- B. Install bypass piping around pressure-reducing valves, with globe valve equal in size to area of pressure-reducing valve seat ring, unless otherwise indicated.
- C. Install gate valves on both sides of pressure-reducing valves.
- D. Install unions or flanges on both sides of pressure-reducing valves having threaded- or flanged-end connections, respectively.
- E. Install pressure gages on low-pressure side of pressure-reducing valves after the bypass connection according to Section 230519 "Meters and Gages for HVAC Piping."
- F. Install strainers upstream for pressure-reducing valve.

- G. Install safety valve downstream from pressure-reducing valve station.

3.5 SAFETY VALVE INSTALLATION

- A. Install safety valves according to ASME B31.1, "Power Piping"; and ASME B31.9, "Building Services Piping."
- B. Pipe safety-valve discharge without valves to atmosphere outside the building.
- C. Install drip-pan elbow fitting adjacent to safety valve and pipe drain connection to nearest floor drain.
- D. Install exhaust head with drain to waste, on vents equal to or larger than NPS 2-1/2.

3.6 TERMINAL EQUIPMENT CONNECTIONS

- A. Install traps and control valves in accessible locations close to connected equipment.
- B. Install bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- C. Install vacuum breakers downstream from control valve, close to coil inlet connection.

END OF SECTION 232216

SECTION 232300 - REFRIGERANT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Refrigerant pipes and fittings.
 - 2. Refrigerant piping valves and specialties.
 - 3. Refrigerants.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of valve, refrigerant piping, and piping specialty.
 - 1. Include pressure drop, based on manufacturer's test data, for the following:
 - a. Thermostatic expansion valves.
 - b. Solenoid valves.
 - c. Hot-gas bypass valves.
 - d. Filter dryers.
 - e. Strainers.
 - f. Pressure-regulating valves.
- B. Shop Drawings:
 - 1. Show piping size and piping layout, including oil traps, double risers, specialties, wall and floor penetrations, and pipe and tube sizes to accommodate, as a minimum, equipment provided, elevation difference between compressor and evaporator, and length of piping to ensure proper operation and compliance with warranties of connected equipment.
 - 2. Show interface and spatial relationships between piping and equipment.
 - 3. Shop Drawing Scale: 1/4 inch equals 1 foot.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For refrigerant valves and piping specialties to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."
- B. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

1.7 PRODUCT STORAGE AND HANDLING

- A. Store piping with end caps in place to ensure that piping interior and exterior are clean when installed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Line Test Pressure for Refrigerant R-410A:
 - 1. Suction Lines for Air-Conditioning Applications: 300 psig.
 - 2. Suction Lines for Heat-Pump Applications: 535 psig.
 - 3. Hot-Gas and Liquid Lines: 535 psig.

2.2 COPPER TUBE AND FITTINGS

- A. Copper Tube: ASTM B 88, Type K or L or ASTM B 280, Type ACR.
- B. Wrought-Copper Fittings: ASME B16.22.
- C. Wrought-Copper Unions: ASME B16.22.
- D. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.
- E. Brazing Filler Metals: AWS A5.8/A5.8M.
- F. Flexible Connectors:
 - 1. Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket.
 - 2. End Connections: Socket ends.
 - 3. Offset Performance: Capable of minimum 3/4-inch misalignment in minimum 7-inch- long assembly.

4. Working Pressure Rating: Factory test at minimum 500 psig.
5. Maximum Operating Temperature: 250 deg F.

2.3 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, black steel with plain ends; type, grade, and wall thickness as selected in piping application articles.
- B. Wrought-Steel Fittings: ASTM A 234/A 234M, for welded joints.
- C. Steel Flanges and Flanged Fittings: ASME B16.5, steel, including bolts, nuts, and gaskets, bevel-welded end connection, and raised face.
- D. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- E. Flanged Unions:
 1. Body: Forged-steel flanges for NPS 1 to NPS 1-1/2 and ductile iron for NPS 2 to NPS 3. Apply rust-resistant finish at factory.
 2. Gasket: Fiber asbestos free.
 3. Fasteners: Four plated-steel bolts, with silicon bronze nuts. Apply rust-resistant finish at factory.
 4. End Connections: Brass tailpiece adapters for solder-end connections to copper tubing.
 5. Offset Performance: Capable of minimum 3/4-inch misalignment in minimum 7-inch- long assembly.
 6. Pressure Rating: Factory test at minimum 400 psig.
 7. Maximum Operating Temperature: 330 deg F.
- F. Flexible Connectors:
 1. Body: Stainless-steel bellows with woven, flexible, stainless-steel-wire-reinforced protective jacket.
 2. End Connections:
 - a. NPS 2 and Smaller: With threaded-end connections.
 - b. NPS 2-1/2 and Larger: With flanged-end connections.
 3. Offset Performance: Capable of minimum 3/4-inch misalignment in minimum 7-inch- long assembly.
 4. Pressure Rating: Factory test at minimum 500 psig.
 5. Maximum Operating Temperature: 250 deg F.

2.4 VALVES AND SPECIALTIES

- A. Diaphragm Packless Valves:

1. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
2. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
3. Operator: Rising stem and hand wheel.
4. Seat: Nylon.
5. End Connections: Socket, union, or flanged.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 275 deg F.

B. Packed-Angle Valves:

1. Body and Bonnet: Forged brass or cast bronze.
2. Packing: Molded stem, back seating, and replaceable under pressure.
3. Operator: Rising stem.
4. Seat: Nonrotating, self-aligning polytetrafluoroethylene.
5. Seal Cap: Forged-brass or valox hex cap.
6. End Connections: Socket, union, threaded, or flanged.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 275 deg F.

C. Check Valves:

1. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
2. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
3. Piston: Removable polytetrafluoroethylene seat.
4. Closing Spring: Stainless steel.
5. End Connections: Socket, union, threaded, or flanged.
6. Maximum Opening Pressure: 0.50 psig.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 275 deg F.

D. Service Valves:

1. Body: Forged brass with brass cap including key end to remove core.
2. Core: Removable ball-type check valve with stainless-steel spring.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Copper spring.
5. Working Pressure Rating: 500 psig.

E. Solenoid Valves: Comply with AHRI 760 and UL 429; listed and labeled by a National Recognized Testing Laboratory (NRTL).

1. Body and Bonnet: Plated steel.
2. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Threaded.

5. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch conduit adapter, and ac coil.
 6. Working Pressure Rating: 400 psig.
 7. Maximum Operating Temperature: 240 deg F.
- F. Safety Relief Valves: Comply with 2010 ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.
1. Body and Bonnet: Ductile iron and steel, with neoprene O-ring seal.
 2. Piston, Closing Spring, and Seat Insert: Stainless steel.
 3. Seat: Polytetrafluoroethylene.
 4. End Connections: Threaded.
 5. Working Pressure Rating: 400 psig.
 6. Maximum Operating Temperature: 240 deg F.
- G. Thermostatic Expansion Valves: Comply with AHRI 750.
1. Body, Bonnet, and Seal Cap: Forged brass or steel.
 2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
 3. Packing and Gaskets: Non-asbestos.
 4. Capillary and Bulb: Copper tubing filled with refrigerant charge.
 5. Suction Temperature: 40 deg F.
 6. Reverse-flow option (for heat-pump applications).
 7. End Connections: Socket, flare, or threaded union.
 8. Working Pressure Rating: 450 psig.
- H. Hot-Gas Bypass Valves: Comply with UL 429; listed and labeled by an NRTL.
1. Body, Bonnet, and Seal Cap: Ductile iron or steel.
 2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
 3. Packing and Gaskets: Non-asbestos.
 4. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
 5. Seat: Polytetrafluoroethylene.
 6. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch conduit adapter and ac coil.
 7. End Connections: Socket.
 8. Throttling Range: Maximum 5 psig.
 9. Working Pressure Rating: 500 psig.
 10. Maximum Operating Temperature: 240 deg F.
- I. Straight-Type Strainers:
1. Body: Welded steel with corrosion-resistant coating.
 2. Screen: 100-mesh stainless steel.
 3. End Connections: Socket or flare.
 4. Working Pressure Rating: 500 psig.

5. Maximum Operating Temperature: 275 deg F.

J. Angle-Type Strainers:

1. Body: Forged brass or cast bronze.
2. Drain Plug: Brass hex plug.
3. Screen: 100-mesh monel.
4. End Connections: Socket or flare.
5. Working Pressure Rating: 500 psig.
6. Maximum Operating Temperature: 275 deg F.

K. Moisture/Liquid Indicators:

1. Body: Forged brass.
2. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
3. Indicator: Color coded to show moisture content in parts per million (ppm).
4. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.
5. End Connections: Socket or flare.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 240 deg F.

L. Replaceable-Core Filter Dryers: Comply with AHRI 730.

1. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: Activated alumina or charcoal.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: 2 psig.
8. Working Pressure Rating: 500 psig.
9. Maximum Operating Temperature: 240 deg F.

M. Permanent Filter Dryers: Comply with AHRI 730.

1. Body and Cover: Painted-steel shell.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: Activated alumina or charcoal.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: 2 psig.

8. Working Pressure Rating: 500 psig.
9. Maximum Operating Temperature: 240 deg F.

N. Mufflers:

1. Body: Welded steel with corrosion-resistant coating.
2. End Connections: Socket or flare.
3. Working Pressure Rating: 500 psig.
4. Maximum Operating Temperature: 275 deg F.

O. Receivers: Comply with AHRI 495.

1. Comply with 2010 ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.
2. Comply with UL 207; listed and labeled by an NRTL.
3. Body: Welded steel with corrosion-resistant coating.
4. Tappings: Inlet, outlet, liquid level indicator, and safety relief valve.
5. End Connections: Socket or threaded.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 275 deg F.

P. Liquid Accumulators: Comply with AHRI 495.

1. Body: Welded steel with corrosion-resistant coating.
2. End Connections: Socket or threaded.
3. Working Pressure Rating: 500 psig.
4. Maximum Operating Temperature: 275 deg F.

2.5 REFRIGERANTS

- A. ASHRAE 34, R-410A: Pentafluoroethane/Difluoromethane.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS FOR REFRIGERANT R-410A

- A. Suction Lines NPS 1-1/2 and Smaller for Conventional Air-Conditioning Applications: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed or soldered joints.
- B. Suction Lines NPS 2 to NPS 3-1/2 for Conventional Air-Conditioning Applications: Copper, Type ACR or Type L, drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.

- C. Suction Lines NPS 4 for Conventional Air-Conditioning Applications: Copper, Type ACR, Type K or Type L, drawn-temper tubing and wrought-copper fittings with soldered joints.
- D. Hot-Gas and Liquid Lines, and Suction Lines for Heat-Pump Applications:
 - 1. NPS 5/8 and Smaller: Copper, Type ACR or Type L, annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
 - 2. NPS 3/4 to NPS 1: Copper, Type K, annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
 - 3. NPS 1-1/4: Copper, Type ACR, Type K or Type L, drawn-temper tubing and wrought-copper fittings with 95-5 tin-antimony soldered joints.
 - 4. NPS 1-1/2 to NPS 2: Copper, Type ACR, Type K or Type L, drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.
- E. Hot-Gas and Liquid Lines, and Suction Lines for Heat-Pump Applications NPS 2 to NPS 4: Schedule 40, black-steel and wrought-steel fittings with welded joints.
- F. Safety-Relief-Valve Discharge Piping:
 - 1. NPS 5/8 and Smaller: Copper, Type ACR or Type L, annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
 - 2. NPS 3/4 to NPS 1: Copper, Type K, annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
 - 3. NPS 1-1/4: Copper, Type ACR, Type K or Type L, drawn-temper tubing and wrought-copper fittings with 95-5 tin-antimony soldered joints.
 - 4. NPS 1-1/2 to NPS 2: Copper, Type ACR, Type K or Type L, drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.
- G. Safety-Relief-Valve Discharge Piping NPS 2 to NPS 4: Schedule 40, black-steel and wrought-steel fittings with welded joints.

3.2 VALVE AND SPECIALTY APPLICATIONS

- A. Install service valves for gage taps at inlet and outlet of hot-gas bypass valves and strainers if they are not an integral part of valves and strainers.
- B. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection.
- C. Except as otherwise indicated, install diaphragm packless or packed-angle valves on inlet and outlet side of filter dryers.
- D. Install a full-size, three-valve bypass around filter dryers.
- E. Install thermostatic expansion valves as close as possible to distributors on evaporators.
 - 1. Install valve so diaphragm case is warmer than bulb.
 - 2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.

3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.
- F. Install safety relief valves where required by 2010 ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to ASHRAE 15.
- G. Install moisture/liquid indicators in liquid line at the inlet of the thermostatic expansion valve or at the inlet of the evaporator coil capillary tube.
- H. Install strainers upstream from and adjacent to the following unless they are furnished as an integral assembly for the device being protected:
 1. Solenoid valves.
 2. Thermostatic expansion valves.
 3. Hot-gas bypass valves.
 4. Compressor.
- I. Install filter dryers in liquid line between compressor and thermostatic expansion valve, and in the suction line at the compressor.
- J. Install receivers sized to accommodate pump-down charge.
- K. Install flexible connectors at compressors.

3.3 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- B. Install refrigerant piping according to ASHRAE 15.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping adjacent to machines to allow service and maintenance.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Select system components with pressure rating equal to or greater than system operating pressure.

- J. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.
- K. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels if valves or equipment requiring maintenance is concealed behind finished surfaces.
- L. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.
- M. Slope refrigerant piping as follows:
 - 1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
 - 2. Install horizontal suction lines with a uniform slope downward to compressor.
 - 3. Install traps and double risers to entrain oil in vertical runs.
 - 4. Liquid lines may be installed level.
- N. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.
- O. Before installation of steel refrigerant piping, clean pipe and fittings using the following procedures:
 - 1. Shot blast the interior of piping.
 - 2. Remove coarse particles of dirt and dust by drawing a clean, lintless cloth through tubing by means of a wire or electrician's tape.
 - 3. Draw a clean, lintless cloth saturated with trichloroethylene through the tube or pipe. Continue this procedure until cloth is not discolored by dirt.
 - 4. Draw a clean, lintless cloth, saturated with compressor oil, squeezed dry, through the tube or pipe to remove remaining lint. Inspect tube or pipe visually for remaining dirt and lint.
 - 5. Finally, draw a clean, dry, lintless cloth through the tube or pipe.
 - 6. Safety-relief-valve discharge piping is not required to be cleaned but is required to be open to allow unrestricted flow.
- P. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.
- Q. Identify refrigerant piping and valves according to Section 230553 "Identification for HVAC Piping and Equipment."
- R. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- S. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."

3.4 PIPE JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Fill pipe and fittings with an inert gas (nitrogen or carbon dioxide), during brazing or welding, to prevent scale formation.
- D. Soldered Joints: Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook."
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
 - 1. Use Type BCuP (copper-phosphorus) alloy for joining copper socket fittings with copper pipe.
 - 2. Use Type BAg (cadmium-free silver) alloy for joining copper with bronze or steel.
- F. Threaded Joints: Thread steel pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and to restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry-seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Steel pipe can be threaded, but threaded joints must be seal brazed or seal welded.
- H. Welded Joints: Construct joints according to AWS D10.12M/D10.12.
- I. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.5 HANGERS AND SUPPORTS

- A. Comply with requirements for pipe hangers and supports specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Install the following pipe attachments:
 - 1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet long.
 - 2. Roller hangers and spring hangers for individual horizontal runs 20 feet or longer.
 - 3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
 - 4. Spring hangers to support vertical runs.

5. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.
- C. Install hangers for copper tubing with the following maximum spacing and minimum rod diameters:
1. NPS 1/2: Maximum span, 60 inches; minimum rod, 1/4 inch.
 2. NPS 5/8: Maximum span, 60 inches; minimum rod, 1/4 inch.
 3. NPS 1: Maximum span, 72 inches; minimum rod, 1/4 inch.
 4. NPS 1-1/4: Maximum span, 96 inches; minimum rod, 3/8 inch.
 5. NPS 1-1/2: Maximum span, 96 inches; minimum rod, 3/8 inch.
 6. NPS 2: Maximum span, 96 inches; minimum rod, 3/8 inch.
 7. NPS 2-1/2: Maximum span, 108 inches; minimum rod, 3/8 inch.
 8. NPS 3: Maximum span, 10 feet; minimum rod, 3/8 inch.
 9. NPS 4: Maximum span, 12 feet; minimum rod, 1/2 inch.
- D. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 2: Maximum span, 10 feet; minimum rod, 3/8 inch.
 2. NPS 2-1/2: Maximum span, 11 feet; minimum rod, 3/8 inch.
 3. NPS 3: Maximum span, 12 feet; minimum rod, 3/8 inch.
 4. NPS 4: Maximum span, 14 feet; minimum rod, 1/2 inch.
- E. Support multifloor vertical runs at least at each floor.

3.6 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
1. Comply with ASME B31.5, Chapter VI.
 2. Test refrigerant piping, specialties, and receivers. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
 3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in "Performance Requirements" Article.
 - a. Fill system with nitrogen to the required test pressure.
 - b. System shall maintain test pressure at the manifold gage throughout duration of test.
 - c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
 - d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.
- B. Prepare test and inspection reports.

3.7 SYSTEM CHARGING

- A. Charge system using the following procedures:
 - 1. Install core in filter dryers after leak test but before evacuation.
 - 2. Evacuate entire refrigerant system in compliance with equipment manufacturers recommendations. At a minimum evacuate the system with a vacuum pump to 500 micrometers. Hold vacuum for a minimum of 12 hours before charging.
 - 3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
 - 4. Charge system with a new filter-dryer core in charging line.

3.8 ADJUSTING

- A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.
- B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.
- C. Adjust set-point temperature of air-conditioning or chilled-water controllers to the system design temperature.
- D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:
 - 1. Verify that compressor oil level is correct.
 - 2. Open compressor suction and discharge valves.
 - 3. Open refrigerant valves except bypass valves that are used for other purposes.
 - 4. Check open compressor-motor alignment and verify lubrication for motors and bearings.
- E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION 232300

SECTION 233113 - METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Single-wall rectangular ducts and fittings.
2. Single-wall round and flat-oval ducts and fittings.
3. Sheet metal materials.
4. Duct liner.
5. Sealants and gaskets.
6. Hangers and supports.
7. Seismic-restraint devices.

1.3 DEFINITIONS

- A. OSHPD: Office of Statewide Health Planning and Development (State of California).

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of the following products:

1. Liners and adhesives.
2. Sealants and gaskets.
3. Seismic-restraint devices.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: A single set of plans or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.
- B. Welding certificates.
- C. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum," for aluminum supports.
3. AWS D9.1/D9.1M, "Sheet Metal Welding Code," for duct joint and seam welding.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and with performance requirements and design criteria indicated in "Duct Schedule" Article.
- B. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and ASCE/SEI 7.
- C. Airstream Surfaces: Surfaces in contact with airstream shall comply with requirements in ASHRAE 62.1.
- D. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment," and Section 7 - "Construction and System Startup."
- E. ASHRAE/IES Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."
- F. Duct Dimensions: Unless otherwise indicated, all duct dimensions indicated on Drawings are inside clear dimensions and do not include insulation or duct wall thickness.

2.2 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
 1. Construct ducts of galvanized sheet steel unless otherwise indicated.
 2. For ducts exposed to weather or located in Pool Area, construct of Type 316 stainless steel indicated by manufacturer to be suitable for outdoor/pool area installation.
- B. Transverse Joints: Fabricate joints in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 1. For ducts with longest side less than 36 inches, select joint types in accordance with Figure 2-1.

2. For ducts with longest side 36 inches or greater, use flange joint connector Type T-22, T-24, T-24A, T-25a, or T-25b. Factory-fabricated flanged duct connection system may be used if submitted and approved by engineer of record.
 3. Where specified for specific applications, all joints shall be welded.
- C. Longitudinal Seams: Select seam types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." All longitudinal seams shall be Pittsburgh lock seams unless otherwise specified for specific application.
1. Where specified for specific applications, all joints shall be welded.
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.
1. Construct ducts of galvanized sheet steel unless otherwise indicated.
 2. For ducts exposed to weather/pool area, construct of Type 316 stainless steel indicated by manufacturer to be suitable for outdoor/ pool area installation.
- B. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter of the round sides connecting the flat portions of the duct (minor dimension).
- C. Transverse Joints: Select joint types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.
- D. Longitudinal Seams: Select seam types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.

2. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.

- E. Tees and Laterals: Select types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.4 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A653/A653M.
 1. Galvanized Coating Designation: G60, indoors and G90 outdoors.
 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. Carbon-Steel Sheets: Comply with ASTM A1008/A1008M, with oiled, matte finish for exposed ducts.
- D. Stainless-Steel Sheets: Comply with ASTM A480/A480M, Type 304 or 316, as indicated in "Duct Schedule" Article; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in "Duct Schedule" Article.
- E. Aluminum Sheets: Comply with ASTM B209 Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.
- F. Factory- or Shop-Applied Antimicrobial Coating:
 1. Apply to the surface of sheet metal that will form the interior surface of the duct. An untreated clear coating shall be applied to the exterior surface.
 2. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
 3. Coating containing the antimicrobial compound shall have a hardness of 2H, minimum, when tested in accordance with ASTM D3363.
 4. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested in accordance with UL 723; certified by an NRTL.
 5. Shop-Applied Coating Color: Black or White.
 6. Antimicrobial coating on sheet metal is not required for duct containing liner treated with antimicrobial coating.
- G. Reinforcement Shapes and Plates: ASTM A36/A36M, steel plates, shapes, and bars; black and galvanized.

1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.
- H. Tie Rods: Galvanized steel, 1/4-inch- minimum diameter for lengths 36 inches or less; 3/8-inch- minimum diameter for lengths longer than 36 inches.

2.5 DUCT LINER (COMPLIANT WITH ASHRAE 170)

- A. Fibrous-Glass Duct Liner: Comply with ASTM C1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."
 1. Maximum Thermal Conductivity:
 - a. Type I, Flexible: 0.27 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
 - b. Type II, Rigid: 0.23 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
 2. Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior surface of the duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
 3. Solvent or Water-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C916.
- B. Flexible Elastomeric Duct Liner: Preformed, cellular, closed-cell, sheet materials complying with ASTM C534/C534M, Type II, Grade 1; and with NFPA 90A or NFPA 90B.
 1. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested in accordance with UL 723; certified by an NRTL.
 2. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.
- C. Fiberglass-Free Duct Liner: Made from partially recycled cotton or polyester products and containing no fiberglass. Airstream surface overlaid with fire-resistant facing to prevent surface erosion by airstream, complying with NFPA 90A or NFPA 90B. Treat natural-fiber products with antimicrobial coating.
 1. Maximum Thermal Conductivity: 0.24 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature when tested in accordance with ASTM C518.
 2. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested in accordance with ASTM E84; certified by an NRTL.
 3. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.
- D. Insulation Pins and Washers:
 1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch- or 0.135-inch- diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.

2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- thick galvanized steel aluminum stainless steel; with beveled edge sized as required to hold insulation securely in place, but not less than 1-1/2 inches in diameter.
- E. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 7-11, "Flexible Duct Liner Installation."
1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
 2. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
 3. Butt transverse joints without gaps, and coat joint with adhesive.
 4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
 5. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and dimensions of standard liner make longitudinal joints necessary.
 6. Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm or greater.
 7. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.
 8. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:
 - a. Fan discharges.
 - b. Intervals of lined duct preceding unlined duct.
 - c. Upstream edges of transverse joints in ducts where air velocities are higher than 2500 fpm or where indicated.

2.6 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested in accordance with UL 723; certified by an NRTL.
- B. Two-Part Tape Sealing System:
1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
 2. Tape Width: 3 inches, 4 inches or 6 inches.
 3. Sealant: Modified styrene acrylic.
 4. Water resistant.
 5. Mold and mildew resistant.
 6. Maximum Static-Pressure Class: 10 inch wg, positive and negative.
 7. Service: Indoor and outdoor.
 8. Service Temperature: Minus 40 to plus 200 deg F.

9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.

C. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10 inch wg, positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

D. Solvent-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Base: Synthetic rubber resin.
3. Solvent: Toluene and heptane.
4. Solids Content: Minimum 60 percent.
5. Shore A Hardness: Minimum 60.
6. Water resistant.
7. Mold and mildew resistant.
8. Maximum Static-Pressure Class: 10-inch wg, positive or negative.
9. Service: Indoor or outdoor.
10. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

E. Flanged Joint Sealant: Comply with ASTM C920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.

F. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

G. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for 10-inch wg static-pressure class, positive or negative.
2. EPDM O-ring to seal in concave bead in coupling or fitting spigot.
3. Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting spigots.

2.7 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Galvanized-steel rods and nuts.
 - 1. Pool Area duct: 316SS.
- B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
- C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."
- D. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- E. Trapeze and Riser Supports:
 - 1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
 - 2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
 - 3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and coordination drawings.
- B. Install ducts in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install ducts in maximum practical lengths with fewest possible joints.
- D. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- E. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- F. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- G. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- H. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

- I. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
 - J. Install fire, combination fire/smoke, and smoke dampers where indicated on Drawings and as required by code, and by local authorities having jurisdiction. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers and specific installation requirements of the damper UL listing.
 - K. Install heating coils, cooling coils, air filters, dampers, and all other duct-mounted accessories in air ducts where indicated on Drawings.
 - L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials both before and after installation. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."
 - M. Elbows: Use long-radius elbows wherever they fit.
 - 1. Fabricate 90-degree rectangular mitered elbows to include turning vanes.
 - 2. Fabricate 90-degree round elbows with a minimum of three segments for 12 inches and smaller and a minimum of five segments for 14 inches and larger.
 - N. Branch Connections: 45 degrees.
- 3.2 INSTALLATION OF EXPOSED DUCTWORK
- A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.
 - B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.
 - C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.
 - D. Maintain consistency, symmetry, and uniformity in arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.
 - E. Repair or replace damaged sections and finished work that does not comply with these requirements.
- 3.3 DUCTWORK IN POOL AREA
- A. All external joints are to have secure watertight mechanical connections. Seal all openings to provide weatherproof construction.
 - B. Provide required supporting structures.

C. Single Wall:

1. Ductwork shall be Type 316 stainless steel.
 - a. If duct outer surface is uninsulated, protect outer surface with suitable paint.

3.4 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Seal ducts at a minimum to the following seal classes in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":
 1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 2. Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class A.
 3. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class A.
 4. Unconditioned Space, Exhaust Ducts: Seal Class C.
 5. Unconditioned Space, Return-Air Ducts: Seal Class A.
 6. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg: Seal Class A.
 7. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class A.
 8. Conditioned Space, Exhaust Ducts: Seal Class B.
 9. Conditioned Space, Return-Air Ducts: Seal Class A.

3.5 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."
- B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
 1. Where practical, install concrete inserts before placing concrete.
 2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
 3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
 4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
 5. Do not use powder-actuated concrete fasteners for seismic restraints.
- C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.
- D. Hangers Exposed to View: Threaded rod and angle or channel supports.

- E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.
- F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.6 CONNECTIONS

- A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.7 PAINTING

- A. Paint interior of metal ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer.

3.8 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Duct System Cleanliness Tests:
 - 1. Visually inspect duct system to ensure that no visible contaminants are present.
 - 2. Test sections of metal duct system, chosen randomly by Owner, for cleanliness in accordance with "Description of Method 3 - NADCA Vacuum Test" in NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems."
 - a. Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.
- C. Duct system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.9 DUCT CLEANING

- A. Clean new duct system(s) before testing, adjusting, and balancing.
- B. Use duct cleaning methodology as indicated in NADCA ACR.
- C. Use service openings for entry and inspection.
 - 1. Provide openings with access panels appropriate for duct static-pressure and leakage class at dampers, coils, and any other locations where required for inspection and cleaning access. Provide insulated panels for insulated or lined duct. Patch insulation and

liner as recommended by duct liner manufacturer. Comply with Section 233300 "Air Duct Accessories" for access panels and doors.

2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
3. Remove and reinstall ceiling to gain access during the cleaning process.

D. Particulate Collection and Odor Control:

1. When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron-size (or larger) particles.
2. When venting vacuuming system to outdoors, use filter to collect debris removed from HVAC system, and locate exhaust downwind and away from air intakes and other points of entry into building.

E. Clean the following components by removing surface contaminants and deposits:

1. Air outlets and inlets (registers, grilles, and diffusers).
2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.
7. Dedicated exhaust and ventilation components and makeup air systems.

F. Mechanical Cleaning Methodology:

1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
5. Clean coils and coil drain pans in accordance with NADCA ACR. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Provide drainage and cleanup for wash-down procedures.
7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents in accordance with manufacturer's written instructions after removal of surface deposits and debris.

3.10 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:
 - 1. Fabricate all ducts to achieve SMACNA pressure class, seal class, and leakage class as indicated below.
- B. Supply Ducts:
 - 1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
 - a. Pressure Class: Positive 2 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.
 - 2. Ducts Connected to Constant-Volume Air-Handling Units:
 - a. Pressure Class: Positive 2 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.
 - 3. Ducts Connected to Variable-Air-Volume Air-Handling Units:
 - a. Pressure Class: Positive 3 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.
 - 4. Ducts Connected to Equipment Not Listed Above:
 - a. Pressure Class: Positive 2 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.
- C. Return Ducts:
 - 1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
 - a. Pressure Class: Positive or negative 2 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.

2. Ducts Connected to Air-Handling Units:
 - a. Pressure Class: Positive or negative 3 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.

3. Ducts Connected to Equipment Not Listed above:
 - a. Pressure Class: Positive or negative 2 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.

D. Exhaust Ducts:

1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:
 - a. Pressure Class: Negative 2 inch wg.
 - b. Minimum SMACNA Seal Class: B if negative pressure, and A if positive pressure.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.
2. Ducts Connected to Air-Handling Units:
 - a. Pressure Class: Positive or negative 2 inch wg.
 - b. Minimum SMACNA Seal Class: B if negative pressure, and A if positive pressure.
 - c. In compliance with IECC.
 - d. SMACNA Leakage Class for Rectangular: 12.
 - e. SMACNA Leakage Class for Round and Flat Oval: 6.
3. Ducts Connected to Dishwashers, Dishwasher Hoods, and Other High-Humidity Locations:
 - a. Type 304, stainless-steel sheet.
 - b. Exposed to View: No. 4 or No. 3 finish.
 - c. Concealed: No. 2D finish.
 - d. Welded longitudinal seams; welded or flanged transverse joints with watertight EPDM gaskets.
 - e. Pressure Class: Positive or negative 2 or as specified inch wg.
 - f. Airtight/watertight.
4. Ducts Connected to Equipment Not Listed above:
 - a. Pressure Class: Positive or negative 2- inch wg.
 - b. Minimum SMACNA Seal Class: B if negative pressure; A if positive pressure.
 - c. SMACNA Leakage Class for Rectangular: 12.

- d. SMACNA Leakage Class for Round and Flat Oval: 6.
- E. Outdoor-Air (Not Filtered, Heated, or Cooled) Ducts:
- 1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
 - a. Pressure Class: Positive or negative 2 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - d. SMACNA Leakage Class for Round and Flat Oval: 6.
 - 2. Ducts Connected to Air-Handling Units:
 - a. Pressure Class: Positive or negative 2 inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - d. SMACNA Leakage Class for Round and Flat Oval: 6.
 - 3. Ducts Connected to Equipment Not Listed Above:
 - a. Pressure Class: Positive or negative 2 inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - d. SMACNA Leakage Class for Round and Flat Oval: 6.
- F. Intermediate Reinforcement:
- 1. Galvanized-Steel Ducts: Galvanized steel or carbon steel coated with zinc-chromate primer.
 - 2. PVC-Coated Ducts:
 - a. Exposed to Airstream: Match duct material.
 - b. Not Exposed to Airstream: Galvanized or Match duct material.
 - 3. Stainless-Steel Ducts:
 - a. Exposed to Airstream: Match duct material.
 - b. Not Exposed to Airstream: Match duct material.
 - 4. Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.
- G. Liner: (In compliance with ASHRAE 170)
- 1. Supply-Air Ducts: Fibrous glass, Type I, Flexible elastomeric or Natural fiber with R-6 value in compliance with IECC.
 - 2. Return-Air Ducts: Fibrous glass, Type I, Flexible elastomeric or Natural fiber with R-6 value in compliance with IECC.
 - 3. Exhaust-Air Ducts: Fibrous glass, Type I, Flexible elastomeric or Natural fiber with R-6 value in compliance with IECC.

4. Supply Fan Plenums: Fibrous glass, Type II, Flexible elastomeric or Natural fiber with R-6 value in compliance with IECC.
5. Return- and Exhaust-Fan Plenums: Fibrous glass, Type II, Flexible elastomeric or Natural fiber with R-6 value in compliance with IECC.
6. Transfer Ducts: Fibrous glass, Type I, Flexible elastomeric or Natural fiber with R-value in compliance with IECC.
7. Provide minimum 15 feet R-6 duct liner for supply and return ductwork connected to each AHU.

H. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
 - a. Velocity 1000 fpm or Lower:
 - 1) Radius Type RE 1 with minimum 0.5 radius-to-diameter ratio.
 - 2) Mitered Type RE 4 without vanes.
 - b. Velocity 1000 to 1500 fpm:
 - 1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
 - 2) Radius Type RE 3 with minimum 0.5 radius-to-diameter ratio and two vanes.
 - 3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
 - c. Velocity 1500 fpm or Higher:
 - 1) Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
 - 2) Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - 3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
2. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
 - a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
 - b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
3. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."

- a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
 - 1) Velocity 1000 fpm or Lower: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.
 - 2) Velocity 1000 to 1500 fpm: 1.0 radius-to-diameter ratio and four segments for 90-degree elbow.
 - 3) Velocity 1500 fpm or Higher: 1.5 radius-to-diameter ratio and five segments for 90-degree elbow.
 - 4) Radius-to Diameter Ratio: 1.5.
- b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
- c. Round Elbows, 14 Inches and Larger in Diameter: Standing seam or Welded.

I. Branch Configuration:

- 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
 - a. Rectangular Main to Rectangular Branch: 45-degree entry.
 - b. Rectangular Main to Round Branch: Conical and. 45-degree
- 2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.
 - a. All Velocities: Conical tap or 45-degree lateral or bell mouth.

END OF SECTION 233113

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Backdraft dampers.
 - 2. Manual volume dampers.
 - 3. Control dampers.
 - 4. Flange connectors.
 - 5. Duct-mounted access doors.
 - 6. Flexible connectors.
 - 7. Duct accessory hardware.
- B. Related Requirements:
 - 1. Section 233113 - Metal Ducts
 - 2. Section 230713 - Duct Insulation

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For duct silencers, include pressure drop and dynamic insertion loss data. Include breakout noise calculations for high transmission loss casings.
- B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.
 - 1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:
 - a. Special fittings.
 - b. Manual volume damper installations.
 - c. Control-damper installations.
 - d. Fire-damper, smoke-damper, combination fire- and smoke-damper, ceiling, and corridor damper installations, including sleeves; and duct-mounted access doors and remote damper operators.
 - e. Duct security bars.
 - f. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which ceiling-mounted access panels and access doors required for access to duct accessories are shown and coordinated with each other, using input from Installers of the items involved.
- B. Source quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air duct accessories to include in operation and maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Fusible Links: Furnish quantity equal to 10 percent of amount installed.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.2 MATERIALS

- A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G90 (Z275)
 - 2. Exposed-Surface Finish: Mill phosphatized.
- B. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 316.
- C. Aluminum Sheets: Comply with ASTM B 209 (ASTM B 209M), Alloy 3003, Temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.

- D. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- E. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 BACKDRAFT DAMPERS

- A. Description: Gravity balanced.
- B. Frame: Hat-shaped, galvanized sheet steel 0.094-inch thick, 0.05-inch- thick stainless steel, with welded corners or mechanically attached and mounting flange.
- C. Blades: Multiple single-piece blades, with sealed edges.
- D. Blade Action: Parallel.
- E. Blade Seals: Extruded vinyl, mechanically locked
- F. Blade Axles:
 - 1. Material: Galvanized steel and Stainless steel
- G. Return Spring: Adjustable tension.
- H. Bearings: Steel ball or synthetic pivot bushings.
- I. Accessories:
 - 1. Adjustment device to permit setting for varying differential static pressure.
 - 2. Counterweights and spring-assist kits for vertical airflow installations.
 - 3. Electric actuators.
 - 4. Chain pulls.
 - 5. Screen Mounting: Front mounted in sleeve.
 - 6. Screen Mounting: Rear mounted.
 - 7. Screen Material: Aluminum
 - 8. Screen Type: Bird
 - 9. 90-degree stops.

2.4 MANUAL VOLUME DAMPERS

- A. Standard, Steel, Manual Volume Dampers:
 - 1. Standard leakage rating, with linkage outside airstream.
 - 2. Suitable for horizontal or vertical applications.
 - 3. Frames:

- a. Frame: Hat-shaped, 0.094-inch- thick, galvanized sheet steel, 0.05-inch thick stainless steel.
 - b. Mitered and welded corners.
 - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
4. Blades:
- a. Multiple or single blade.
 - b. Parallel- or opposed-blade design.
 - c. Stiffen damper blades for stability.
 - d. Galvanized, Stainless-steel, 0.064 inch thick.
5. Blade Axles: Galvanized steel, Stainless steel
6. Bearings:
- a. Oil-impregnated bronze, Stainless-steel sleeve.
 - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
7. Tie Bars and Brackets: Galvanized steel.
8. Extended stand for duct insulation.
- B. Low-Leakage, Steel, Manual Volume Dampers:
- 1. Comply with AMCA 500-D testing for damper rating.
 - 2. Low-leakage rating, with linkage outside airstream,]and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.
 - 3. Suitable for horizontal or vertical applications.
 - 4. Frames:
 - a. Hat shaped.
 - b. 0.094-inch thick, galvanized sheet steel, thick stainless steel.
 - c. Mitered and welded corners.
 - d. Flanges for attaching to walls and flangeless frames for installing in ducts.
5. Blades:
- a. Multiple or single blade.
 - b. Parallel- or opposed-blade design.
 - c. Stiffen damper blades for stability.
 - d. Galvanized, Stainless, roll-formed steel, 0.064 inch thick.
6. Blade Axles: Galvanized steel, Stainless steel.
7. Bearings:
- a. Oil-impregnated bronze, Stainless-steel sleeve].
 - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
8. Blade Seals: Vinyl

9. Jamb Seals: Cambered stainless steel, aluminum.
10. Tie Bars and Brackets: Galvanized steel, Aluminum.
11. Accessories:
 - a. Include locking device to hold single-blade dampers in a fixed position without vibration.

2.5 CONTROL DAMPERS

- A. Low-leakage rating with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.
- B. Frames:
 1. Hat shaped.
 2. 0.094-inch thick, galvanized sheet steel
 3. Mitered and welded corners.
- C. Blades:
 1. Multiple blade with maximum blade width of 6 inches
 2. Parallel- and opposed blade design.
 3. Galvanized-steel
 4. 0.064 inch thick single skin or 0.0747-inch- thick dual skin.
 5. Blade Edging: Closed-cell neoprene
 6. Blade Edging: Inflatable seal blade edging, or replaceable rubber seals.
- D. Blade Axles: 1/2-inch- diameter; galvanized steel, blade-linkage hardware of zinc-plated steel and brass; ends sealed against blade bearings.
 1. Operating Temperature Range: From minus 40 to plus 200 deg F
- E. Bearings:
 1. Oil-impregnated bronze or Molded synthetic
 2. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
 3. Thrust bearings at each end of every blade.

2.6 FIRE DAMPERS

- A. Type: Dynamic, rated and labeled according to UL 555 by an NRTL.
- B. Closing rating in ducts up to 4-inch wg static pressure class and minimum 2000-fpm velocity.
- C. Fire Rating: 1-1/2 hours.

- D. Frame: Curtain type with blades outside airstream, fabricated with roll-formed, 0.034-inch- thick galvanized steel; with mitered and interlocking corners.
- E. Mounting Sleeve: Factory- or field-installed, galvanized sheet steel.
 - 1. Minimum Thickness: 0.39 inch thick, as indicated, and of length to suit application.
- F. Mounting Orientation: Vertical or horizontal as indicated.
- G. Blades: Roll-formed, interlocking, 0.034-inch thick, galvanized sheet steel. In place of interlocking blades, use full-length, 0.034-inch thick, galvanized-steel blade connectors.
- H. Horizontal Dampers: Include blade lock and stainless-steel closure spring.
- I. Heat-Responsive Device: Replaceable, 165 deg F rated, fusible links.
- J. Heat-Responsive Device: replaceable link and switch package, factory installed, 165 deg F rated.

2.7 FLANGE CONNECTORS

- A. Description: roll-formed, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.
- B. Material: Galvanized steel.
- C. Gage and Shape: Match connecting ductwork.

2.8 DUCT-MOUNTED ACCESS DOORS

- A. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 7-2 (7-2M), "Duct Access Doors and Panels," and 7-3, "Access Doors - Round Duct."
 - 1. Door:
 - a. Double wall, rectangular.
 - b. Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
 - c. Vision panel.
 - d. Hinges and Latches: 1-by-1-inch butt or piano hinge and cam latches.
 - e. Fabricate doors airtight and suitable for duct pressure class.
 - 2. Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.

2.9 DUCT ACCESS PANEL ASSEMBLIES

- A. Labeled according to UL 1978 by an NRTL.
- B. Panel and Frame: Minimum thickness 0.0428-inch galvanized steel.
- C. Fasteners: galvanized steel. Panel fasteners shall not penetrate duct wall.
- D. Gasket: Comply with NFPA 96; grease-tight, high-temperature ceramic fiber, rated for minimum 2000 deg F.
- E. Minimum Pressure Rating: 10-inch wg, positive or negative.

2.10 FLEXIBLE CONNECTORS

- A. Materials: Flame-retardant or noncombustible fabrics.
- B. Coatings and Adhesives: Comply with UL 181, Class 1.
- C. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to two strips of 2-3/4-inchwide, 0.028-inch thick, galvanized sheet steel. Provide metal compatible with connected ducts.
- D. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.
 - 1. Minimum Weight: 26 oz./sq. yd.
 - 2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch (in the filling).
 - 3. Service Temperature: Minus 40 to plus 200 deg F
- E. Outdoor System, Flexible Connector Fabric: Glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone.
 - 1. Minimum Weight: 24 oz./sq. yd.
 - 2. Tensile Strength: 530 lbf/inch in the warp and 440 lbf/inch in the filling.
 - 3. Service Temperature: Minus 50 to plus 250 deg F
- F. High-Corrosive-Environment System, Flexible Connectors: Glass fabric with chemical-resistant coating.
 - 1. Minimum Weight: 14 oz./sq. yd
 - 2. Tensile Strength: 450 lbf/inch in the warp and 340 lbf/inch in the filling.
 - 3. Service Temperature: Minus 67 to plus 500 deg F
- G. Thrust Limits: Combination coil spring and elastomeric insert with spring and insert in compression, and with a load stop. Include rod and angle-iron brackets for attaching to fan discharge and duct.
 - 1. Frame: Steel, fabricated for connection to threaded rods and to allow for a maximum of 30 degrees of angular rod misalignment without binding or reducing isolation efficiency.

2. Outdoor Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Elastomeric Element: Molded, oil-resistant rubber or neoprene.
7. Coil Spring: Factory set and field adjustable for a maximum of 1/4-inch movement at start and stop.

2.11 DUCT ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.
- C. Compliance with ASHRAE/IESNA 90.1-2004 includes Section 6.4.3.3.3 - "Shutoff Damper Controls," restricts the use of backdraft dampers, and requires control dampers for certain applications. Install backdraft or control dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.
- D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.
 1. Install steel volume dampers in steel ducts.
 2. Install aluminum volume dampers in aluminum ducts.
 3. Install stainless steel volume dampers in stainless steel ducts.
- E. Set dampers to fully open position before testing, adjusting, and balancing.

- F. Install test holes at fan inlets and outlets and elsewhere as indicated.
- G. Install fire and smoke dampers according to UL listing.
- H. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
 - 1. On both sides of duct coils.
 - 2. Upstream and downstream from duct filters.
 - 3. At outdoor-air intakes and mixed-air plenums.
 - 4. At drain pans and seals.
 - 5. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.
 - 6. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
 - 7. At each change in direction and at maximum 50-foot spacing.
 - 8. Upstream and downstream from turning vanes.
 - 9. Upstream or downstream from duct silencers.
 - 10. Control devices requiring inspection.
 - 11. Elsewhere as indicated.
- I. Install access doors with swing against duct static pressure.
- J. Access Door Sizes:
 - 1. One-Hand or Inspection Access: 8 by 5 inches
 - 2. Two-Hand Access: 12 by 6 inches
 - 3. Head and Hand Access: 18 by 10 inches
 - 4. Head and Shoulders Access: 21 by 14 inches
 - 5. Body Access: 25 by 14 inches
 - 6. Body plus Ladder Access: 25 by 17 inches
- K. Label access doors according to Section 230553 "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.
- L. Install flexible connectors to connect ducts to equipment.
- M. For fans developing static pressures of 5-inch wg and more, cover flexible connectors with loaded vinyl sheet held in place with metal straps.
- N. Connect terminal units to supply ducts directly.
- O. Connect diffusers to ducts directly.
- P. Install duct test holes where required for testing and balancing purposes.

- Q. Install thrust limits at centerline of thrust, symmetrical on both sides of equipment. Attach thrust limits at centerline of thrust and adjust to a maximum of 1/4-inch movement during start and stop of fans.

3.2 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operate dampers to verify full range of movement.
2. Inspect locations of access doors and verify that purpose of access door can be performed.
3. Operate fire, smoke, and combination fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
4. Inspect turning vanes for proper and secure installation.
5. Operate remote damper operators to verify full range of movement of operator and damper.

END OF SECTION 233300

SECTION 233416 - CENTRIFUGAL HVAC FANS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Backward-inclined centrifugal fans, including airfoil and curved blade fans.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Construction details, material descriptions, dimensions of individual components and profiles, and finishes for fans.
 - 2. Rated capacities, operating characteristics, and furnished specialties and accessories.
 - 3. Certified fan performance curves with system operating conditions indicated.
 - 4. Certified fan sound-power ratings.
 - 5. Motor ratings and electrical characteristics, plus motor and electrical accessories.
 - 6. Material thickness and finishes, including color charts.
 - 7. Dampers, including housings, linkages, and operators.
 - 8. Fan speed controllers.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.
 - 4. Design Calculations: Calculate requirements for selecting vibration isolators and for designing vibration isolation bases.
 - 5. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Fan room layout and relationships between components and adjacent structural and mechanical elements, drawn to scale, and coordinated with each other, using input from installers of the items involved.
- B. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For centrifugal fans to include in normal operation, emergency operation, and maintenance manuals with replacement parts listing.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Belts: One set(s) for each belt-driven unit.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of unit components.
- C. ASHRAE 62.1 Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Startup."
- D. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."
- E. Capacities and Characteristics:
 - 1. Fan Type: Centrifugal.
 - 2. Blade Type: Backward inclined airfoil.
 - 3. Class: AMCA 99, Section 14, Class II.
 - 4. Drive Arrangement: 4.
 - 5. Drive Type: Direct.
 - 6. Discharge Arrangement: UB.
 - 7. Housing Material: Reinforced steel.
 - 8. Housing Coating: Powder-baked enamel.
 - 9. Wheel Material: Steel.

10. Wheel Coating: Powder-baked enamel.
11. Motor:
 - a. Motor Enclosure Type: Open, dripproof.
 - b. Efficiency: 1.35 FEI.
 - c. Service Factor: 100 percent.
 - d. Suitable for Use with Variable-Frequency Drive: Yes.
12. Vibration Isolators:
 - a. Type: Spring.
 - b. Static Deflection: 1 inch inches.
13. Spark-Resistance Class: Classified according to AMCA 99, Section 8 Type A Type B Type C.

2.2 BACKWARD-INCLINED CENTRIFUGAL FANS

A. Description:

1. Factory-fabricated, -assembled, -tested, and -finished, direct-driven centrifugal fans, consisting of housing, wheel, fan shaft, bearings, motor, drive assembly, and support structure. Deliver fans as factory-assembled units, to the extent allowable by shipping limitations.
2. Factory-installed and -wired disconnect switch.

B. Housings:

1. Housing Assembly: Sideplates continuously welded or spot welded or attached by continuous Pittsburgh lock seal or similar seal.
2. Formed panels to make curved-scroll housings with shaped cutoff.
3. Panel Bracing: Steel angle- or channel-iron member supports for mounting and supporting fan scroll, wheel, motor, and accessories.
4. Spun inlet cone with flange.
5. Outlet flange.
6. Discharge Arrangement: Fan scroll housing is field rotatable to any of seven or eight discharge positions. Provide fan with discharge positioned in proper direction to minimize connected duct turns.

C. Wheels:

1. Wheel Configuration: SWSI construction with a precision-spun curved inlet flange and a backplate fastened to shaft with setscrews. Wheels shall be statically and dynamically balanced, and nonoverloading.
2. Cast-iron or cast-steel hub riveted to backplate and fastened to shaft with set screws.
3. Backward-Inclined Airfoil Blades:
 - a. Aerodynamic design.
 - b. Heavy backplate.

- c. Hollow die-formed, airfoil-shaped blades continuously welded at tip flange and backplate.

D. Bearings:

1. Prelubricated and Sealed Shaft Bearings:

- a. Self-aligning, pillow-block-type ball bearings.
- b. Ball-Bearing Rating Life: ABMA 9, L(10) at 120,000 hours.
- c. Roller-Bearing Rating Life: ABMA 11, L(10) at 120,000 hours.

2. Grease-Lubricated Shaft Bearings, Tapered Roller:

- a. Self-aligning, pillow-block-type, tapered roller bearings with double-locking collars and two-piece, cast-iron housing.
- b. Roller-Bearing Rating Life: ABMA 11, L(10) at 120,000 hours.
- c. Extended Lubrication Lines: Extend lines to accessible location.

3. Grease-Lubricated Shaft Bearings, Ball or Roller:

- a. Self-aligning, pillow-block-type, ball or roller bearings with adapter mount and two-piece, cast-iron housing.
- b. Ball-Bearing Rating Life: ABMA 9, L(10) at 120,000 hours.
- c. Roller-Bearing Rating Life: ABMA 11, L(10) at 120,000 hours.
- d. Extended Lubrication Lines: Extend lines to accessible location.

E. Accessories:

- 1. Companion Flanges: Rolled flanges for duct connections of same material as housing.

2.3 MOTORS

- A. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
- B. Where variable-frequency drives are indicated or scheduled, provide fan motor compatible with variable-frequency drive.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Install centrifugal fans level and plumb.
- B. Disassemble and reassemble units, as required for moving to the final location, according to manufacturer's written instructions.
- C. Lift and support units with manufacturer's designated lifting or supporting points.

D. Equipment Mounting:

1. Install floor- or roof-mounted centrifugal fans on cast-in-place concrete equipment base(s).
2. Comply with requirements for vibration isolation devices specified in Section 230548.13 "Vibration Controls for HVAC."

E. Install units with clearances for service and maintenance.

F. Label fans according to requirements specified in Section 230553 "Identification for HVAC Piping and Equipment."

3.2 DUCTWORK CONNECTIONS

A. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors.

B. Install ducts adjacent to fans to allow service and maintenance.

3.3 ELECTRICAL CONNECTIONS

A. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

C. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.

D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.

1. Nameplate shall be laminated acrylic or melamine plastic signs, as specified in Section 260553 "Identification for Electrical Systems."

3.4 CONTROL CONNECTIONS

A. Install control and electrical power wiring to field-mounted control devices.

B. Connect control wiring according to Section 260523 "Control-Voltage Electrical Power Cables."

3.5 STARTUP SERVICE:

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks in accordance with manufacturer's written instructions.
2. Verify that shipping, blocking, and bracing are removed.
3. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
4. Verify that cleaning and adjusting are complete.
5. For direct-drive fans, verify proper motor rotation direction and verify fan wheel free rotation and smooth bearing operation.
6. For belt-drive fans, disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
7. Adjust belt tension.
8. Adjust damper linkages for proper damper operation.
9. Verify lubrication for bearings and other moving parts.
10. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
11. Disable automatic temperature-control operators, energize motor and confirm proper motor rotation and unit operation, adjust fan to indicated rpm, and measure and record motor voltage and amperage.
12. Shut unit down and reconnect automatic temperature-control operators.
13. Remove and replace malfunctioning units and retest as specified above.

3.6 ADJUSTING

- A. Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

3.7 CLEANING

- A. After completing system installation and testing, adjusting, and balancing and after completing startup service, clean fans internally to remove foreign material and construction dirt and dust.

3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- C. Perform tests and inspections with the assistance of a factory-authorized service representative.
 1. Fan Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 3. Fans and components will be considered defective if they do not pass tests and inspections.

- D. Prepare test and inspection reports.

3.9 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain centrifugal fans.

END OF SECTION 233416

SECTION 236213 – AIR COOLED CONDENSING UNITS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Condensing unit package.
- B. Charge of refrigerant and oil.
- C. Controls and control connections.
- D. Refrigerant piping connections.
- E. Motor starters.
- F. Electrical power connections.

1.02 RELATED SECTIONS

- A. Section 23 05 48 - Vibration and Seismic Controls for HVAC
- B. Section 23 07 19 - HVAC Piping Insulation
- C. 23 23 00 - Refrigerant Piping
- D. Section 23 09 93 -Instrumentation and Controls for HVAC Systems
- E. Section 26 00 00 – Specifications on contract drawings

1.03 REFERENCES

- A. ANSI/ASHRAE 15 - Safety Code for Mechanical Refrigeration.
- B. ANSI/ASHRAE 90A - Energy Conservation in new Building Design.
- C. AHRI 370 - Sound Rating of Large Refrigeration and Air-conditioning Equipment.
- D. AHRI 365 - Unitary Air-Conditioning Equipment.

1.04 SUBMITTALS

- A. Submit shop drawings indicating components, dimensions, weights and loadings, required clearances, and location and size of field connections. Include schematic layouts showing condensing units, cooling coils, refrigerant piping, and accessories required for complete system.
- B. Submit product data indicating rated capacities, weights, specialties and accessories, electrical nameplate data, and wiring diagrams.
- C. Submit design data indicating refrigeration and chilled water pipe sizing.
- D. Submit manufacturer's installation instructions.

1.05 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data.
- B. Include manufacturer's descriptive literature, start-up instructions, installation instructions, and maintenance procedures.

1.06 HANDLING

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
- B. Protect units on site from physical damage.

1.07 WARRANTY

- A. Provide a full parts warranty for one year from start-up or 18 months from shipment, whichever occurs first.
- B. Provide 5th year extended parts warranty for compressors.

1.08 MAINTENANCE

- A. All work on units shall be accomplished by OEM factory trained and authorized service technicians.
- B. In conjunction with and supporting Factory warranty OEM shall furnish complete factory authorized service and maintenance of condensing units for the first year from Date of Substantial Completion.

1.09 ACOUSTICS

- A. Manufacturer of condensing unit shall provide outdoor sound power level at gross cooling capacity, and at significant part-load stages (for units equipped to be operated in stages). Outdoor sound shall consist of radiated sound power for each octave band from 63Hz to 8kHz. Data shall be obtained in accordance with ANSI/AHRI Standard 370.

1.10 REGULATORY REQUIREMENTS

- A. Unit shall conform to UL 1995 for construction of condensing units and shall have UL label affixed to unit.
 - 1. In the event the unit is not UL approved, the manufacturer shall, at his expense, provide for a field inspection by a UL representative to verify conformance to UL standards. If necessary, contractor shall perform required modifications to the unit to comply with UL, as directed by the UL representative, at no additional expense to the Owner.

1.11 SUMMARY

- A. The contractor shall furnish and install air-cooled condensing unit(s) as shown as scheduled on the contract documents. The unit(s) shall be installed in accordance with this specification and perform at the specified conditions as scheduled.

PART 2 - PRODUCTS

2.01 GENERAL UNIT DESCRIPTION

- A. Provide self-contained, packaged, factory-assembled and pre-wired units suitable for outdoor/indoor use consisting of cabinet, compressors, condensing coil and fans, subcooling circuits, and controls.

2.02 CASING

- A. Units shall be constructed of 14-gauge welded galvanized steel frame with 14 and 16-gauge galvanized steel panels and access doors. Units shall have factory mounted, louvered, full-length steel grilles to protect the condenser coils and piping. Unit surface shall be phosphatized and finished with an air-dry paint. This air-dry paint finish shall be durable enough to withstand a minimum of 672-consecutive-hour salt spray application in accordance with standard ASTM B117.

2.03 CONDENSER SECTION

- A. Condenser coils shall have all Aluminum Microchannel coils. All coils shall be leak tested at the factory to ensure pressure integrity. The condenser coil shall be pressure tested to 650 psig.
- B. Provide factory mounted, louvered, full-length steel grilles to protect the condenser coils and piping.

2.04 REFRIGERANT CIRCUIT(S)

- A. Provide single circuit on 20 through 30 tons units and two circuits on 40 through 120ton units.
- B. Installer shall provide and install Bleed Thermal Expansion valves. 30% or 15% Bleed thermal Expansion valves shall be used. Quantity and size shall be based on the application and determined by the installer. Note: Liquid line solenoids are required for all applications. Trim solenoids cannot be used.
- C. Provide Suction Service Valve. Unit shall include a refrigerant shut off valve to isolate the compressor for servicing.

2.05 FANS AND MOTORS

- A. Condenser Fans shall have Vertical discharge, direct drive fans with aluminum blades and zinc plated steel hubs guard on discharge. Fans shall be statically and dynamically balanced.

- B. Condenser fan motors shall be three-phase motors with permanently lubricated ball bearings, built in current and thermal overload protection and weather-tight slingers over motor bearings.

2.06 COMPRESSORS

- A. Scroll compressors shall provide low vibration. Compressors shall have a completely enclosed compression chamber with no leakage paths. The compressor(s) shall be suction gas cooled, direct drive, with 3600 RPM hermetic motors. The scroll compressor shall include a centrifugal oil pump, oil level sight glass, and an oil charging valve.
- B. Motor shall be designed for across-the-line starting and suitable for a voltage utilization range of +/- 10 percent from nameplate voltage.

2.07 SYSTEM CONTROLS

- A. System Control: by ATC contractor.

2.08 MISCELLANEOUS FEATURES

- A. Provide a non-fused disconnect switch. Disconnect shall be mounted in the control box and provides for interruption of power for servicing the unit. Lugs shall be suitable for copper wires only. No overcurrent or short circuit protection is provided for unit by this switch.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide for connection to electrical service.
- C. Install units on vibration isolation.
- D. Install units on concrete base as indicated.
- E. Provide connection to refrigeration piping system and evaporators.

3.02 MANUFACTURER'S FIELD SERVICES

- A. Supply initial charge of refrigerant and oil for each refrigerant circuit.
- B. Provide startup and written report.

END OF SECTION 236213

SECTION 237313 – INDOOR AIR-HANDLING UNITS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Applied Air Handling Units.

1.02 RELATED SECTIONS

- A. Section 233113 - Metal Ducts
- B. Section 230713 - Duct Work Insulation
- C. Section 230993 - Instrumentation and Controls for HVAC Systems
- D. Section 260000 – Specifications on contract drawings

1.03 REFERENCES

- A. AMCA Standard 500-D - Laboratory Methods of Testing Dampers for Rating.
- B. ANSI/AHRI Standard 410 - Forced Circulation Air-Cooling and Air-Heating Coils.
- C. ANSI/AHRI Standard 430 - Central Station Air Handling Units.
- D. ANSI/ASHARE Standard 62.1 - Ventilation for Acceptable Indoor Air Quality.
- E. ANSI/ASHARE Standard 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- F. ANSI/UL 900 - Standard for Safety Air Filter Units.
- G. NFPA 70 - National Electrical Code
- H. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilation Systems.
- I. UL 1995 - Standard for Safety Heating and Cooling Equipment

1.04 QUALITY ASSURANCE

- A. Air Coils: Certify capacities, pressure drops and selection procedures in accordance with current AHRI Standard 410.
- B. Air handling units shall be rated and/or tested and certified in accordance with AHRI Standard.

1.05 SUBMITTALS

- A. No equipment shall be fabricated or delivered until the receipt of approved shop drawings from the Owner or Owner's approved representative.
- B. AHU manufacturer shall provide the following information with each shop drawing/product data submission:
 - 1. Dimensioned arrangement drawings for each AHU including a plan and elevation view of the assembled unit with overall dimensions, lift points, unit shipping split locations and dimensions, installation and operating weights, and installation, operation and service clearances.
 - 2. All electrical, piping, and ductwork requirements, including sizes, connection locations, and connection method recommendations.
 - 3. Each component of the unit shall be identified and mechanical specifications shall be provided for unit and accessories describing construction, components, and options.
 - 4. All performance data, including capacities and airside and waterside pressure drops, for components.
 - 5. Fan curves shall be provided for fans with the design operating points indicated. Data shall be corrected to actual operating conditions, temperatures, and altitudes.
- C. The AHU manufacturer shall provide appropriate sets of submittals as referenced in the General Conditions and shall submit to the Owner electronic copies of the IOM.
- D. The AHU manufacturer shall list any exceptions to the specification.

1.06 REGULATORY REQUIREMENTS

- A. Agency Listings/Certifications
 - 1. Unit shall be manufactured to conform to UL 1995 and shall be listed by either UL/CUL or ETL. Units shall be provided with listing agency label affixed to the unit. In the event the unit is not UL or ETL approved, the contractor shall, at his/her expense, provide for a field inspection by a UL or ETL representative to verify conformance. If necessary, contractor shall perform modifications to the unit to comply with UL/CUL or ETL as directed by the representative, at no additional expense to the owner.
 - 2. Air handling units shall be certified in accordance with AHRI Standard 430. Units meeting AHRI Standard 430 certification shall have a label affixed to the unit. If the unit is not AHRI 430 certified, or tested in accordance with AHRI 430 then the contractor shall be responsible for expenses associated with testing of units after installation to verify performance of fan(s). Any costs incurred to adjust fans to meet scheduled capacities shall be the sole responsibility of the contractor.

3. Certify air handling coils in accordance with AHRI Standard 410. Units shall be provided with certification label affixed to the unit. If air handling coils are not certified in accordance with AHRI Standard 410, contractor shall be responsible for expenses associated with testing of coils after installation to verify performance of coil(s). Any costs incurred to adjust coils to meet scheduled capacities shall be the sole responsibility of the contractor.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
- B. Units shall ship fully assembled up to practical shipping and rigging limitations. Shipping splits shall be clearly defined on submittal drawings. Cost associated with non-conformance to shop drawings shall be the responsibility of the manufacturer. AHU's less than 100-inches wide shall allow for forklift transport and maneuverability on the jobsite.
- C. Deliver units to jobsite with fan motor(s), sheave(s), and belt(s) completely assembled and mounted in units.
- D. Indoor units shall be shipped in a clear shrink-wrap or stretch-wrap to protect unit from in-transit rain and debris per ASHRAE 62.1 recommendations.
- E. Installing contractor shall be responsible for storing AHU in a clean, dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

1.08 START-UP AND OPERATING REQUIREMENTS

- A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters in place, bearings lubricated (if applicable), condensate properly trapped, piping connections verified and leak-tested, belts aligned and tensioned, all shipping braces removed, bearing set screws torqued, and fan has been test run under observation.

1.09 WARRANTY

- A. AHU manufacturer shall provide, at no additional cost, a standard parts warranty that covers a period of one year from unit start-up or 18 months from shipment, whichever occurs first. This warrants that all products are free from defects in material and workmanship and shall meet the capacities and ratings set forth in the equipment manufacturer's catalog and bulletins.
- B. Beginning at the expiration of the standard warranty, the original equipment owner shall be provided optional extended warranties.

1. These warranties shall included:
 - a. Labor for Year 1.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Unit layout and configuration shall be as defined in project plans and schedule.

2.02 UNIT CASING

- A. The entire air handler shall be constructed of galvanized steel. Casing finished to meet ASTM B117 125-hour salt-spray test. The removal of access panels or access doors shall not affect the structural integrity of the unit. All removable panels shall be gasketed. All doors shall have gasketing around full perimeter to prevent air leakage. Contractor shall be responsible to provide connection flanges and all other framework that is needed to properly support the unit.
- B. All panels shall be 2-inch double wall construction to facilitate cleaning of unit interior. Casing deflection shall not exceed .005-inch deflection per linear inch under negative or positive pressure, up to unit 6" of pressure.
- C. Unit floor shall be of sufficient strength to support 300-lb load during maintenance activities, and shall deflect no more than .005-inches when sitting on a support structure.
- D. Panel insulation shall provide a minimum thermal resistance (R) value of 13 ft²*h*F/Btu throughout the entire unit. Insulation shall completely fill the panel cavities in all directions so that no voids exist and settling of insulation is prevented. Panel assembly shall comply with NFPA 90A.
- E. Access panels and/or access doors shall be provided in all sections to allow easy access to drain pan, coil(s), motor, drive components and bearings for cleaning, inspection, and maintenance.
- F. Access panels and doors shall be fully removable without the use of specialized tools to allow complete access of interior surfaces.

2.03 ACCESS DOORS

- A. Access doors shall be 2-inch double-wall construction. Interior and exterior shall be of the same construction as the interior and exterior wall panels.
- B. Gasketing shall be provided around the full perimeter of the doors to prevent air leakage.
- C. Door hardware shall be surface-mounted to prevent through-cabinet penetrations that could likely weaken the casing leakage and thermal performance.

- D. Handle hardware shall be designed to prevent unintended closure.
- E. Access doors shall be hinged and removable without the use of specialized tools to allow.
- F. All doors shall be a 60-inch high when sufficient unit height is available, or the maximum height allowed by the unit height.

2.04 PRIMARY DRAIN PANS

- A. The drain pan shall be designed in accordance with ASHRAE 62.1 being of sufficient size to collect all condensation produced from the coil and sloped in two planes, pitched toward drain connections, promoting positive drainage to eliminate stagnant water conditions when unit is installed level and trapped per manufacturer's requirements. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition. Drainpan shall be stainless steel.
- B. All drain pan threaded connections shall be visible external to the unit. Threaded connections under the unit floor shall not be accepted.
- C. Drain connections shall be of the same material as the primary drain pan and shall extend a minimum 2-1/2-inch beyond the base to ensure adequate room for field piping of condensate traps.
- D. The installing contractor is responsible to ensure the unit is installed level, trapped in accordance with the manufacturer's requirements, and visually inspected to ensure proper drainage of condensate.

2.05 SUPPLY FAN

- A. Fan sections shall have a minimum of one hinged and latched access door located on the drive side of the unit to allow inspection and maintenance of the fan, motor, and drive components.
- B. Provide fans of type specified on the schedule. Belt drive fan shafts shall be solid steel, coated with a rust-inhibiting coating, and properly designed so that fan shaft does not pass through first critical speed as unit comes up to rated RPM.
- C. Belt drive fans with integral frame motors shall be internally isolated to inhibit noise and vibration through the ductwork and building structure. A flexible connection shall be installed between the fan and unit casing to ensure complete isolation. Fan and motor shall be internally isolated with spring isolators. If fans and motors are not internally isolated, then the entire unit shall be externally isolated from the building, including supply and return duct work, piping, and electrical connections. External isolation shall be furnished by the installing contractor in order to avoid transmission of noise and vibration through the ductwork and building structure.

- D. Belt-driven fans shall be provided with self-aligning, anti-friction bearings selected for L-50 200,000-hour average life per ANSI/AFBMA Standard 9

2.06 MOTORS AND DRIVES

- A. All motors, and drives for belt drive fans, shall be factory-installed and run tested. Motors for belt driven fans shall be installed on a slide base to permit adjustment of belt tension. Slide base shall be designed to accept all motor sizes offered by the air-handler manufacturer for that fan size to allow a motor change in the future, should airflow requirements change. Fan sections without factory-installed motors shall have motors field installed by the contractor. The contractor shall be responsible for all costs associated with installation of motor and drive, alignment of sheaves and belts, run testing of the motor, and balancing of the assembly.
- B. Integral horsepower motors shall meet or exceed all NEMA Standards Publication MG 1 - 2006 requirements and comply with NEMA Premium efficiency levels when applicable. Motors shall comply with applicable requirements of NEC and shall be UL Listed.
- C. Integral horsepower fan motors shall be heavy duty, open drip-proof operable at 460/60/3 volts, 60Hz, 3-phase. If applicable, motor efficiency shall meet or exceed NEMA Premium efficiencies.
- D. All fan types utilizing integral horsepower motors, shall use 4-pole, 1800 rpm, motors, NEMA B design, with Class B insulation, capable to operate continuously at 104 deg F (40 deg C) without tripping overloads.
- E. Motors shall have a +/- 10 percent voltage utilization range to protect against voltage variation.
- F. V-Belt drives for housed fans shall be 800 rpm (750 - 850 variable) pitch rated at 1.5 times the motor nameplate. Drives 20 hp and larger or any drives on units equipped with VFDs and housed fans shall be fixed pitch.
- G. All housed fans with motors 15 hp and larger shall be equipped with multiple belt drives.
- H. Manufacturer shall provide for each unit with a housed fan a nameplate.

2.07 COILS

- A. Coils section header end panel shall be removable to allow for removal and replacement of coils without impacting the structural integrity of the unit.
- B. Install coils such that headers and return bends are enclosed by unit casing to ensure that if condensate forms on the header or return bends, it is captured by the drain pan under the coil.

- C. AHU-10; DX and Hot Gas Reheat Coils: Coils shall be manufactured with plate fins to minimize water carryover and maximize airside thermal efficiency. Fin tube holes shall have drawn and belled collars to maintain consistent fin spacing to ensure performance and air pressure drop across the coil as scheduled. Tubes shall be mechanically expanded and bonded to fin collars for maximum thermal conductivity. Use of soldering or tinning during the fin-to-tube bonding process is not acceptable due to the inherent thermal stress and possible loss of bonding at that joint.
- D. Construct coil casings of galvanized steel. End supports and tube sheets shall have belled tube holes to minimize wear of the tube wall during thermal expansion and contraction of the tube.
- E. All coils shall be completely cleaned prior to installation into the air handling unit. Complete fin bundle in direction of airflow shall be degreased and steam cleaned to remove any lubricants used in the manufacturing of the fins, or dirt that may have accumulated, in order to minimize the chance for water carryover.
- F. Steam Heating Coils
 - 1. Steam supply, condensate return, and vacuum breaker penetrations through unit casing shall be factory provided.
 - 2. Coils shall be non-freeze, steam distributing type. Coils shall be pitched in units for proper drainage of steam condensate from coils.
 - 3. Coils shall be proof tested to 300 psig and leak tested to 200 psig air pressure under water.
 - 4. Headers shall be constructed of cast iron.
 - 5. Tubes shall consist of 1 1/16 inch O.D., minimum 0.031 inch thick, copper inner tubes and 1 inch O.D., minimum .031 copper outer tubes. Fins shall be of aluminum material.
 - 6. Inner tubes shall have orifices that ensure even steam distribution throughout the length of the outer tube. Orifices shall direct steam toward return connections to ensure steam condensate is properly drained from coils to prevent flashing of condensate.

2.08 FILTERS

- A. Provide factory-fabricated filter section of the same construction and finish as unit casings. Filter section shall have side access filter guides and access door(s) extending the full height of the casing to facilitate filter removal. Construct doors in accordance with Section 2.04. Provide fixed filter blockoffs as required to prevent air bypass around filters. Blockoffs shall not need to be removed during filter replacement. Filters to be of size, and quantity needed to maximize filter face area of each particular unit size.
- B. Filter type, MERV rating, and arrangement shall be provided as defined in project plans and schedule

2.09 DAMPERS

- A. All dampers shall be internally mounted. Dampers shall be premium ultra low leak and located as indicated on the schedule and plans. Parallel blade arrangement shall be provided as indicated on the schedule and drawings. Dampers shall be Ruskin CD60 double-skin airfoil design or equivalent for minimal air leakage and pressure drop. Leakage rate shall not exceed 3 CFM/square foot at one inch water gauge complying with ASHRAE 90.1 maximum damper leakage and shall be AMCA licensed for Class 1A. All leakage testing and pressure ratings shall be based on AMCA Standard 500-D. Manufacturer shall submit brand and model of damper(s) being furnished, if not Ruskin CD60.

2.10 VARIABLE FREQUENCY DRIVE

- A. Service Conditions
 - 1. VFDs shall provide full output in an ambient temperature from -10 to 50°C (14 to 104°F).
 - 2. VFDs shall provide full output in a relative humidity from 0 to 95%, non-condensing.
 - 3. VFDs shall provide full output up to 3,300 feet elevation without derating.
 - 4. VFDs shall provide full output with an AC line voltage variation from -10 to +10% of nominal voltage.
 - 5. No side clearance shall be required for cooling of any units. All power and control wiring shall be done from the bottom.
- B. Warranty
 - 1. The VFD shall be warranted by the manufacturer for a period of 42 months from date of shipment, or 36 months from start-up, which ever occurs first. The warranty shall include parts, labor, travel costs and living expenses incurred by the manufacturer to provide factory-authorized on-site service.

2.11 FACTORY-INSTALLED MOTOR WIRE TERMINATION, VFD, AND STARTER ENCLOSURES

- A. VFDs or starter shall be factory mounted on the drive side of the fan section.
- B. Any welds shall be properly finished with no rough edges. Enclosures shall house, Drive-OFF switches, manual speed controls, and control transformers.

2.12 FACTORY WIRING OF VFD'S AND STARTERS

- A. VFDs shall be wired per NEC, UL, and NFPA 90A requirements. Units with factory-mounted controls shall also include power wiring from the VFD or starter control transformer to the control system transformers. After mounting and wiring of VFDs, on the AHUs, trained factory personnel shall ensure proper operation of each VFD, through a thorough factory test. Testing shall include a Hypot test of

unit wiring to ensure that no weaknesses exist in wiring or motor. Each VFD shall be energized and the fan run to ensure the VFD will operate throughout the usable range of the drive and that the fan rotation is correct.

- B. On units provided with factory mounted and wired supply fan starter or VFD and DDC controls, the manufacturer shall provide a single point of power. Line-to-24v transformers shall be provided with sufficient vA to power the factory installed control points.

PART 3 - EXECUTION

3.01 SHIPPING

- A. Paper copies of the IOM shall also be shipped with each AHU.
- B. The AHU manufacturer shall identify all shipments with the order number. Enough information shall be provided with each shipment to enable the Mechanical Contractor to confirm the receipt of units when they are received. For parts too small to mark individually, the AHU manufacturer shall place them in containers.
- C. To protect equipment during shipment and delivery, all indoor units shall be stretch or shrink wrapped. Wrap shall be a minimum of 7 mil plastic. Pipe ends and pipe connection holes in the casing shall be capped or plugged prior to shipment
- D. After loading the equipment for shipment, the AHU manufacturer shall contact the shipping contact on the order and provide the name of the carrier, description of equipment, order number, shipping point, and date of shipment.

3.02 ON-SITE STORAGE

- A. If equipment is to be stored for a period of time prior to installation, the Mechanical Contractor shall remove all stretch or shrink wrap from units upon receipt to prevent unit corrosion and shall either place the units in a controlled indoor environment or shall cover the units with canvas tarps and place them in a well-drained area. Covering units with plastic tarps shall not be acceptable.

3.03 FIELD EXAMINATION

- A. The Mechanical Contractor shall verify that the mechanical room is ready to receive work and the opening dimensions are as indicated on the shop drawings and contract documents.
- B. The Mechanical Contractor shall verify that the proper power supply is available prior to starting of the fans.

3.04 INSTALLATION

- A. The Mechanical Contractor shall be responsible to coordinate all of his installation requirements with the Owner and the Owner's selected Mechanical Contractor to ensure that a complete installation for each unit is being provided. Coordination efforts shall include such items as unloading and hoisting requirements, field wiring requirements, field piping requirements, field ductwork requirements, requirements for assembly of field-bolted or welded joints, and all other installation and assembly requirements.
- B. The AHU manufacturer shall provide all screws and gaskets for joining of sections in the field.
- C. The Mechanical Contractor shall verify that the following items have been completed prior to scheduling the AHU manufacturer's final inspection and start up:
 - 1. All isolated components have had their shipping restraints removed and the components have been leveled.
 - 2. On all field-joined units, that all interconnections have been completed, i.e., electrical and control wiring, piping, casing joints, bolting, welding, etc.
 - 3. All water and steam piping connections have been completed and hydrostatically tested and all water flow rates have been set in accordance with the capacities
 - 4. All ductwork connections have been completed and all ductwork has been pressure tested for its intended service.
 - 5. All power wiring, including motor starters and disconnects, serving the unit has been completed.
 - 6. All automatic temperature and safety controls have been completed.
 - 7. All dampers are fully operational.
 - 8. All shipping materials have been removed.
 - 9. Clean filter media has been installed in the units.

3.05 LEVELING

- A. The Mechanical Contractor shall level all unit sections in accordance with the unit manufacturer's instructions. The Mechanical Contractor shall provide and install all necessary permanent shim material to ensure individual sections and entire assembled units are level.

3.06 FINAL INSPECTION AND START UP SERVICE

- A. After the Mechanical Contractor has provided all water and steam piping connections, ductwork connections, and field control wiring, and Electrical Contractor has provided all the field power wiring, the Mechanical Contractor shall inspect the installation. The Mechanical Contractor shall then perform startup of the equipment.

- B. The Automatic Temperature Control (Building Direct Digital Control) Contractor shall be scheduled to be at the job site at the time of the equipment start up.
- C. The Mechanical Contractor and unit manufacturer's representative, shall perform the following tests and services and submit written report to Owner/Engineer outlining the results:
1. Record date, time, and person(s) performing service.
 2. Check all motor and starter power lugs and tighten as required.
 3. Verify all electrical power connections.
 4. Conduct a start up inspection per the AHU manufacturer's recommendations.
 5. Record fan motor voltage and amperage readings.
 6. Check fan rotation and spin wheel to verify that rotation is free and does not rub or bind.
 7. Check fan for excessive vibration.
 8. If so equipped, check V belt drive for proper tension and alignment. Tighten the belts in accordance with the AHU manufacturer's directions. Check belt tension during the second and seventh day's operation and re-adjust belts, as may be required, to maintain proper tension as directed by the AHU manufacturer.
 9. Remove all foreign loose material in ductwork leading to and from the fan and in the fan itself.
 10. Disengage all shipping fasteners on vibration isolation equipment.
 11. Secure all access doors to the fan, the unit and the ductwork.
 12. Switch electrical supply "on" and allow fan to reach full speed.
 13. Physically check each fan at start up and shut down to insure no abnormal or problem conditions exist.
 14. Check entering and leaving air temperatures (dry bulb and wet bulb) and simultaneously record entering and leaving chilled water temperatures and flow, steam pressures and flow, and outside air temperature.
 15. Check all control sequences.

END OF SECTION 237313

SECTION 237313 – INDOOR CENTRAL-STATION AIR-HANDLING UNIT

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Applied Air Handling Units.

1.02 RELATED SECTIONS

- A. Section 23 31 13 – Metal Ducts
- B. Section 23 07 13 - Duct Work Insulation.
- C. Section 230993 - Instrumentation and Controls for HVAC Systems
- D. Section 26 00 00 – Specifications on contract drawings

1.03 REFERENCES

- A. AMCA Standard 500-D - Laboratory Methods of Testing Dampers for Rating.
- B. ANSI/AHRI Standard 410 - Forced Circulation Air-Cooling and Air-Heating Coils.
- C. ANSI/AHRI Standard 430 - Central Station Air Handling Units.
- D. ANSI/ASHARE Standard 62.1 - Ventilation for Acceptable Indoor Air Quality.
- E. ANSI/ASHARE Standard 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- F. ANSI/UL 900 - Standard for Safety Air Filter Units.
- G. NFPA 70 - National Electrical Code
- H. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilation Systems.
- I. UL 1995 - Standard for Safety Heating and Cooling Equipment

1.04 QUALITY ASSURANCE

- A. Air Coils: Certify capacities, pressure drops and selection procedures in accordance with current AHRI Standard 410.
- B. Air handling units with fan sections utilizing multiple fans shall be rated in accordance with AHRI Standard 430 for airflow, static pressure, and fan speed performance.

1.05 SUBMITTALS

- A. No equipment shall be fabricated or delivered until the receipt of approved shop drawings from the Owner or Owner's approved representative.
- B. AHU manufacturer shall provide the following information with each shop drawing/product data submission:
 - 1. Dimensioned arrangement drawings for each AHU including a plan and elevation view of the assembled unit with overall dimensions, lift points, unit shipping split locations and dimensions, installation and operating weights, and installation, operation and service clearances.
 - 2. All electrical, piping, and ductwork requirements, including sizes, connection locations, and connection method recommendations.
 - 3. Each component of the unit shall be identified and mechanical specifications shall be provided for unit and accessories describing construction, components, and options.
 - 4. All performance data, including capacities and airside and waterside pressure drops, for components.
 - 5. Fan curves shall be provided for fans with the design operating points indicated. Data shall be corrected to actual operating conditions, temperatures, and altitudes.
 - 6. For units utilizing multiple fans in a fan section, a fan curve shall be provided showing the performance of the entire bank of fans at design conditions. In addition, a fan curve shall be provided showing the performance of each individual fan in the bank of fans at design conditions. Also a fan curve shall be provided showing the performance of the bank of fans, if one fan is down. The percent redundancy of the bank of fans with one fan down shall be noted on the fan curve or in the tabulated fan data.
 - 7. A filter schedule must be provided for each air handling unit supplied by the air handling unit manufacturer. Schedule shall detail unit tag, unit size, corresponding filter section location within the AHU, filter arrangement (e.g. angled/flat), filter depth, filter type (e.g. pleated media), MERV rating, and filter quantity and size.
 - 8. A schedule detailing necessary trap height shall be provided for each air handling unit. Schedule shall detail unit tag, unit size, appropriate trap schematic with recommended trap dimensions, and unit supplied base rail height. Contractor shall be responsible for additional trap height required for trapping and insulation beyond the unit supplied base rail height by adequate housekeeping pad.
 - 9. An electrical MCA - MOP schedule shall be provided for each electrical circuit to which field-power must be supplied. Schedule to detail unit tag, circuit description, voltage/phase/hertz, Minimum Circuit Ampacity (MCA), and calculated Maximum Overcurrent Protection (MOP).

10. Sound data shall be provided using AHRI 260 test methods. Unit discharge, inlet, and radiated sound power levels in dB shall be provided for 63, 125, 250, 500, 1000, 2000, 4000 and 8000Hz.
- C. The AHU manufacturer shall provide appropriate sets of submittals as referenced in the General Conditions and shall submit to the Owner electronic copies of the IOM.
- D. The AHU manufacturer shall list any exceptions to the specification.

1.06 REGULATORY REQUIREMENTS

- A. Agency Listings/Certifications
 1. Unit shall be manufactured to conform to UL 1995 and shall be listed by either UL or ETL. Units shall be provided with listing agency label affixed to the unit. In the event the unit is not UL or ETL approved, the contractor shall, at his/her expense, provide for a field inspection by a UL or ETL representative to verify conformance. If necessary, contractor shall perform modifications to the unit to comply with UL or ETL as directed by the representative, at no additional expense to the owner.
 2. Air handling fans shall be rated in accordance with AHRI Standard 430.
 3. Air handling coils shall be rated in accordance with AHRI Standard 410. Units shall be provided with certification label affixed to the unit if coils are AHRI 410 certified

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
- B. Units shall ship fully assembled up to practical shipping and rigging limitations. Units not shipped fully assembled shall have tags and airflow arrows on each section to indicate location and orientation in direction of airflow. Shipping splits shall be clearly defined on submittal drawings. Cost associated with non-conformance to shop drawings shall be the responsibility of the manufacturer. Each section shall have lifting lugs for field rigging, lifting and final placement of AHU section(s).
- C. Unit shall be stretch or shrink wrapped to protect unit from in-transit rain and debris per ASHRAE 62.1 recommendations.
- D. Installing contractor shall be responsible for storing AHU in a clean, dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

1.08 START-UP AND OPERATING REQUIREMENTS

- A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters in place, bearings lubricated (if applicable), condensate properly trapped, piping connections verified and leak-tested, belts aligned and tensioned, all shipping braces removed, bearing set screws torqued, and fan has been test run under observation.

1.09 WARRANTY

- A. AHU manufacturer shall provide, at no additional cost, a standard parts warranty that covers a period of one year from unit start-up or 18 months from shipment, whichever occurs first. This warrants that all products are free from defects in material and workmanship and shall meet the capacities and ratings set forth in the contract documents.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Unit layout and configuration shall be as defined in project plans and schedule.
- B. Manufacturer to provide a full perimeter integral base frame to support and raise all sections of the unit for proper trapping. Base frame will either be bolted construction or welded construction. Refer to schedule for base height and construction type.

2.02 UNIT CASING

- A. Unit manufacturer shall ship unit in segments as specified by the contractor for ease of installation in tight spaces. The entire air handler shall be constructed of galvanized steel. Casing finished to meet ASTM B117 125-hour salt-spray test. The removal of access panels or access doors shall not affect the structural integrity of the unit. All removable panels shall be gasketed. All doors shall have gasketing around full perimeter to prevent air leakage. Contractor shall be responsible to provide connection flanges and all other framework that is needed to properly support the unit.
- B. Casing performance - Casing air leakage shall not exceed leak class 6 (CL = 6) per ASHRAE 111 at specified casing pressure, where maximum casing leakage (cfm/100 ft² of casing surface area) = CL X P^{0.65}.
- C. Air leakage shall be determined at 1.00 times maximum casing static pressure up to 8 inches w.g. Specified air leakage shall be accomplished without the use of caulk. Total estimated air leakage shall be reported for each unit in CFM, as a percentage of supply air, and as an ASHRAE 111 Leakage Class.
- D. Under 55F supply air temperature and design conditions on the exterior of the unit of 81F dry bulb and 73F wet bulb, condensation shall not form on the casing

exterior. The AHU manufacturer shall provide tested casing thermal performance for the scheduled supply air temperature plotted on a psychrometric chart. The design condition on the exterior of the unit shall also be plotted on the chart. If tested casing thermal data is not available, AHU manufacturer shall provide, in writing to the Engineer and Owner, a guarantee against condensation forming on the unit exterior at the stated design conditions above.

- E. Unit casing (wall/floor/roof panels and doors) shall be able to withstand up to 1.5 times design static pressure, or 8-inch w.g., whichever is less, and shall not exceed 0.0042 per inch of panel span ($L/240$).
- F. Floor panels shall be double-wall construction and designed to support a 300-lb load during maintenance activities and shall deflect no more than 0.0042 per inch of panel span.
- G. Unit casing panels shall be double-wall construction, with solid galvanized exterior and solid galvanized interior, to facilitate cleaning of unit interior.
- H. Unit casing panels and doors shall be provided with a minimum thermal resistance (R-value) of $13 \text{ Hr} \cdot \text{Ft}^2 \cdot ^\circ\text{F} / \text{BTU}$.
- I. Unit casing panels (roof, walls, floor) and external structural frame members shall be completely insulated filling the entire panel cavity in all directions so that no voids exist. Panel insulation shall comply with NFPA 90A.
- J. Casing panel inner liners must not extend to the exterior of the unit or contact the exterior frame. A mid-span, no-through-metal, internal thermal break shall be provided for all unit casing panels.
- K. Access panels and/or access doors shall be provided in all sections to allow easy access to drain pan, coil(s), motor, drive components and bearings for cleaning, inspection, and maintenance.
- L. Access panels and doors shall be fully removable without the use of specialized tools to allow complete access of interior surfaces.

2.03 ACCESS DOORS

- A. Access door construction shall be same as main unit casing, including R value. All doors shall be provided with a thermal break construction of the door panel and frame. Full perimeter gasketing of the door shall be provided to prevent air leakage. Doors shall be provided with stainless steel hinges. Handle hardware shall be designed such as to prevent unintended closure. Doors shall be minimum 60-inches in height when sufficient unit height is available. If not available, door height shall be height of unit. Single handle door shall be provided for each door linking multiple latching points necessary to maintain the specified air leakage integrity of the unit.

1. Door hardware shall be surface-mounted. Access doors shall be hinged and removable without the use of specialized tools. Hinges and handles shall be interchangeable to allow for alternating door swing in the field to minimize access interference due to unforeseen job site obstructions. Door handle hardware shall be adjustable and visually indicate locking position of the door latch external to the section.

2.04 PRIMARY DRAIN PANS

- A. All cooling coil sections shall be provided with an insulated, double-wall, galvanized drain pan.
- B. The drain pan shall be designed in accordance with ASHRAE 62.1 being of sufficient size to collect all condensation produced from the coil and sloped in two planes, pitched toward drain connections, promoting positive drainage to eliminate stagnant water conditions when unit is installed level and trapped per manufacturer's requirements.
- C. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.
- D. All drain pan threaded connections shall be visible external to the unit. Threaded connections under the unit floor shall not be accepted.
- E. Drain connections shall be of the same material as the primary drain pan and shall extend a minimum 2-1/2-inch beyond the base to ensure adequate room for field piping of condensate traps.
- F. The installing contractor is responsible to ensure the unit is installed level, trapped in accordance with the manufacturer's requirements, and visually inspected to ensure proper drainage of condensate.
- G. Coil support members inside the drain pan shall be of the same material as the drain pan and coil casing.
- H. If drain pans are required for heating coils, access sections, or mixing sections they will be indicated in the plans.

2.05 FANS

- A. Fan sections shall have a minimum of one hinged and latched access door located on the drive side of the unit to allow inspection and maintenance of the fan, motor, and drive components.
- B. Provide fans of type and class as specified on the schedule. All fans shall be statically and dynamically tested by the manufacturer for vibration and alignment

as an assembly at the operating RPM to meet design specifications. Fans that are selected with inverter balancing shall first be dynamically balanced at design RPM. The fans then will be checked in the factory from 25% to 100% of design RPM to insure they are operating within vibration tolerance specifications, and that there are no resonant frequency issues throughout this operating range. Inverter balancing that requires lockout frequencies inputted into a variable frequency drive to in order to bypass resonant frequencies shall not be acceptable. If supplied in this manner by the unit manufacturer, the contractor will be responsible for rebalancing in the field after unit installation. Fans selected with inverter balancing shall have a maintenance free grounding assembly installed on the fan motor to discharge both static and induced shaft currents to ground.

- C. Direct drive plenum fans with integral frame motors, shall be mounted on isolation bases. Fan shall be dynamically balanced throughout the operating range to a BV-3 (0.20 in/s) per AMCA 204 test standard. Fan and motor shall be internally isolated with spring isolators. A flexible connection shall be installed between fan and unit casing to ensure complete isolation. Flexible connection shall comply with NFPA 90A and UL 181 requirements. If fans and motors are not internally isolated, then the entire unit shall be externally isolated from the building, including supply and return duct work, piping, and electrical connections. External isolation shall be furnished by the installing contractor in order to avoid transmission of noise and vibration through the ductwork and building structure.
- D. MOTORS AND DRIVES
 - 1. Motors shall meet or exceed all NEMA Standards Publication MG 1 - 2006 requirements and comply with NEMA Premium efficiency levels when applicable. Motors shall comply with applicable requirements of NEC and shall be UL Listed.
 - 2. Fan Motors shall be heavy duty, open drip-proof operable at scheduled voltage. If applicable, motor efficiency shall meet or exceed NEMA Premium efficiencies.
 - 3. Direct driven fans utilizing integral frame motors shall use 2-pole (3600 rpm), 4-pole (1800 rpm) or 6-pole (1200 rpm) motors, NEMA Design B, with Class B insulation capable to operate continuously at 104 deg F (40 deg C) without tripping overloads.
 - 4. Motors shall have a +/- 10 percent voltage utilization range to protect against voltage variation.

2.06 COILS

- A. Coils section header end panel shall be removable to allow for removal and replacement of coils without impacting the structural integrity of the unit.
- B. Install coils such that headers and return bends are enclosed by unit casing to ensure that if condensate forms on the header or return bends, it is captured by the drain pan under the coil.

- C. DX and Hot Gas Reheat Coils: Coils shall be manufactured with plate fins to minimize water carryover and maximize airside thermal efficiency. Fin tube holes shall have drawn and belled collars to maintain consistent fin spacing to ensure performance and air pressure drop across the coil as scheduled. Tubes shall be mechanically expanded and bonded to fin collars for maximum thermal conductivity. Use of soldering or tinning during the fin-to-tube bonding process is not acceptable due to the inherent thermal stress and possible loss of bonding at that joint.
- D. Construct coil casings of galvanized steel. End supports and tube sheets shall have belled tube holes to minimize wear of the tube wall during thermal expansion and contraction of the tube.
- E. All coils shall be completely cleaned prior to installation into the air handling unit. Complete fin bundle in direction of airflow shall be degreased and steam cleaned to remove any lubricants used in the manufacturing of the fins, or dirt that may have accumulated, in order to minimize the chance for water carryover.
- F. When two or more cooling coils are stacked in the unit, an intermediate drain pan shall be installed between each coil. The intermediate drain pan shall be designed being of sufficient size to collect all condensation produced from the coil and sloped to promote positive drainage to eliminate stagnant water conditions. The intermediate drain pan shall be constructed of the same material as the sections primary drain pan.
- G. The intermediate drain pan shall begin at the leading face of the water-producing device and be of sufficient length extending downstream to prevent condensate from passing through the air stream of the lower coil.
- H. Intermediate drain pan shall include downspouts to direct condensate to the primary drain pan. The intermediate drain pan outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.
- I. Steam Heating Coils
 - 1. Steam supply, condensate return, and vacuum breaker connections shall be clearly labeled on unit exterior.
 - 2. Coils shall be non-freeze, steam distributing type. Coils shall be pitched in units for proper drainage of steam condensate from coils.
 - 3. Coils shall be proof tested to 300 psig and leak tested to 200 psig air pressure under water.
 - 4. Headers shall be constructed of cast iron.
 - 5. Tubes shall consist of 11/16 inch O.D., minimum 0.031 inch thick, copper inner tubes and 1 inch O.D., minimum .031 copper outer tubes. Fins shall be of aluminum material.

6. Inner tubes shall have orifices that ensure even steam distribution throughout the length of the outer tube. Orifices shall direct steam toward return connections to ensure steam condensate is properly drained from coils to prevent flashing of condensate.

J. Refrigerant Cooling Coils

1. Coils shall be proof tested to 450 psig and leak tested to 300 psig air pressure under water. After testing, insides of tubes shall be air dried, charged with dry nitrogen or dry air, and sealed to prevent contamination.
2. Refrigerant suction and liquid headers shall be constructed of copper tubing. Suction and liquid connections shall penetrate unit casings to allow for sweat connections to refrigerant lines.
3. Tubes shall be 1/2-inch with aluminum fins.
4. Coils shall have equalizing type vertical distributors sized in conjunction with capacities of coils.

2.07 FILTERS

- A. Provide factory-fabricated filter section of the same construction and finish as unit casings. Filter section shall have side access filter guides and access door(s) extending the full height of the casing to facilitate filter removal. Construct doors in accordance with Section 2.04. Provide fixed filter blockoffs as required to prevent air bypass around filters. Blockoffs shall not need to be removed during filter replacement. Filters to be of size, and quantity needed to maximize filter face area of each particular unit size.
- B. Filter type, MERV rating, and arrangement shall be provided as defined in project plans and schedule

2.08 DAMPERS

- A. All dampers, with the exception of external bypass and multizones (if scheduled), shall be internally mounted. Dampers shall be premium ultra low leak and located as indicated on the schedule and plans. Blade arrangement (parallel or opposed) shall be provided as indicated on the schedule and drawings. Dampers shall be Ruskin CD60 double-skin airfoil design or equivalent for minimal air leakage and pressure drop. Leakage rate shall not exceed 3 CFM/square foot at one inch water gauge complying with ASHRAE 90.1 maximum damper leakage and shall be AMCA licensed for Class 1A. All leakage testing and pressure ratings shall be based on AMCA Standard 500-D. Manufacturer shall submit brand and model of damper(s) being furnished, if not Ruskin CD60.

2.09 ACCESS SECTIONS

- A. Access sections shall be provided where indicated in the schedule and plans to allow additional access for inspection, cleaning, and maintenance of unit

components. The unit shall be installed for proper access. Procedure for proper access, inspection and cleaning of the unit shall be provided in the AHU manufacturer's maintenance manual.

2.10 VFD per Fan

- A. Multiple VFDs on a common panel, shall be provided for each fan array to provide redundancy in case of loss of function of one of the VFDs or motors. Individual VFD shall be sized based on motor FLA to reduce overall panel input current. In the event of a VFD failure, the remaining VFDs must be capable of compensating and maintaining normal fan array operation.
- B. VFD panel shall have a common disconnect that is accessible from the outside of the unit. Disconnect shall open input power to all VFDs simultaneously. Disconnect shall be lockable in the off position. Disconnect shall utilize circuit breaker to provide overcurrent and short circuit protection.
- C. VFD panel shall be provided with a common point connection for speed input signal, start/stop signal, fault status, and field interlock connection
- D. VFD panel shall be provided with a single point of field connection for field input power. Each VFD shall be supplied with independent input fusing, as required. Panel shall be provided with short circuit current of 5kA RMS symmetrical.
- E. VFD panel shall be provided with a single point of field connection for field input power. Each VFD shall be supplied with independent input fusing, as required. Panel shall be provided with short circuit current of 65kA RMS symmetrical.
- F. Externally mounted VFDs shall be provided with independent keypad.

2.11 Factory Wiring

- A. VFDs shall be wired per NEC, UL, and NFPA 90A requirements. Units with factory-mounted controls shall also include power wiring from the VFD or starter/disconnect control transformer to the control system transformers. Units with VFDs and factory-mounted controls shall have a binary start-stop signal and an analog speed signal wired from the direct digital controller to the VFD.
- B. All power wiring for voltages greater than 24V and traveling through multiple unit sections shall be contained in an enclosed, metal, power-wiring raceway or EMT. Sections less than 6-inch in length may be contained in FMC.
- C. After mounting and wiring of VFDs, on the AHUs, trained factory personnel shall ensure proper operation of each VFD, through a thorough factory test. Testing shall include a Hypot test of unit wiring to ensure that no weaknesses exist in wiring or motor. Each VFD shall be energized and the fan run to ensure the VFD will operate throughout the usable range of the drive and that the fan rotation is correct. Each

VFD with bypass shall also be tested in the bypass position to ensure the bypass is operational.

PART 3 - EXECUTION

3.01 SHIPPING

- A. Paper copies of the IOM shall also be shipped with each AHU.
- B. The AHU manufacturer shall identify all shipments with the order number. Enough information shall be provided with each shipment to enable the Mechanical Contractor to confirm the receipt of units when they are received. For parts too small to mark individually, the AHU manufacturer shall place them in containers.
- C. To protect equipment during shipment and delivery, all indoor units shall be completely stretch or shrink wrapped. Wrap shall be a minimum of 7 mil plastic. Pipe ends and pipe connection holes in the casing shall be capped or plugged prior to shipment
- D. After loading the equipment for shipment, the AHU manufacturer shall contact the shipping contact on the order and provide the name of the carrier, description of equipment, order number, shipping point, and date of shipment.

3.02 ON-SITE STORAGE

- A. If equipment is to be stored for a period of time prior to installation, the Mechanical Contractor shall remove all stretch or shrink wrap from units upon receipt to prevent unit corrosion and shall either place the units in a controlled indoor environment or shall cover the units with canvas tarps and place them in a well-drained area. Covering units with plastic tarps shall not be acceptable.

3.03 FIELD EXAMINATION

- A. The Mechanical Contractor shall verify that the mechanical room is ready to receive work and the opening dimensions are as indicated on the shop drawings and contract documents.
- B. The Mechanical Contractor shall verify that the proper power supply is available prior to starting of the fans.

3.04 INSTALLATION

- A. The Mechanical Contractor shall be responsible to coordinate all of his installation requirements with the Owner and the Owner's selected Mechanical Contractor to ensure that a complete installation for each unit is being provided. Coordination efforts shall include such items as unloading and hoisting requirements, field wiring requirements, field piping requirements, field ductwork requirements,

requirements for assembly of field-bolted or welded joints, and all other installation and assembly requirements.

- B. The AHU manufacturer shall provide all screws and gaskets for joining of sections in the field.
- C. The Mechanical Contractor shall verify that the following items have been completed prior to scheduling the AHU manufacturer's final inspection and start up:
 - 1. All spring-isolated components have had their shipping restraints removed and the components have been leveled.
 - 2. On all field-joined units, that all interconnections have been completed, i.e., electrical and control wiring, piping, casing joints, bolting, welding, etc.
 - 3. All DX and steam piping connections have been completed and hydrostatically tested and all water flow rates have been set in accordance with the capacities scheduled on the Drawings.
 - 4. All ductwork connections have been completed and all ductwork has been pressure tested for its intended service.
 - 5. All power wiring, including motor starters and disconnects, serving the unit has been completed.
 - 6. All automatic temperature and safety controls have been completed.
 - 7. All dampers are fully operational.
 - 8. All shipping materials have been removed.
 - 9. All (clean) filter media has been installed in the units.

3.05 LEVELING

- A. The Mechanical Contractor shall level all unit sections in accordance with the unit manufacturer's instructions. The Mechanical Contractor shall provide and install all necessary permanent shim material to ensure individual sections and entire assembled units are level.

3.06 FINAL INSPECTION AND START UP SERVICE

- A. After the Mechanical Contractor has provided all DX and steam piping connections, ductwork connections, and field control wiring, and Electrical Contractor has provided all the field power wiring, the Mechanical Contractor shall inspect the installation. The Mechanical Contractor shall then perform startup of the equipment.
- B. The Automatic Temperature Control (Building Direct Digital Control) Contractor shall be scheduled to be at the job site at the time of the equipment start up.

- C. The Mechanical Contractor with unit manufacturer's representative, shall perform the following tests and services and submit a report in writing to Owner/Engineer outlining the results:
1. Record date, time, and person(s) performing service.
 2. Lubricate all moving parts.
 3. Check all motor and starter power lugs and tighten as required.
 4. Verify all electrical power connections.
 5. Conduct a start up inspection per the AHU manufacturer's recommendations.
 6. Record fan motor voltage and amperage readings.
 7. Check fan rotation and spin wheel to verify that rotation is free and does not rub or bind.
 8. Check fan for excessive vibration.
 9. Remove all foreign loose material in ductwork leading to and from the fan and in the fan itself.
 10. Disengage all shipping fasteners on vibration isolation equipment.
 11. Check safety guards to insure they are properly secured.
 12. Secure all access doors to the fan, the unit and the ductwork.
 13. Switch electrical supply "on" and allow fan to reach full speed.
 14. Physically check each fan at start up and shut down to insure no abnormal or problem conditions exist.
 15. Check entering and leaving air temperatures (dry bulb and wet bulb) and simultaneously record entering and leaving chilled water temperatures and flow, steam pressures and flow, and outside air temperature.
 16. Check all control sequences.

END OF SECTION 237313

SECTION 237433-ROOFTOP UNIT RTU-1

PART 1-GENERAL

1.01 SECTION INCLUDES

- A. Package roof top unit.
- B. Fully modulating electric coil.
- C. Refrigeration components.
- D. Fully modulating hot gas reheat coil.
- E. Unit operating controls.
- F. Roof curb.
- G. Electrical power connections.
- H. BACnet controls/controller
- I. Operation and maintenance service.

1.02 RELATED SECTIONS

- A. Section 233113 - Metal Ducts
- B. Section 230713 - Duct Work Insulation
- C. Section 230993 - Instrumentation and Controls for HVAC Systems
- F. Section 26000 – Specifications on contract drawings

1.03 REFERENCES

- A. NFPA 90 A & B - Installation of Air Conditioning and Ventilation Systems and Installation of Warm Air Heating and Air Conditioning Systems.
- B. ANSI/ASHRAE 15 - Safety Code for Mechanical Refrigeration.
- C. AHRI 340/360 - Commercial and Industrial Unitary Air Conditioning Equipment testing and rating standard. (g/e, c/e above 135,000 btuh)
- D. ANSI/ASHRAE 37 - Testing Unitary Air Conditioning and Heat Pump Equipment.
- E. ANSI/ASHRAE/IESNA 90.1-2016 - Energy Standard for New Buildings Except Low-Rise Residential Buildings.
- H. AHRI 210/240 - Unitary Air-Conditioning Equipment and Air- Source Heat Pump Equipment.
- I. AHRI 270 - Sound Rating of Outdoor Unitary Equipment.
- J. AHRI 370 - Sound Rating of Large Outdoor Refrigerating and Air Conditioning Equipment.(all above 135,000 Btuh)

1.04 SUBMITTALS

- A. Submit unit performance data including: capacity, nominal and operating performance.
- B. Submit Mechanical Specifications for unit and accessories describing construction, components and options.
- C. Submit shop drawings indicating overall dimensions as well as installation, operation and services clearances. Indicate lift points and recommendations and center of gravity. Indicate unit shipping, installation and operating weights including dimensions.
- D. Submit data on electrical requirements and connection points. Include recommended wire and fuse sizes or MCA, sequence of operation, safety and start-up instructions.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
- B. Protect units from physical damage. Leave factory shipping covers in place until installation.

1.06 WARRANTY

- A. Provide parts warranty for one year from start-up or 18 months from shipment, whichever occurs first.
- B. Provide five year extended warranty for compressors.
- C. Provide five year warranty for electric coil.

1.08 REGULATORY REQUIREMENTS

- A. Units are UL listed and labeled.

PART 2-PRODUCTS

2.01 SUMMARY

- A. The contractor shall furnish and install package rooftop unit(s) as shown and scheduled on the contract documents. The unit(s) shall be installed in accordance with this specification and perform at the specified conditions as scheduled.

2.02 GENERAL UNIT DESCRIPTION

- A. Packaged rooftop units cooling, heating capacities, and efficiencies are AHRI Certified within scope of AHRI Standard 210-240 for 6 to 25 Tons and ANSI Z21.47.
- B. Rooftop unit shall be factory assembled, internally wired, fully charged with R-410A, and 100 percent run tested to check cooling operation, fan and blower rotation, and control sequence before leaving the factory.
- D. Internal wiring must be colored and numbered for simplified identification.
- E. Controls operating range shall be between 0°F and 125°F in cooling mode.

2.03 UNIT CASING

- A. Cabinet: Galvanized steel with baked enamel finish.
- B. Rooftop unit casing shall be zinc coated, heavy gauge, steel. Casing panels are weather resistant pre-painted metal with galvanized substrate and meet ASTM B117, 672 hour salt spray test.
- C. Cabinet top cover shall be one piece construction or where seams exist, it shall be double-hemmed and gasket-sealed.
- D. Unit shall include a removable single side maintenance access panels. Lifting handles in maintenance access panels can be removed and reinstalled by removing fasteners while providing a water and air tight seal.
- E. Unit's base pan shall have a raised 1 1/8 inch high lip around the supply and return openings for water integrity.
- F. Exposed vertical panels and top covers in the indoor air section are insulated with a cleanable foil-faced, fire-retardant permanent, odorless glass fiber material.
- G. Base pan shall have no penetrations within the perimeter of the curb other than the raised 1 inch high downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up.
- H. Base of the unit is insulated with 1/8 inch, foil-faced, closed-cell insulation.
- I. Provide openings either on side of unit or through the base for power, control, condensate, and gas connections.
- J. Unit base shall contain provisions for forklift and/or crane lifting on three sides of unit.

2.04 AIR FILTERS

- A. MERV 13 filters.

2.05 FANS AND MOTORS

- A. Supply fan shall be a direct drive plenum fan with backward-curved fan wheel with an external rotor direct drive variable speed motor.
- B. Supply fan speed adjustments can be made using the control user interface.
- C. Provide Fan Fail indication. The indication will be registered at the on-board user interface, mobile service app., or building management system.
- D. Variable speed direct drive motors are premium efficiency
- E. Motors are thermally protected.
- F. Outdoor fans shall be direct drive, statically and dynamically balanced, draw through in the vertical discharge position. Outdoor motors shall be 3 phase.
- G. Provide shafts constructed of solid hot rolled steel, ground and polished, with key-way, and protectively coated with lubricating oil.

2.06 ELECTRIC HEATING SECTION

- A. Provide heavy duty nickel chromium heating elements internally Delta connected for 240V, wye connection for 480V. Each heater package shall have automatically reset high limit control operating through heating element contactors. Backup protection is also provided via non-resettable single operation limits connected directly to high voltage. All heaters shall be individually fused from the factory, where required, and shall meet all NEC requirements when properly installed. Power assemblies shall provide single point connection. Electrical heat modules shall be UL listed.
- B. Heater shall be internal to unit cabinet.
- C. Heater shall be UL listed and approved and provide single point power connection.
- D. Controls: Fully modulating.

2.07 EVAPORATOR COIL

- A. Cooling unit evaporators shall aluminum microchannel that provide optimal heat transfer performance due to flat, streamlined tubes with small ports, and metallurgical tube-to-fin bond.
- C. Provide a removable, reversible, cleanable double sloped drain pan for base of evaporator coil constructed of PVC.
- D. Unit shall include a condensate overflow switch to shut the unit down in the event that a clogged condensate drain line prevents proper condensate removal from the unit.

2.08 HOT GAS REHEAT COIL

- A. Coil shall have aluminum microchannel that provide optimal heat transfer performance due to flat, streamlined tubes with small ports, and metallurgical tube-to-fin bond.
- B. Controls: Fully modulating.

2.09 CONDENSER SECTION

- A. Provide vertical discharge, direct drive fans with aluminum blades. Fans shall be statically balanced. Motors shall be permanently lubricated, with integral thermal overload protection in a weather tight casing.
- B. Cooling condensers shall be microchannel.
- E. Provide tool-less factory installed corrosion resistant louvered hail/vandalism guards to protect condenser coils from hail or physical damage.

2.10 REFRIGERATION SYSTEM

- A. Unit shall have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps. Suction gas-cooled motor with voltage utilization range of plus or minus 10 percent of unit nameplate voltage. Internal overloads and crankcase heaters are standard on compressors.

- B. E-flex variable speed compressor shall be capable of capacity modulation. The compressor motor shall be a permanent magnet type. Each variable speed compressor shall be matched with a specially designed refrigerant cooled , variable frequency drive which modulates the speed of the compressor motor and provides several compressor protection functions.
- C. Compressors shall have thermostatic temperature motor winding control for protection against excessive temperatures caused by over/under voltage operation or loss of charge. Also provide high and low pressure switches.
- D. Thermal Expansion valves are standard.
- E. Dual compressors.
- F. Units shall have cooling capabilities down to 0 degree F as standard.

2.11 OUTDOOR AIR SECTION

- A. Barometric relief shall provide a pressure operated damper that shall be gravity closing.
- B. Barometric relief shall prohibit entrance of outside air during the equipment “off” cycle.
- C. Fully modulating motorized outside air damper, when indoor fan starts, outdoor air dampers shall open to minimum ventilation set position. When indoor fan shuts down, damper shall close to the full closed position.
- D. Provide spring return motor for outside air damper closure during unit shut down or power interruption.
- E. Provide microprocessor unit-mounted control which when used with an electronic zone sensor provides proportional integral room control. This UCM shall perform all unit functions by making all heating, cooling and ventilating decisions through resident software logic.
- F. Provide factory-installed indoor evaporator defrost control to prevent compressor slugging by interrupting compressor operation.
- G. Provide an anti-cycle timing and minimum on/off between stages timing in the microprocessor.

2.12 SYSTEM CONTROL

- A. SZ VAV: Provide all necessary controls to operate a rooftop unit based on maintaining two temperature setpoints: discharge air and zone. During one zone vav cooling, the unit will maintain zone cooling setpoint by modulating the supply fan speed more or less to meet zone load demand; and the unit will maintain discharge temperature to the discharge cooling setpoint by modulating economizer if available and staging dx cooling.
- D. Clogged filter indication: Provide factory installed differential pressure switch to indicate filter replacement status. Differential pressure switch shall cause a contact closure to display a service indication and unit will continue to operate normally.

2.13 BUILDING MANAGEMENT SYSTEM

- A. Connection to Building Management System to be furnished by rooftop unit manufacturer. Through this interface, all Building Management functions (specified in Building Management

Section) shall be performed. See Building Automation and Automatic Temperature Control System Specifications. The only field connection to Building Management System shall be a single communication link.

1. BACnet interface to BMS.

- B. Control Functions: Include unit scheduling, occupied/unoccupied mode, start-up and coast-down modes, nighttime free-cool purge mode, demand limiting, night setback, discharge air set point adjustment, timed override and alarm shutdown.

2.14 ROOF CURB

- A. Refer to contract drawings for roof curb requirements.
- B. Curb shall be manufactured in accordance with the National Roofing Contractors Association guidelines.

PART 3-EXECUTION

3.01 EXAMINATION

- A. Contractor shall verify that roof is ready to receive work and opening dimensions are correct.
- B. Contractor shall verify that proper power supply is available.

3.02 INSTALLATION

- A. Contractor shall install in accordance with manufacturer's instructions.
- B. Mount units on factory built roof mounting frame providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.

Cc engage unit manufacturer's representative to perform unit start up.

- 1. Provide written report to Owner/Engineer.

END OF SECTION 237433

SECTION 237434 – ROOFTOP UNIT RTU-2

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes factory-assembled, rooftop outdoor air-handling unit, including multiple components.

1.3 RELATED SECTIONS

- A. Section 233113 - Metal Ducts
- B. Section 230713 - Duct Work Insulation
- C. Section 230993 - Instrumentation and Controls for HVAC Systems
- D. Section 260000 – Specifications on contract drawings

1.4 DEFINITIONS:

- A. ECM: Electronically commutated motor.
- B. IS COP: Integrated Seasonal Coefficient of Performance.
- C. ISMRE: Integrated Seasonal Moisture Removal Efficiency.
- D. MRC: Moisture Removal Capacity.
- E. MRE: Moisture Removal Efficiency.

1.5 ACTION SUBMITTALS

- A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 3. Include unit dimensions and weight.
 4. Include cabinet material, metal thickness, finishes, insulation, and accessories.
 5. Fans:
 - a. Certified fan-performance curves with system operating conditions indicated.
 - b. Certified fan-sound power ratings.
 - c. Fan construction and accessories.
 - d. Motor ratings, electrical characteristics, and motor accessories.
 6. Include certified coil-performance ratings with system operating conditions indicated.
 7. Include filters with performance characteristics.
 8. Include heat exchangers with performance characteristics.
 9. Include dampers, including housings, linkages, and operators.
- B. Delegated-Design Submittal: For Roof Mounted Air Handling Unit supports indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 2. Detail mounting, securing, and flashing of roof curb to roof structure. Indicate coordinating requirements with roof membrane system.
 3. Wind and Seismic Restraint Details: Detail fabrication and attachment of wind and seismic restraints and snubbers. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.
- C. Shop Drawings:
1. Unit manufacturer shall provide the following information with each shop drawing/product data submission:
 - a. Dimensioned arrangement drawings for roof mounted air handling unit including a plan and elevation view of the assembled unit with overall dimensions, lift points, unit shipping split locations and dimensions, installation and operating weights, and installation, operation and service clearances.
 - b. All electrical, piping, and ductwork requirements, including sizes, connection locations, and connection method recommendations.
 - c. All performance data, including capacities and airside pressure drops, for components.
 - d. Fans:

- 1) Certified fan-performance curves with system operating conditions indicated.
 - 2) Certified fan-sound power ratings.
 - 3) Fan construction and accessories.
 - 4) Motor ratings, electrical characteristics, and motor accessories.
-
- e. Certified coil-performance ratings with system operating conditions indicated.
 - f. Dampers, including housings, linkages, and operators.
 - g. Filters with performance characteristics.
 - h. Sound data shall be provided using ARI 260 test methods. Unit discharge, inlet, and radiated sound power levels in dB shall be provided for 63, 125, 250, 500, 1000, 2000, 4000, and 8000 Hz.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Floor/roof plans and other details, or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.
- B. Seismic Qualification Data: Certificates, for dedicated outdoor-air units, accessories, and components, from manufacturer.
 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
 4. Restraint of internal components.
- C. Product Certificates: Submit certification that specified equipment will withstand wind forces identified in "Performance Requirements" Article and in Section 230548 "Vibration and Seismic Controls for HVAC."
 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculations.
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of wind force and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- D. Source quality-control reports.
- E. Startup service reports.
- F. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For rooftop air handling unit to include in emergency, operation, and maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

- 1. Filters: One (1) set for each dedicated outdoor air unit.

1.9 WARRANTY

- A. Warranty: Manufacturer agrees to replace components of dedicated outdoor-air units that fail in materials or workmanship within specified warranty period.

- 1. Provide parts warranty extending either 12-months from date of unit start-up or a maximum of 18-months from unit ship date.
 - 2. Provide 25 year heat exchanger limited warranty.
 - 3. Provide 5 year compressor limited warranty.

1.10 REGULATORY REQUIREMENTS

- A. Unit shall conform to the appropriate standards listed in Section 103 as well as be listed and labeled by a Nationally Recognized Testing Laboratory (NRTL) for compliance with the following applicable standards.

- 1. Standard for Safety Heating and Cooling Equipment-Fourth Edition, UL 1995
 - 2. Standard for Gas Unit Heaters And Gas-Fired Duct Furnaces ANSI Z83.8-2013
 - 3. Standard for Non-Recirculating Direct Gas-Fired Industrial Air Heaters, ANSI Z83.4 /
 - 4. In the event the unit is not approved by an NRTL for compliance with the appropriate standards, the manufacturer shall, at manufacturer's expense, provide for a field certification and labeling of unit by an NRTL to the appropriate standards. Manufacturer shall, at manufacturer's cost, complete any and all modifications required by NRTL prior to certification and field labeling. Manufacturer shall include coverage of all modifications in unit warranty.

1.11 REFERENCES

- A. AHRI Compliance:
 - 1. Comply with AHRI 920.

- B. AMCA Compliance:
 - 1. Comply with AMCA 11 and bear the AMCA-Certified Ratings Seal for air and sound performance according to AMCA 211 and AMCA 311.
 - 2. Damper leakage tested in accordance with AMCA 500-D.
 - 3. Operating Limits: Classify according to AMCA 99.
- C. ASHRAE Compliance:
 - 1. Comply with ASHRAE 15 for refrigeration system safety.
 - 2. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1,
- D. NFPA Compliance: Comply with NFPA 90A or NFPA 90B.
- E. UL Compliance: Comply with UL 1995.
- F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in
- G. NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.12 DELIVERY, STORAGE AND HANDLING

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
- B. Protect units from physical damage. Leave factory shipping covers in place until installation.
- C. Units to be secured via base rail tie-down locations.

PART 2 - PRODUCTS

2.1 SUMMARY

- A. The contractor shall furnish and install packaged outdoor air units as shown and scheduled on the contract documents. The units shall be installed in accordance with this specification and perform at the specified conditions as scheduled.

2.2 MANUFACTURERS

- A. This specification is based on a dehumidification unit as manufactured by Trane.
 - 1. Manufacturer shall comply with all specifications, performance requirements listed herein, dimensional requirements, service, start-up, and warranties. Subject to compliance with requirements, equals shall meet or exceed all scheduled values.

2. Unit manufacturer to provide MRE and MRC efficiency values as established by AHRI 920.

2.3 GENERAL UNIT DESCRIPTION

- A. Units furnished and installed shall be packaged outdoor air units as scheduled on contract documents and described in these specifications. Units shall be designed for dehumidification, cooling and heating. For dehumidification and cooling modes the evaporator temperature shall be monitored, reported at unit controller. Compressor controls shall modulate capacity to maintain evaporator leaving set point. Hot Gas Bypass shall not be used to control compressor capacity. Compressor Hot Gas Reheat (HGRH) shall be factory installed. To prevent rehydration of evaporator condensate the reheat coil face shall be located a minimum of 6" downstream from the leaving face of the evaporator coil. Heating system shall include modulating controls. Compressor on-off only or primary heating on-off only controls shall not be acceptable control strategies.
- B. Units shall have labels, decals, and/or tags to aid in the service of the unit and indicate caution areas.
- C. Unit discharge airflow configuration shall be:
 1. Vertical discharge thru unit base.

2.4 CABINET

- A. Cabinet panels: 2" double-wall foamed panel construction throughout the indoor section of unit to provide nonporous, cleanable interior surfaces. All interior seams exposed to airflow shall be sealed. All interior surfaces exposed to airflow shall be 2" double wall including the floor and ceiling.
- B. Insulation: 2" double-wall foamed injected R-13 construction throughout. Unit shall be double wall in all areas in contact with supply and exhaust air streams.
- C. Cabinet base shall be double wall construction designed to prevent trapping or ponding of water within the unit base. Cabinet base pan shall be insulated with 2" thick polyisocyanurate foam. Foam insulation shall be fully enclosed with galvanized steel insulation cover. Insulation shall not be applied to underside of unit base.
- D. Cabinet Base Rails: Side and end base rails shall include openings for forklift and tie-down access. To protect unit base from fork damage side rails shall include removable heavy gauge fork pockets.
- E. Shipping anchors attach to and/or through unit base rails. Straps over unit shall not be used to secure unit for shipping.

- F. Cabinet material interior and base rails: shall be G-90 zinc-coated galvanized steel. Material gauge shall be a minimum of 14-gauge for base rails, 16-gauge for structural members and 20-gauge for access doors and cabinet panels.
- G. Exterior Corrosion Protection: Exterior cabinet panels shall be a base coat of G-90 galvanized steel with both exterior and interior surfaces cleaned, phosphatized and finished with a weather-resistant baked enamel finish. Unit's surface shall be in compliance with ASTM B45 salt spray testing at a minimum of 672 hour duration.
- H. Cabinet construction shall provide hinged panels providing easy access for all parts requiring routine service.
- I. Cabinet top cover shall be one piece construction or where seams exist, it shall be double-hemmed and gasket-sealed.
- J. Hinged Access Panels: Water- and air-tight hinged access panels shall provide access to all areas requiring routine service including air filters, heating section, electrical and control cabinet sections, optional ERV and power exhaust fan section, supply air fan section, evaporator and reheat coil sections. Insulated doors shall be constructed to allow the hinges to be reversed in the field.
 - 1. Hold-open devices shall be factory installed on all hinged access doors. Chains shall not be used as hold-open devices.
 - 2. Latches with locking hasp or tool operated closure devices shall be factory installed on all hinged access panels.
- K. Drain Pan material shall be Type 430 Stainless steel drain and constructed to sloped in two directions to ensure positive drainage with corners exposed to standing water and drain fittings welded liquid tight to prevent leaks. Pan shall have a minimum depth of 2". Base of drain pan shall be insulated with 1" thick foam insulation.
 - 1. Condensate switch.
- L. Provide openings either on side of unit or thru the base for power, control and gas connections.
- M. Unit shall be equipped with a 6" filter rack upstream of the evaporator. Frame shall be field-adjustable to match any filter specified combination.
- N. Factory assembled inlet hood with aluminum bird screen.

2.5 FANS AND MOTORS

- A. Provide factory mounted variable frequency drive for supply and exhaust fans.
- B. Indoor fans shall be high efficiency backward curved impeller.

- C. The indoor fan motor shall be an electronic commutated motor with integrated power electronics for variable motor speed.
- D. Outdoor fans shall be direct drive with premium efficiency motors, statically and dynamically balanced, draw through in the vertical discharge position.
- E. Provide shafts constructed of solid hot rolled steel, ground and polished, with key-way, and protectively coated with lubricating oil.

2.6 AIR FILTERS

- A. Evaporator Inlet filters shall be:
 - 1. MERV 8 30%
 - 2. MERV 13 80%

2.7 DAMPERS

- A. Unit shall include a motor operated outdoor air damper constructed of galvanized steel.
- B. Damper blades shall be air foil design with rubber edge seals designed not to exceed a 4 CFM/SQ FT leakage rate exceeding ASHRAE 90.1 damper leakage requirements.
- C. Damper actuator shall be factory mounted and wired sealed spring return and either two-position or fully modulating.
- D. Dampers air velocity shall not exceed 2000 fpm.
- E. Return Air damper shall be of same material, construction and leakage rate as outdoor air damper. Return air damper actuator shall be factory mounted and wired sealed spring fully modulating and operate based on outdoor air damper feedback signal to properly regulate RA airflow.

2.8 DEHUMIDIFICATION/COOLING

- A. Compressors
 - 1. All units shall have Digital Scroll Compressors.
 - 2. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage.
 - 3. Internal overloads shall be provided with the scroll compressors.
 - 4. Each compressor shall have a crankcase heater to minimize the amount of liquid refrigerant present in the oil sump during off cycles.
 - 5. Each compressor shall be mounted on rubber vibration isolators, to reduce the transmission of noise.

6. Provide each unit with 1 or 2 hermetically sealed refrigerant circuit(s) factory-supplied completely piped with liquid line filter-drier, liquid line charging port, suction and liquid line pressure ports, sight glass, and thermal expansion valve.
7. Provide each circuit with automatic reset high and low pressure and high temperature switches for safety control.

B. Coils

1. Evaporator, Condenser and Hot Gas Reheat coils shall be constructed with copper tubes mechanically bonded to configured aluminum plate fins.
2. Coils shall be factory leak tested in accordance ANSI/ASHRAE 15-1992 at a minimum pressure of 500 PSIG.
3. The condenser coil shall have a fin designed for ease of cleaning.
4. Evaporator coil shall include six or four rows, as scheduled, of cooling interlaced for superior sensible and latent cooling with a maximum of 12 FPI for ease of cleaning.
5. Reheat coil shall be fully integrated into the supply airstream and be capable of delivering design supply air temperature.
6. To prevent re-hydration of condensate from evaporator coil, the evaporator coil face and the hot gas reheat coil face shall be separated by a minimum of six inches.

C. Condenser Section

1. Outdoor Fans: Shall be direct drive vertical discharge design with low-noise corrosion resistant glass reinforced polypropylene props, powder coated wire discharge guards and electro-plated motor mounting brackets.
2. Fans shall be statically and dynamically balanced.

D. Compressor Capacity Control

1. Electronic Control.

2.9 FANS AND MOTORS

- A. Indoor fan shall be direct drive plenum fan, factory installed and wired to on-board Variable Frequency Drive and shall be equipped with slide out service access for ease of maintenance.
- B. All fan motors shall be premium efficiency ODP and meet the U.S. Energy Policy Act of 2005/10 (EPACT).
- C. All fan motors shall either be permanently lubricated and/ or have internal thermal overload protection.
- D. Outdoor fans shall be direct drive with premium efficiency motors, statically and dynamically balanced, draw through in the vertical discharge position.
- E. Provide shafts constructed of solid hot rolled steel, ground and polished, with key-way, and protectively coated with lubricating oil.

2.10 HEATING

A. Fully Modulating Indirect Gas Fired Heating System

1. Completely assembled and factory installed heating system shall be located in the primary heating position located downstream of the indoor fan assembly and be integral to unit and approved for use downstream from refrigerant cooling coils in units mounted outdoors. Threaded gas connection shall terminate at manual shut-off valve. Provide capability for sidewall or thru-base gas piping.
2. Heaters shall include high turn-down burners firing into individual stainless steel tubular heat exchangers. Heat exchangers shall be constructed of type 439 stainless steel and be a high efficiency dimpled tubular design capable of draining internal condensate. Units with multiple heaters shall include one fully modulating high turndown heater with additional on-off heater sections. Total heater turndown shall be based on heater gas input capacity 5:1 when ≤ 150 MBH or a minimum of 10:1 when > 150 MBH. Staged burners are not acceptable. Burners shall be operational from 7"-14" w.c. inlet NG pressure.
3. Heater outdoor air inlet shall be hooded and include internal baffle system to prevent rain blow thru. To prevent recirculation of flue gas and to prevent flue gas condensate from draining onto and obstructing the heater air inlet, the inlet shall be hooded and shall be located a minimum of 11" beneath the flue outlet. Inlet hood shall include bird screen.
4. Heater flue outlet(s) shall include hooded outlet with wire cloth all constructed of Type 430 stainless steel. Hooded outlet shall be sealed to prevent flue gas recirculation.
5. Gas Burner Safety Controls: Provide safety controls for the proving of combustion air prior to ignition, continuous air proving monitoring following ignition and continuous electronic flame supervision.
6. Inducer fan shall be direct drive high pressure centrifugal type with two speeds and shall include built- in thermal overload protection.
7. Limit controls: High temperature automatic reset limits shall be located on blower wall and in indoor fan chamber to shut off gas flow in the event of excessive temperatures resulting from restricted indoor airflow, or loss of indoor airflow.
8. Flame roll-out safeties shall provide continuous monitoring of proper burner operation.

2.11 ELECTRICAL RATINGS AND CONNECTIONS

- A. All high voltage power components such as fuses, switches and contactors shall include a service personnel protection barrier or shall be a listed as touch-safe design.
- B. Field wiring access to be provided thru unit base into isolated enclosure with removable cover.
- C. Power wiring to be single point connection.
- D. Wiring internal to the unit shall be colored and numbered for identification.
- E. Unit shall be factory wired to field wiring terminal block mounted in isolated enclosure.

- F. Factory wired main power disconnect and overcurrent device shall be rated for total unit connected power
- G. Unit SCCR rating shall be a minimum of 5kA
- H. Factory wired Voltage/Phase monitor shall be included as standard. In the event of any of the following, the units will be shut down and a fault code will be stored in the monitor for the most recent 25 faults. Upon correction of the fault condition the unit will reset and restart automatically.
- I. Phase Unbalance Protection: Factory set 2%
- J. Over/Under/Brown Out Voltage Protection: +/-10% of nameplate voltage
- K. Phase Loss/Reversal
- L. Factory to mount and wire optional 120 volt convenience outlet. Field wiring of convenience outlet not acceptable.
- M. All low voltage field wiring connections shall be made at factory installed low voltage terminal strip.

2.12 UNIT CONTROLS

- 1. Factory- engineered, mounted, configured and tested.
 - 2. Microprocessor control, BacNet communications interface
 - 3. Human interface with touch-pad screen for monitoring, setting, editing and controlling.
- A. Main Unit Controller (MCM) shall be a microprocessor based controller with resident control logic. Controller program logic shall include:
- 1. Include single program with field selectable:
 - a. Discharge Air control with unit conditioning modes enabled based on outdoor air conditions and controlled to maintain discharge air setpoints.
 - b. Space control with unit conditioning modes enabled and controlled to maintain space setpoints.
 - 2. Multizone VAV controls.
- B. MCM shall:
- 1. Prevent simultaneous operation of any conditioning modes.
 - 2. Accept separate setpoints for Occupied and Unoccupied states.
 - 3. Call for Dehumidification based on dew point setpoints. When no call for Dehumidification is present MCM shall control calls for Cooling, Heating and Economizer modes based on enthalpy temperature setpoints. MCM shall have onboard clock and scheduling function for occupancy.

4. Include non-volatile memory to retain all programmed values without the use of a battery, in the event of a power failure.
 5. Enable HGRH dehumidification and cooling modes and control modulation to maintain reset supply air temperature.
 6. Unit shall include minimum discharge air control.
- C. System Sensors shall include: Factory installed and wired Outdoor Air Temperature, Outdoor Air Humidity and Evaporator Leaving Air Temperature and factory furnished, field installed Discharge Air Temperature.
1. Multi Zone VAV: Coordinate with ATC contractor.
 2. Economizer includes Return Air Temperature and Humidity sensor
 3. Powered Exhaust with Economizer includes duct pressure sensor to be field installed.
- D. System controls shall include:
1. Anti-cycle timing.
 2. Minimum compressor run/off-times.
- E. Factory Mounted and Wired Control Devices:
1. Outdoor Air Temperature Sensor
 2. Outdoor Air Humidity Sensor
 3. Outdoor Air Flow Measuring Station
 4. Outdoor Air Modulating Damper and Actuator
 5. Return Air/Mixed Air Modulating Damper and Actuator
 6. Return Air Temperature Sensor
 7. Return Air Humidity Sensor
 8. Return Air Duct Pressure Sensor
 9. Filter Differential Pressure Switch – Status
 10. Evaporator Leaving Air Temperature Sensor
 11. 0-10 vDc Input for Hot Gas Reheat Modulation
 12. Supply Fan Status
 13. Supply Fan Piezometer Air Flow Measuring Station
 14. Supply Fan Variable Speed Fan Control
 15. Exhaust Fan Status
 16. Exhaust Fan Piezometer Air Flow Measuring Station
 17. Exhaust Fan Variable Speed Fan Control
 18. Modulating Gas Heat
 19. Unit Leaving Air Temperature Sensor for Discharge Air Temperature/Humidity for Dewpoint Control
 20. Liquid Line Pressure sensor
 21. Suction Pressure sensor
 22. Space Temperature
 23. Space Humidity
 24. Monitor Leaving Air Dewpoint

2.13 POWER EXHAUST

- A. Provide a factory installed power exhaust assembly that shall be designed to ventilate return air to atmosphere.
- B. Plenum mounted direct drive airfoil design exhaust wheel material shall be heavy gauge aluminum, welded construction and rated for up to Class III speed/pressure performance. Belt-drive and/or forward curve plenums fans shall not be used.
- C. Exhaust to discharge through powered isolation dampers located on each side of unit cabinet.

2.14. MANUFACTURER'S FIELD SERVICES

- A. Unit start-up shall be completed by a Factory-trained and factory-certified technician.
 - 1. Provide written report to Owner/Engineer.
- B. Manufacturer must have twenty factory-authorized and factory-trained technicians within a 50 mile radius of job site.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for piping, ducts, and electrical systems to verify actual locations of connections before equipment installation.
- C. Examine roof curbs and equipment supports for suitable conditions where units will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Contractor shall install in accordance with manufacturer's instructions.
- B. Mount units on roof mounting frame providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.
- C. Roof Curb: Refer to contract documents for requirements.
- D. Unit Support: Install unit level on structural steel support.

- E. Do not operate fan system until filters (temporary or permanent) are in place. Replace temporary filters used during construction and testing with new, clean filters.
- F. Install filter-gauge, static-pressure taps upstream and downstream of filters. Mount filter gauges on outside of filter housing or filter plenum in accessible position. Provide filter gauges on filter banks, installed with separate static-pressure taps upstream and downstream of filters.
- G. Connect duct to air-handling units with flexible connections. Comply with requirements in Section 233300 "Air Duct Accessories."
- H. Install wall- and duct-mounted sensors furnished by manufacturer for field installation. Install control wiring and make final connections to control devices and unit control panel.
- I. Comply with requirements for gas-fired furnace installation in NFPA 54.
- J. Install separate devices furnished by manufacturer and not factory installed.
- K. Install new filters at completion of equipment installation and before testing, adjusting, and balancing.

3.3 PIPING CONNECTIONS

- A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Where installing piping adjacent to unit, allow space for service and maintenance.
- C. Connect piping to units mounted on vibration isolators with flexible connectors.
- D. Gas Piping:
 - 1. Connect gas piping to furnace, full size of gas train inlet, and connect with union, pressure regulator, and shutoff valve with sufficient clearance for burner removal and service.
 - 2. Install AGA-approved flexible connectors.
- E. Duct Connections:
 - 1. Comply with requirements in Section 233113 "Metal Ducts."
 - 2. Drawings indicate the general arrangement of ducts.
 - 3. Connect ducts to units with flexible duct connectors. Comply with requirements for flexible duct connectors in Section 233300 "Air Duct Accessories."

3.4 ELECTRICAL CONNECTIONS

- A. Connect wiring in accordance with 260000 specifications on contract drawings.
- B. Ground equipment in accordance with 260000 specifications on contract drawings.
- C. Install electrical devices furnished by manufacturer, but not factory mounted, in accordance with NFPA 70 and NECA 1.
- D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.
 - 1. Nameplate shall be laminated acrylic or melamine plastic signs.
 - 2. Nameplate shall be laminated acrylic or melamine plastic signs with a black background and engraved white letters at least 1/2 inch high.

3.5 CONTROL CONNECTIONS

- A. Install control and electrical power wiring to field-mounted control devices.
- B. Connect control wiring in accordance with 260000 specifications on contract drawings.

3.6 MANUFACTURER'S FIELD SERVICES

- A. Unit start-up shall be completed by a 'Factory-trained and factory-certified technician.
- B. The contractor shall furnish manufacturer complete submittal wiring diagrams of the package unit as applicable for field maintenance and service.

3.7 STARTUP SERVICE

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup checks in accordance with manufacturer's written instructions.
 - 2. Inspect units for visible damage to furnace combustion chamber.
 - 3. Perform the following operations for both minimum and maximum firing, and adjust burner for peak efficiency:
 - a. Measure gas pressure at manifold.
 - b. Measure combustion-air temperature at inlet to combustion chamber.
 - c. Measure flue-gas temperature at furnace discharge.
 - d. Perform flue-gas analysis. Measure and record flue-gas carbon dioxide and oxygen concentration.

- e. Measure supply-air temperature and volume when burner is at maximum firing rate and when burner is off. Calculate useful heat to supply air.
4. Verify operation of remote panel, including pilot-light operation and failure modes. Inspect the following:
 - a. High-limit heat exchanger.
 - b. Alarms.
5. Inspect units for visible damage to refrigerant compressor, condenser and evaporator coils, and fans.
6. Start refrigeration system when outdoor-air temperature is within normal operating limits. and measure and record the following:
 - a. Cooling coil leaving-air, dry- and wet-bulb temperatures.
 - b. Cooling coil entering-air, dry- and wet-bulb temperatures.
 - c. Condenser coil entering-air dry-bulb temperature.
 - d. Condenser coil leaving-air dry-bulb temperature.
7. Simulate maximum cooling demand and inspect the following:
 - a. Compressor refrigerant suction and hot-gas pressures.
 - b. Short-circuiting of air through outside coil or from outside coil to outdoor-air intake.
8. Inspect casing insulation for integrity, moisture content, and adhesion.
9. Verify that clearances have been provided for servicing.
10. Verify that controls are connected and operable.
11. Verify that filters are installed.
12. Clean coils and inspect for construction debris.
13. Clean furnace flue and inspect for construction debris.
14. Inspect operation of power vents.
15. Purge gas line.
16. Inspect and adjust vibration isolators and seismic restraints.
17. Verify bearing lubrication.
18. Clean fans and inspect fan-wheel rotation for movement in correct direction without vibration and binding.
19. Adjust fan belts to proper alignment and tension.
20. Start unit.
21. Inspect and record performance of interlocks and protective devices, including response to smoke detectors by fan controls and fire alarm.
22. Operate unit for run-in period.
23. Calibrate controls.
24. Adjust and inspect high-temperature limits.
25. Inspect outdoor-air dampers for proper stroke and interlock with return-air dampers.
26. Verify operational sequence of controls.

27. Measure and record the following airflows. Plot fan volumes on fan curve.

- a. Supply-air volume.
- b. Relief-air flow.
- c. Outdoor-air flow.

- B. After startup, change filters, verify bearing lubrication, and adjust belt tension.
- C. Remove and replace components that do not properly operate, and repeat startup procedures as specified above.
- D. Provide written report of the results of startup services to Owner/Engineer.

3.8 ADJUSTING

- A. Adjust initial temperature and humidity set points.
- B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.
- C. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

3.9 CLEANING

- A. After completing system installation; testing, adjusting, and balancing dedicated outdoor-air unit and air-distribution systems; and completing startup service, clean air-handling unit internally to remove foreign material and construction dirt and dust. Clean fan wheels, casings, dampers, coils, and filter housings, and install new, clean filters.

3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.
 - 1. Duration: 8 hours.
- B. Provide video recordings of how the HVAC system equipment physically operates, etc.

END OF SECTION 237434

SECTION 237435 – ROOFTOP UNIT RTU-3

PART 1 - GENERAL

1. RELATED SECTIONS

- A. Section 233113 - Metal Ducts
- B. Section 230713 - Duct Work Insulation
- C. Section 230993 - Instrumentation and Controls for HVAC Systems
- D. Section 260000 – Specifications on contract drawings

2. Scope

Furnish and install, a factory-assembled, fully-enclosed, packaged environmental control system with energy recovery feature(s) designed for natatorium environment control.

Features shall include:

- A. Space heating by means of a packaged hot water coil
- B. Cooling mode with heat rejection to a packaged outdoor air cooled fluid cooler (dry-cooler)
- C. Packaged minimum exhaust fan
- D. Integral minimum outdoor air connection
- E. Heat recovery by means of a glycol run-around loop between the minimum exhaust and minimum outdoor air streams
- F. Convenience outlet and light included factory mounted in control cabinet, powered and wired separately.

3. Quality And Safety Assurance

- A. The system shall be ETL listed
- B. The system shall be completely assembled, wired, piped, and test-run at the factory prior to shipping. All controls shall be factory adjusted to satisfy the design conditions.
- C. Manufacturer shall have a minimum of ten-plus years prior experience making similar equipment.

- D. The system shall have a microprocessor controller with unit-mounted refrigerant pressure transducers on each refrigeration circuit, multiple temperature sensors and BACnet controller.
- E. Warranty: The entire system shall have a 24-month limited parts warranty from the factory ship date
 - 1. A 1-year labor warranty shall be provided by the manufacturer from the date of final commissioning
 - 2. The compressor(s) shall have a 5-year warranty from the date of final commissioning
- 4. Intent
 - A. It is the intent of this section of the specifications to provide a complete, operable, adjusted natatorium dehumidification system as shown and scheduled on the plans.
- 5. Basis Of Design
 - A. Unit shall be PoolPak and PPK Series, or approved equal.
 - 1. Refrigerant pressure transducers used for active control of the refrigeration system and no manifold gauges needed to service the equipment
 - 2. Fully dipped airside coils for corrosion protection
 - 3. Fully modulating reheat coil for stable space temperature control from the DX system. Coil sized for rejecting 100% of all compressors heat.
 - 4. All fans direct drive with VFD or ECM
 - 5. Each evaporator coil provided with a baked powder painted IAQ Aluminum drain pan
 - 6. Two speed fluid cooler or outdoor condenser fans
 - 7. Cabinet 2" double walled with fully painted inner metal liner
 - 8. Heat recovery from the minimum exhaust air stream used to directly preheat the incoming minimum outdoor air stream
 - 9. Unit controller holds memory of basic refrigerant system info for 2 years of hourly data and 5 days of one-minute interval data
 - 10. Standard fully dipped coating on all air side coils: corrosion resistance and hydrophilic (decreasing water carryover)

PART 2 - PRODUCT

1. General

The natatorium control system shall include:

- A. Mechanical process dehumidification
- B. Outdoor cabinet configuration

- C. Packaged outdoor air-cooled fluid cooler (dry cooler) for AC heat rejection
 - D. A packaged hot water heating coil
 - E. Air filtration via MERV-13 pleated panel filters for return
 - F. Minimum exhaust fan(s)
 - G. Heat recovery between the minimum exhaust air and outdoor air streams and via a glycol run around loop
 - H. Programmable microprocessor controller with remote Internet logging and parameter adjustment
 - I. Bacnet IP building management system interface
2. Cabinet
- A. The cabinet shall be designed and configured for outdoor installation with a 2" double walled cabinet including painted inner liner
 - 1. Infill panels and doors shall be constructed with 18 gauge G90 galvanized steel exterior and 18 gauge mil aluminum finish interior suitable for chlorine and pool chemical resistance.
 - 2. The structural base frame shall be 3/16" steel channel base with 12-gauge steel cross bracing.
 - 3. Base Rails: The cabinet shall have a base frame comprised of 2 layers of 10 gauge mill galvanized G90 steel. Lifting lugs shall be provided on the base frame for rigging the system.
 - 4. The cabinet floor shall be comprised of a 16-gauge galvanized steel panel with a 20-gauge pre-painted steel inner liner, 2-inch double wall engineered with structural bending for maximum rigidity and be mechanically fastened to the base frame of the unit
 - 5. The cabinet roof shall be 20-gauge pre-painted steel, 2-inch double wall engineered with structural bending for maximum rigidity and be mechanically fastened to the base walls of the unit
 - 6. The cabinets shall be mechanically assembled with stainless steel 5/32" sealed blind rivets. Where bolts are required bright zinc plated bolts shall be used
 - 7. Access doors shall be supported on multiple hinges, held shut by compression latches for quick access. Doors shall be provided for entrance to all sections housing components requiring routine maintenance. Full height access doors shall have "hold back" latches to prevent door closure during the performance of service procedures
 - 8. The unit shall have non-corroding protective mesh screens on all air intake openings

9. The system shall have non-corroding protective mesh screens covering internal fan blades, protective grates covering all floor access ports

B. Insulation: The unit shall be insulated per the following standards:

1. All exterior cabinet sections shall be insulated with two (2) inch thick fiberglass inside the double walled cabinet
2. Fire resistant rating to conform to NFPA Standard 90A and 90B
3. Sound attenuation coefficient shall not be less than 1.02 at a frequency of 1,000 Hz as per ASTM Standard C423
4. Thermal conductivity shall not exceed 0.26 Btu/hr-sqft-ft at 75 °F

C. Cabinet configuration shall include:

1. A filter rack with separate access doors shall be provided for the return air and minimum outdoor air streams
2. Electrical panel: The unit shall have a built-in electrical control panel in a separate compartment in order not to disturb the airflow within the dehumidifier during electrical servicing. All electrical components shall be mounted on a 16 gauge galvanized sub-panel

3. Filters

- A. Exhaust Air: 2-Inch MERV 8, 30% pleated filters with rust-free non-metallic structure
- B. Return Air: 2-Inch MERV 13, 90% pleated filters with rust-free non-metallic structure on a slide-in or face-loading rack
- C. Outside Air: 2-Inch MERV 13, 90% pleated filters with rust-free non-metallic structure.
- D. Dirty air filter switches included on the return air filter for indicating an alarm when pressure drop exceeds a set point.

4. Coils

- A. Evaporator/dehumidifier coils shall be designed for maximum moisture removal capacity
 1. Coils shall be fully dipped and coated with a polyester/enamel coating for maximum corrosion protection. Coating shall comply with ASTM B117/D1654 and ASTM D2126 for corrosion resistance against common acids, salt and gases
 2. Coil shall have galvanized casing and end plates
 3. Aluminum fin and copper tubes mechanically bonded to assure high heat transfer.
- B. Air reheat coils shall be sized for variable heat transfer into the air with a capacity of 100% of the compressors total required heat of rejection. Air reheat coils that are on off will cause unstable space conditions and are not acceptable.

1. Coils shall be fully dipped and coated with a polyester/enamel coating for maximum corrosion protection. Coating shall comply with ASTM B117/D1654 and ASTM D2126 for corrosion resistance against common acids, salt and gases
2. Coil shall have galvanized casing and end plates
3. Aluminum fin and copper tube joints mechanically bonded to assure high heat transfer

C. Heat Recovery Coils

1. The unit shall have heat recovery between the minimum exhaust and outdoor air streams per specifications
 - a. The heat recovery coils shall be sized for heat transfer between the two air streams
 - b. The heat recovery fluid circulating between coils shall be glycol. The module shall be a complete package and independent circuit that includes a circulating pump, fill valves and expansion tank
2. Coils shall be fully dipped and coated with a polyester/enamel coating for maximum corrosion protection. Coating shall comply with ASTM B117/D1654 and ASTM D2126 for corrosion resistance against common acids, salt and gases
3. Aluminum fin and copper tube joints mechanically bonded to assure high heat transfer

5. Drain Pans

Each evaporator coil shall be provided with a positive draining, compound-sloped, baked powder paint coated aluminum drain pan with fully-welded corners to ensure zero water retention.

6. Blowers and Blower Motors

A. Supply blowers:

1. The complete blower assembly shall be statically and dynamically balanced on precision electronic balancers
2. The blower assembly shall be mounted on a 1" deflection spring isolated rack
3. The fan inlets shall be equipped with accidental contact protection screen
4. Motor(s) shall be Premium efficiency painted cast iron construction TEFC, NEMA MG1-PART 31 Inverter Duty 15:1 Constant Torque Severe Duty with a service factor 1.25. Motors shall be 6 Pole 1200 RPM synchronous speed with HOA switch with motor safeties against overloading at 60 Hz operation directly on mains. Motors shall have double lip seals on both ends with re-greasable bearings 254T frame and larger with Polyurea grease

B. Exhaust blowers:

1. The packaged exhaust blower (EF1) shall be sized to maintain the negative pressure requirement in the space during normal operation and its operation tied to the system's occupancy scheduler

2. The blower shall be impeller plenum fan complete with backward curved, three-dimensional, profiled blades made of high performance composite material. The blower shall be completely corrosion resistant and be maintenance free a direct drive via a direct current (DC) electronic commuted (EC) motor. The EC-Motor shall have zero slippage design and have continuously variable speed control when connected to the unit's controller. Fans that are not direct drive or EC are not acceptable.
3. The fan assembly shall be balanced in Class G 6.3 acc DIN ISO 1940, dynamic on two levels
4. The fan assembly shall be suitable for ambient temperatures of -40°C to max. +70°C
5. Thermal contacts installed in the windings compliant with THCL 155
6. Drive motor in external rotor principle, sealed in protection class IP54 with moisture protection impregnation of the windings, topical protection
7. High corrosion resistance design with high quality and reliability
8. The exhaust fan shall be controlled from an end switch on the power open of the exhaust air damper. The exhaust dampers shall be protected by louvers to divert rain from the face of the dampers
9. Shall be packaged with the heat recovery module

7. Dampers

Internal dampers shall be made from extruded anodized aluminum with a parallel blade configuration and neoprene double-seal tips to minimize leakage. Damper blades shall be mounted on steel rods which rotate on nylon bushings. All damper hardware shall be corrosion resistant

- A. The system shall be provided with normally closed outside air and exhaust air dampers equipped with spring-return actuators The dampers adjust between 0% to 100% open position.
- B. The outdoor air and exhaust air dampers shall be of opposed blade configuration. Dampers shall have 0.750-inch insulated blades made from extruded anodized aluminum with neoprene double-seal tips to minimize leakage. Damper leakage shall be less than 1% of maximum flow at 4-inch water column differential. Damper blades shall be mounted on steel rods which rotate on nylon bushings. All damper hardware shall be corrosion resistant

8. Compressors

- A. Hermetic, scroll action compressor, suction gas cooled, suitable for refrigerant R-410A
- B. The compressor(s) shall be mounted on rubber-in-shear isolators to limit the transmission of noise and vibration
- C. The compressor(s) shall be equipped with removable crankcase heater(s) for liquid migration protection

- D. The compressor manufacturer must have a wholesale outlet for replacement parts in the nearest major city

9. Refrigeration Circuit

- A. The system shall consist of two factory sealed refrigeration circuits for dehumidification and sensible cooling. No site refrigeration work shall be required
- B. Each refrigeration circuit shall have pressure transducers monitoring the refrigerant discharge (high) and suction (low) pressures. The refrigeration circuit shall be accessible for diagnostics, adjustment and servicing without the need for service manifold gauges
- C. All refrigeration circuits shall have refrigerant control valves, a liquid line filter-drier, a liquid and moisture indicator, an expansion valve, head pressure control feature and pump down feature
- D. All refrigeration circuits shall have an externally adjustable balanced port design mechanical thermostatic expansion valve
- E. The system shall have an externally adjustable balanced port design mechanical thermostatic expansion valve. The valve shall have a removable power head
- F. Tamper proof, hermetically sealed non-adjustable high and low pressure switches and refrigeration service valves shall be installed using Schrader type valves. Refrigeration service valves shall be located outside of the airstream
- G. The suction line shall be fully insulated with 0.500-inch closed cell insulation
- H. The maximum operating pressure for the glycol loop is 100 psi. The glycol loop temperature should not exceed 134 °F.

10. Control Panel

- A. The electrical contractor shall be responsible for external power wiring and disconnect switch fusing. Power block terminals shall be provided
- B. The system shall include a factory-installed fused disconnect
- C. Main control panel shall be mounted inside the service vestibule outside of the process air stream
- D. Blower motors shall be protected with thermal trip overloads
- E. The system shall have a voltage monitor with phase protection
- F. Available dry contacts shall include:

1. Alarm
2. Blower interlock
3. Stage 1 & 2 heating
4. Outdoor air damper control
5. Remote exhaust fan #1
6. Remote exhaust fan #2
7. Outdoor-air cooled equipment
8. System on
9. Auxiliary pool heater 1
10. Heat recovery

- G. Terminals shall be provided to send 24-volt power to the outdoor air cooled condenser or fluid cooler fan contactor
- H. All wiring shall be installed in accordance with UL or CSA safety electrical code regulations and shall be in accordance with the NFPA All components used in the system shall be UL or CSA listed
- I. Wiring diagrams shall be located near the electrical panel(s) on the system. These diagrams shall provide colour-coding and wire numbering for easy troubleshooting. All wires shall be contained in a wire duct.
- J. The compressor(s) shall have a time delay on start to prevent short cycling
- K. Pressure transducers for measuring refrigerant discharge (high) pressure and suction (low) pressure shall be provided.
- L. An airflow switch and a dry contact for alarm(s) shall be provided and factory-mounted.

11. Microprocessor Control

- A. A microprocessor controller with the following characteristics will be provided:
1. All set points and parameter adjustments are pre-programmed at the factory during quality control testing
 2. The microprocessor program shall be stored on updatable FLASH memory
 3. A minimum of 11 analogue inputs, 4 analogue outputs, 24 digital inputs and 16 digital outputs
 4. Four serial interface ports including both RS232 and RS485 types
 5. An Ethernet port with RJ-45 connector and LED activity indicator
 6. A real time clock to time-stamp the system operation log and to enable a programmable 7-day occupation schedule
 7. Two manual demand forced modes to allow the user to manually bypass the microprocessor in the event of controller failure
 8. The local and remote operator panel(s) shall have a backlit graphic liquid crystal display with touch controls

- B. The system shall have pressure transducers monitoring the refrigerant discharge (high) and suction (low) pressures. The refrigeration circuit shall be accessible for diagnostics, adjustment and servicing without the need of service manifold gauges.
- C. The following status LEDs shall be on the controller:
 - 1. Alarm - indicates there has been a failure requiring service.
 - 2. Dehumidification - indicates that the system is dehumidifying the space.
 - 3. Cooling - indicates that the air-conditioning mode.
 - 4. Pool Heating - indicates that the system is heating the pool water with recycled energy.
 - 5. Space Heat - indicates that the space heating is operating.
 - 6. Maintenance - indicates whether or not maintenance is required.
 - 7. Manual - indicates that the system has been set to manual operation.
- D. The following set points shall be accessible and adjustable from the operator panel:
 - 1. Space temperature
 - 2. Space relative humidity
 - 3. Pool water temperature
- E. The following sensors shall be unit-mounted and monitored at the operator panel. All information from these items shall be actively used in the system control and operation strategies:
 - 1. Refrigerant high pressure
 - 2. Refrigerant low pressure
 - 3. Return air temperature
 - 4. Supply air temperature
 - 5. Return air relative humidity
 - 6. Entering pool water temperature
 - 7. Leaving pool water temperature
 - 8. Evaporator leaving air temperature
 - 9. Suction temperature
 - 10. Discharge temperature
- F. System Fault: Shall indicate via text message to the display what systems require attention or servicing. Built-in monitoring and diagnostics shall allow the user to view the following:
 - 1. Power failure
 - 2. Dirty air filter
 - 3. Refrigerant high and low pressure
 - 4. System off
 - 5. Anti-short cycle delay

12. Auxiliary Air Heating

The packaged hot water coil shall be sized to meet the scheduled heating capacity and have the following characteristics:

- A. Modulating (0-10V) auxiliary air heat control by means of a factory mounted and wired three-way control valve
- B. Auxiliary air heating coil tubes, fins, headers, casing and end-plates shall be fully protected by a polyester/enamel coating for maximum corrosion protection. The protective coating shall comply with ASTM B117/D1654 and ASTM D2126 for corrosion resistance against common acids, salts and gases
- C. Coil casing and end-plates shall be made of galvanized steel
- D. Fin and tube joints shall be mechanically bonded to ensure high heat transfer
- E. Fins shall be made of aluminum
- F. Tubes shall be made of copper
- G. The maximum loop operating pressure shall not be less than 250 psig

13. Air Conditioning

Air-cooled air conditioning via a fluid cooler

- A. The system shall be equipped with an air conditioning mode where excess compressor heat is rejected to a factory packaged integral outdoor air-cooled heat exchanger (aka Dry Cooler) via a single glycol fluid loop. No site refrigeration work shall be required. The packaged fluid cooled condenser and outdoor air-cooled heat exchanger shall both be capable of rejecting 100% of the compressor heat rejection with an air on temperature at summer design conditions
- B. The system shall be provided with a dry contact rated for 24VAC/5A to operate the remote outdoor fluid cooler control
- C. Each refrigeration circuit shall include refrigerant valves, a receiver with pressure relief valve set at 650 psig, a pressure control valve and a pressure differential valve, and two manual shutoff valves to isolate the outdoor fluid cooler
- D. Coils shall be tested at 425 PSIG and mounted vertically for complete surface utilization. Coils shall be counter flow and have adequate capacity to dissipate the total heat rejection of the system at design conditions

14. Roof Curb

The 24" high roof curb shall be a prefabricated, perimeter type curb made of 12-gauge galvanized steel with stiffeners, 2.000 in x 2.000 in treated wood nailer strip and not less than 1.500 in of rigid acoustical and thermal fiberglass insulation, knocked-down for shipment. 1.000 in x 0.250 in adhesive gasketing and all necessary hardware shall be provided for field assembly of the curb on the roof decking prior to system shipment

15. Factory Performance Testing

- A. The system shall be thoroughly tested under factory test conditions.

PART 3 - EXECUTION

1. Product Delivery, Acceptance, Storage and Handling

- A. Perform a thorough physical inspection of the system upon delivery from the shipment carrier
- B. Identify and immediately report any physical damage to manufacturer
- C. If the system is to be stored prior to installation, store in a clean, dry place protected from weather, dirt, fumes, water, construction and physical damage
- D. Handle the system carefully during installation to prevent damage
- E. Damaged systems or components shall not be installed. Contact the manufacturer for RMA instructions
- F. Comply with the manufacturer's rigging and installation instructions for unloading the system and moving it into position

2. Connections

- A. Where installing piping adjacent to the system, allow space for service and maintenance
- B. Duct connections: drawings indicate the general arrangements of the ducts. Connect the system to ducts with flexible duct connectors. Comply with code requirements for flexible duct connectors
- C. Electrical connections: comply with code requirements for power wiring, switches and motor controls in electrical sections

3. Start Up

- A. Detailed instructions for start up as provided by the manufacturer must be followed

- B. Installing contractor must contact the manufacturer prior to start up to confirm start up procedures
- C. Provide written start up report to Engineer.

END OF SECTION 237435

SECTION 237436 – MAKEUP AIR UNIT MAU-1

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Applied Makeup Air Unit.

1.02 RELATED SECTIONS

- A. Section 233113 - Metal Ducts
- B. Section 230713 - Duct Work Insulation
- C. Section 230993 - Instrumentation and Controls for HVAC Systems
- D. Section 260000 – Specifications on contract drawings

1.01 REFERENCES

- A. AMCA Standard 500-D - Laboratory Methods of Testing Dampers for Rating.
- B. ANSI/AHRI Standard 410 - Forced Circulation Air-Cooling and Air-Heating Coils.
- C. ANSI/AHRI Standard 430 - Central Station Air Handling Units.
- D. ANSI/ASHARE Standard 62.1 - Ventilation for Acceptable Indoor Air Quality.
- E. ANSI/ASHARE Standard 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- F. ANSI/UL 900 - Standard for Safety Air Filter Units.
- G. NFPA 70 - National Electrical Code
- H. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilation Systems.
- I. UL 1995 - Standard for Safety Heating and Cooling Equipment

1.02 SUBMITTALS

- A. No equipment shall be fabricated or delivered until the receipt of approved shop drawings from the Owner or Owner's approved representative.
- B. MAU manufacturer shall provide the following information with each shop drawing/product data submission:
 - 1. Dimensioned arrangement drawings for each MAU including a plan and elevation view of the assembled unit with overall dimensions, lift points, unit shipping split locations and

dimensions, installation and operating weights, and installation, operation and service clearances.

2. All electrical, piping, and ductwork requirements, including sizes, connection locations, and connection method recommendations.
 3. Each component of the unit shall be identified and mechanical specifications shall be provided for unit and accessories describing construction, components, and options.
 4. All performance data, including capacities and airside and waterside pressure drops, for components.
 5. Fan curves shall be provided for fans with the design operating points indicated. Data shall be corrected to actual operating conditions, temperatures, and altitudes.
- C. MAU manufacturer shall provide appropriate sets of submittals as referenced in the General Conditions and shall submit to the Owner electronic copies of the IOM.
- D. The MAU manufacturer shall list any exceptions to the specification.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
- B. Units shall ship fully assembled up to practical shipping and rigging limitations. Shipping splits shall be clearly defined on submittal drawings. Cost associated with non-conformance to shop drawings shall be the responsibility of the manufacturer. AHU's less than 100-inches wide shall allow for forklift transport and maneuverability on the jobsite.
- C. Deliver units to jobsite with fan motor(s), sheave(s), and belt(s) completely assembled and mounted in units.
- D. Installing contractor shall be responsible for storing AHU in a clean, dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

1.04 START-UP AND OPERATING REQUIREMENTS

- A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters in place, bearings lubricated (if applicable), condensate properly trapped, piping connections verified and leak-tested, belts aligned and tensioned, all shipping braces removed, bearing set screws torqued, and fan has been test run under observation.

1.05 WARRANTY

- A. MAU manufacturer shall provide, at no additional cost, a standard parts warranty that covers a period of one year from unit start-up or 18 months from shipment, whichever occurs first. This warrants that all products are free from defects in material and workmanship and shall meet the capacities and ratings set forth in the equipment manufacturer's catalog and bulletins.
- B. Beginning at the expiration of the standard warranty, the original equipment owner shall be provided optional extended warranties.

1. These warranties shall included:

- a. NG HX furnace: 10 year
- b. Labor for Year 1.

PART 2 - PRODUCTS

2.01 GENERAL

A. Unit layout and configuration shall be as defined in project plans and schedule.

B. Description:

An Indirect-fired gas heating and ventilating unit(s), as indicated on the drawings shall be furnished. Orientation shall be Horizontal Down discharge. Unit(s) shall be factory assembled, tested and shipped as a complete packaged assembly, for indoor or outdoor mounting, consisting of the following:

- Gas furnace;
- Centrifugal blower (forward-curved double width/double inlet or backward inclined);
- Motor starter with thermal overload protection;
- Motor and drive assembly;
- Fuel burning and safety equipment;
- Temperature control system, and
- Gas piping.

C. Approvals:

Unit(s) assembly shall be tested in accordance with Standard, ANSI Z83.8 and shall bear the ETL label. The duct furnace shall be certified by the American Gas Association.

D. Construction:

The unit shall have double-wall construction consisting of at least two layers of 20 gauge G-90 galvanized steel. The wall panels and roof panels shall be fabricated by forming double-standing, self-locking seams that require no additional support. The floor and wall panels shall be caulked air tight with a silicone caulk. All casing panels shall be attached with sheet-metal screws or rivets, which can be removed to field service large components. The unit base shall be suitable for curb or flat mount. The base shall be constructed of galvanized steel for improved rigidity. Base shall be structurally reinforced to accommodate the blower assembly and burner. Housing construction should be suitable for outdoor or indoor installation.

All double-wall insulated doors and at least one side of every sheet metal surface of the unit separating two air-masses of different air temperatures.

The discharge of the unit (Down) shall be internal to the heating module containing the furnaces.

All electrical controls on the control board shall be mounted in an isolated, fully enclosed and insulated vestibule, completely separated from any combustion air, but accessible for servicing needs.

All furnace exhaust flues shall be of double-wall construction. All furnace exhaust flue connections and roof-penetration seams shall be sealed with High-Temp Fire-Barrier 2000+ type silicone caulking.

Unit housings, shall be equipped with Internal Air Distribution Screens on the upstream side of each furnace heat-exchanger.

All gas valves and electrical safety-limits shall be mounted within the burner vestibule; wiring to these components shall be properly secured and away from all high temperature metal surfaces. The burner vestibule shall be an integral part of the unit and not extend outside the exterior casing of the unit and not exposed to the main air stream.

High wind rain caps shall be installed at the termination of the furnace discharge flues.

The vestibule full-size door shall provide easy access to controls and gas-train components. Blower door shall provide easy access to blower, motor and drives. Access doors shall be provided on both front and back side of unit providing full access to every part of the unit.

E. Blower

Wheels shall be balanced in two planes and done in accordance with AMCA standard 204-96, Balance Quality and Vibration Levels for Fans. The wheel blades shall be aerodynamically designed to minimize turbulence, increase efficiency and reduce noise. The wheel blades shall be securely attached to the wheel inlet ring. The wheel shall be firmly attached to the fan shaft with set screws and keys. The blower assembly shall be isolated from the fan structure with vibration isolators.

Blower capacity shall be 4,500 CFM at 70 degrees F standard air, 1.0 external static press. External Static: The sum of duct loss plus duct component static- Example: louvers, diffusers. All blowers shall be tested and set at rated speed after being installed in the factory-assembled unit.

F. Direct Drive

Direct drive blower assembly shall consist of a centrifugal backward inclined, non-overloading wheel secured directly to a heavy duty, ball bearing type motor via two set screws. The motor and wheel assembly shall be mounted to a heavy gauge galvanized steel frame. The motor shall be controlled by a variable frequency drive, allowing for variable airflow without the need of belts and pulleys.

G. Motor & Motor Compartment

Motors shall be heavy duty ball bearing type and furnished at the specified voltage, phase and enclosure. Motor mounting plate shall be constructed of heavy gauge galvanized steel and shall be designed to provide easy adjustment of belt tension. Blower motor shall be suitable for operation on 460 volts, 60 cycle, 3 phase power. Blower motor shall be a 5 HP motor, Open Drip Proof.

H. Shaft & Bearings

Shafts shall be precision ground and polished. Heavy duty, pre-lubricated bearings shall be selected for a minimum (L50) life in excess of 200,000 hours of operation at maximum cataloged

operating speed. They shall be designed for, and individually tested specifically for use in air handling applications.

I. Burner & Heat Exchanger

The gas burner shall be an indirect-fired, push-through type, sized to provide an output per schedule.

The burner shall be capable of heating the entire air supply per schedule. Burner shall be a tubular in-shot fired design capable of using natural gas. Each burner ignition shall be of the direct-spark design with remote flame sensing at inlet of the last firing tube of the gas manifold. Each burner ignition module shall be pre-programmed with an ignition sequence comprised of a 1 minute pre-purge, 1 min inter-purge, 2 minute post-purge, 15 second ignition, 3 trials for ignition, and 60 min lockout.

Direct-sparking sequence shall last through the complete during of the trial for ignition period for guaranteed light-off. Burner shall always be lit at maximum gas flow and combustion airflow for guaranteed light-off. Each burner ignition module shall have LED indicators for troubleshooting and a set of exposed prongs for testing flame indication signal.

All furnaces shall be controlled by an electronic vernier-type fully modulating control system capable of achieving 80% combustion efficiency over the entire gas firing range of the unit.

Each furnace shall have:

- A minimum turndown ratio of 6:1 for natural gas
- Furnace heat exchanger shall be a bent-tube style design made entirely of type 409 stainless steel.
- Furnace shall include a blocked vent safety airflow switch with high temperature silicone tubing operating off of absolute pressure measured inside of the power-vent blower housing.
- Furnace shall include a high temperature auto-recycling limit with a maximum non-adjustable set-point of 200F.
- Furnace shall include a manual reset high temperature flame roll out switch with a non-adjustable set-point of 325F.
- Furnace shall be accessible from both sides of unit.
- Furnace shall include a power-vent assembly for exhausting flue gases with a type PSC type motor that is securely mounted with rubber vibration isolators and easily accessible/removable for service.

Furnace module gas inlet shall be equipped with a 0-35" w.c. gas pressure gauge. A 0-10" w.c. gas pressure gauge shall be installed on the gas manifold of each furnace.

J. GAS EQUIPMENT

All gas equipment shall conform to local-Code requirements.

Components:

1. Modulating-gas valve
2. On/off redundant gas valve
3. Burner
4. Main-gas shut-off valve

5. Main-gas regulator
6. Two solenoid valves
7. All gas manifold components shall be piped and wired at the factory.

K. SAFETY CONTROLS

1. Motor starter with adjustable overloads
2. Main air-flow safety switch
3. Electronic flame-safety relay
4. High-temperature limit switch
5. Non-fused disconnect
6. Flame roll-out switch
7. Main-gas regulator
8. Two solenoid valves
9. Modulating-gas valve
10. Burner
11. Combustion air-proving switch
12. High gas-pressure switches to open circuit to electronic flame-safety relay, if gas pressure is too high.
13. Low gas-pressure switch to open circuit to electronic flame safety relay, if gas pressure is too low.
14. Adjustable low temperature blower-safety control with bypass timer to shut down unit, if discharge temperature drops below setting.

L. ACCESSORIES

- Inlet Dampers: Manufacturer shall provide and install on unit, when possible, a two-position, motor-operated damper with internal end switch to energize the blower-starter circuit, when damper is 80% open. Blades shall be a maximum of 6" wide 16 Gauge G-90 galvanized steel shall be made to guarantee the absence of noticeable vibration at design air velocities. Damper blades to be mounted on friction-free synthetic bearings. Damper edges shall have PVC coated polyester fabric mechanically locked into blade edge. Jamb seals to be flexible metal, compression type.
- Filters: The filters shall be (2") thick, aluminum mesh, coated with super-filter adhesive. Aluminum-mesh filters shall have aluminum frames with media to be layers of slit and expanded aluminum, varying in pattern to obtain maximum depth loading. Washable 2" filters shall be enclosed in two-piece, die-cut frame with diagonal supports. Frame shall be constructed of heavy-duty beverage board. Filter media is supported on the air leaving side by a metal grid. Filter Section: shall be insulated constructed of G-90 galvanized steel with filters supported by internal slides and with removable access panels. MERV 13 Filters shall be provided in a v-bank arrangement.
- Roof Curb: Insulate roof curb adapter.

M. TEMPERATURE CONTROL SYSTEMS

Control: BACnet controller for interface to BMS.

Activate Based on: Shall have the ability to activate heating based on the following:

- Existing sequence of operations.

Tempering Mode: Shall have the ability to control heating/cooling based on the following.

- Discharge – Unit shall modulate to maintain discharge temperature.
- Space – Unit shall modulate to maintain space temperature.
- BAS – Unit shall be controlled via call for fan, call for heat, call for cool (optional), as well as a modulating heat input (0-20mA, 4-20mA, 0-10V, or 2-10V).
- (Optional) DDC – Unit shall be controlled via a DDC controller. Protocols to include BACnet or Lonworks.

Blower Mode:

- Manual (On) – Blower shall run constantly regardless of heating/cooling based on blower on/off button on HMI.
- Auto – Blower shall only run on a call for heating or cooling.
- Interlock (Off) – Blower shall only run when unit interlock is energized.

Service Functionality:

- Ability to monitor temperatures and VFD feedback real-time throughout unit.
- Test Fan, Heat (high/low fire setting) and Cooling.
- Fault history storing past twenty faults.
- VFD parameter adjustment through HMI.

N. WIRING AND ELECTRICAL

The control circuit voltage shall be 24 volts.

A control transformer shall be provided.

Unit shall have standing 120 Vac power.

The control wiring shall be carried in wire channel or conduit.

Wiring in control enclosures shall be in accordance with the National Electrical Code and the local code, as it may affect the installation.

Motor starter shall be provided.

Starter shall be line voltage, definite purpose type.

Unit(s) shall be complete with all items such as relays, starters, switches, safety controls, conduit and wire as previously mentioned, and as required for proper operation.

All factory-mounted controls shall be factory prewired to the unit control panel.

- Single point electrical connection shall be supplied.
- Blower-on delay timer to pre-heat the heat-exchanger prior to energizing the main blower.
- Convenience outlet shall be provided on the control board with 120 Vac service.
- Freeze-stat shall be provided with adjustable temperature set point to shut down the main blower in case of burner failure.
- Fire stat with adjustable set-p temperature.
- Dirty filter airflow switch with LED indicator light on remote panel.
- Cabinet heater strip with thermostat.
- Variable Frequency Drive for main blower motor.

O. FACTORY TESTED

Unit(s) shall be operated, tested and set at the factory using job-site conditions for electrical and gas input. All operating and safety controls shall be tested and set at the factory. Adjustable, or fixed sheaves shall be set for proper RPM at specified conditions. Gas-pressure regulator shall be set for specified burning rate at specified inlet pressure.

PART 2 - EXECUTION

2.01 SHIPPING

- A. Paper copies of the IOM shall also be shipped with each AHU.
- B. The MAU manufacturer shall identify all shipments with the order number. Enough information shall be provided with each shipment to enable the Mechanical Contractor to confirm the receipt of units when they are received. For parts too small to mark individually, the MAU manufacturer shall place them in containers.
- C. To protect equipment during shipment and delivery, all indoor units shall be stretch or shrink wrapped. Wrap shall be a minimum of 7 mil plastic. Pipe ends and pipe connection holes in the casing shall be capped or plugged prior to shipment
- D. After loading the equipment for shipment, the MAU manufacturer shall contact the shipping contact on the order and provide the name of the carrier, description of equipment, order number, shipping point, and date of shipment.

2.02 ON-SITE STORAGE

- A. If equipment is to be stored for a period of time prior to installation, the Mechanical Contractor shall remove all stretch or shrink wrap from units upon receipt to prevent unit corrosion and shall either place the units in a controlled indoor environment or shall cover the units with canvas tarps and place them in a well-drained area. Covering units with plastic tarps shall not be acceptable.

2.03 FIELD EXAMINATION

- A. The Mechanical Contractor shall verify that the mechanical room is ready to receive work and the opening dimensions are as indicated on the shop drawings and contract documents.
- B. The Mechanical Contractor shall verify that the proper power supply is available prior to starting of the fans.

2.04 INSTALLATION

- A. The Mechanical Contractor shall be responsible to coordinate all of his installation requirements with the Owner and the Owner's selected Mechanical Contractor to ensure that a complete installation for each unit is being provided. Coordination efforts shall include such items as unloading and hoisting requirements, field wiring requirements, field piping requirements, field ductwork requirements, requirements for assembly of field-bolted or welded joints, and all other installation and assembly requirements.

- B. The MAU manufacturer shall provide all screws and gaskets for joining of sections in the field.
- C. The Mechanical Contractor shall verify that the following items have been completed prior to scheduling the MAU manufacturer's final inspection and start up:
 - 1. All isolated components have had their shipping restraints removed and the components have been leveled.
 - 2. On all field-joined units, that all interconnections have been completed, i.e., electrical and control wiring, piping, casing joints, bolting, welding, etc.
 - 3. All ductwork connections have been completed and all ductwork has been pressure tested for its intended service.
 - 4. All power wiring, including motor starters and disconnects, serving the unit has been completed.
 - 5. All automatic temperature and safety controls have been completed.
 - 6. All dampers are fully operational.
 - 7. All shipping materials have been removed.
 - 8. Clean filter media has been installed in the units.

2.05 LEVELING

- A. The Mechanical Contractor shall level all unit sections in accordance with the unit manufacturer's instructions. The Mechanical Contractor shall provide and install all necessary permanent shim material to ensure individual sections and entire assembled units are level.

2.06 FINAL INSPECTION AND START UP SERVICE

- A. After the Mechanical Contractor has provided all water and steam piping connections, ductwork connections, and field control wiring, and Electrical Contractor has provided all the field power wiring, the Mechanical Contractor shall inspect the installation. The Mechanical Contractor shall then perform startup of the equipment.
- B. The Automatic Temperature Control (Building Direct Digital Control) Contractor shall be scheduled to be at the job site at the time of the equipment start up.
- C. The Mechanical Contractor and unit manufacturer's representative, shall perform the following tests and services and submit written report to Owner/Engineer outlining the results:
 - 1. Record date, time, and person(s) performing service.
 - 2. Check all motor and starter power lugs and tighten as required.
 - 3. Verify all electrical power connections.
 - 4. Conduct a start up inspection per the MAU manufacturer's recommendations.
 - 5. Record fan motor voltage and amperage readings.
 - 6. Check fan rotation and spin wheel to verify that rotation is free and does not rub or bind.
 - 7. Check fan for excessive vibration.
 - 8. If so equipped, check V belt drive for proper tension and alignment. Tighten the belts in accordance with the MAU manufacturer's directions. Check belt tension

during the second and seventh day's operation and re-adjust belts, as may be required, to maintain proper tension as directed by the AHU manufacturer.

9. Remove all foreign loose material in ductwork leading to and from the fan and in the fan itself.
10. Disengage all shipping fasteners on vibration isolation equipment.
11. Secure all access doors to the fan, the unit and the ductwork.
12. Switch electrical supply "on" and allow fan to reach full speed.
13. Physically check each fan at start up and shut down to insure no abnormal or problem conditions exist.
14. Check entering and leaving air temperatures (dry bulb and wet bulb) and simultaneously record entering and leaving chilled water temperatures and flow, steam pressures and flow, and outside air temperature.
15. Check all control sequences.

END OF SECTION 237436



ABATEMENT SPECIFICATIONS

KENNEDY HIGH SCHOOL

AHU REPLACEMENT

PROJECT No. 3258OC-09

Prepared by:

AI Engineers

919 Middle Street

Middletown, CT 06457



100% Construction Documents – August 8, 2023

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SECTION 01 01 00

ASBESTOS ABATEMENT GENERAL CONDITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Related Sections:
 - 1. Section 01 01 60: Asbestos Abatement Scheduling and Phasing
 - 2. Section 01 02 20: Asbestos Abatement Unit Prices
 - 3. Section 01 70 01: Asbestos Abatement Contract Closeout
 - 4. Section 02 07 50: Selective Demolition for Asbestos Abatement
 - 4. Section 02 08 00: Asbestos Abatement

1.02 ASBESTOS ABATEMENT CONTRACTOR (AAC) QUALIFICATIONS

- A. All bidders shall submit a record of prior experience in asbestos abatement projects, listing no less than three (3) completed jobs in the past year, with all projects of similar size and scope. The Asbestos Abatement Contractor (AAC) shall list the experience and training of the site supervisor and all on-site workers. The information that shall be included is as follows:
 - 1. Project Name and Address
 - 2. Owner's Name and Address
 - 3. Architect/Consultant/Construction Manager
 - 4. Contract Amount
 - 5. Date of Completion
 - 6. Extras and Change Orders
- B. The AAC selected must appear on the approved list of Asbestos Abatement contractors on file at the State of Connecticut Department of Public Health (CTDPH).
- C. Submit a written statement regarding whether the AAC has ever been found out-of-compliance with federal or state asbestos and/or lead regulations pertaining to worker protection, removal, transport, or disposal.
- D. Award of this Contract may not necessarily be based solely on the submitted lowest Base Bid amount. The Owner reserves the right to award this Contract to the Bidder who best meets all AAC qualifications.

1.03 AAC 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 under the direction of the Owner.
- C. Assume full responsibility for protection and safekeeping of products under this Contract.
- D. The AAC shall not interfere with general Site operations. The AAC shall coordinate parking for employees with the Owner.
- E. The AAC shall coordinate location of waste container(s) with Owner operations.
- F. The school may be in operation at the time this abatement work is performed. If the school is in operation or is occupied by any children under the age of 18 years old, work will be performed in accordance with an approved variance issued by the State of Connecticut Department of Public Health to perform abatement while school is under partial or full occupancy. The HMAC shall comply with all provisions of the approved variance.

1.04 WORK PHASING

- A. Work under this project may be performed in phases to accommodate Owner's requirements. Coordinate abatement schedule and operations with the Owner/Consultant and other trades.
- B. Coordinate use of the premises under the direction of the Owner. The school building may be under full or partial occupancy at the time of this project. If the school building is under full or partial occupancy at the time of the work, asbestos abatement work shall be performed in accordance with an approved variance to perform abatement while school is in session.

1.05 OWNER'S OPERATIONS

- A. Schedule the Work to accommodate this requirement.
- B. Maintain means of egress.
- C. Coordinate Work with the Owner, the Architect, and the Owner's Consultant.
- D. Maintain the fire alarm and fire detection systems active at all time during construction.
- E. Maintain permanent means of egress during construction. Provide and maintain temporary means of egress as required by Fire Marshall.

1.06 CLOSEOUT AND PUNCH LIST

- A. The AAC shall carefully check his/her own work and that of any Subcontractor as

the work is being performed. Unsatisfactory work shall be corrected immediately.

- B. When the AAC determines that he is substantially complete, that is, has less than one percent of his Contract remaining to be completed, he shall prepare for submission to the Owner's Consultant, a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the AAC to complete all work in accordance with the Contract Documents.
- C. Upon receipt of the AAC's list of items to be completed or corrected, the Owner's Consultant will promptly make a thorough inspection and prepare a "punch list" setting forth in accurate detail any items on the AAC's list and any additional items that are not acceptable.
- D. When the "punch list" has been prepared, the Owner's Consultant will arrange a meeting with the AAC to identify and explain all punch list items and answer questions on the work that must be completed before final acceptance.
- E. The AAC shall correct all "punch list" items or shall cause the correction of the "punch list" items within a time frame to be established when the "punch list" is made. The time frame for the completion of the "punch list" shall not exceed the completion date of the Contract. Should the "punch list" not be completed within the specified time frame, the Owner may invoke the rights given under the General Conditions.
- F. The Owner's Consultant shall not be expected to inspect any area more than once for the preparation of the "punch list" items. If, during an inspection, the Owner's Consultant discovers five (5) or more deficient conditions, then the area shall be declared "Not Ready" for Inspection.
- G. All inspections and sampling required for hazardous materials abatement compliance will be performed by the Owner's Consultant.

1.07 CLEANING

- A. Throughout the construction period, the AAC shall maintain the building and the 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.

1.08 ADDITIONAL GENERAL REQUIREMENTS

- A. The AAC shall employ a competent and English-speaking Asbestos Abatement Supervisor with at least three (3) years of experience on projects of similar scope and magnitude. The Supervisor shall be responsible for all work involving hazardous materials 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.
- B. The AAC shall allow the work of this contract to be inspected, if required, by local, state, federal, and any other authorities having jurisdiction over such work.

The AAC shall immediately notify the Owner and Owner's Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.

- C. The AAC shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The AAC 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 AAC shall immediately notify the Owner and Owner's Consultant of the delivery of all permits, licenses, certificates of inspection, of approval or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless to who issued, and shall cause them to be displayed to the Owner and Owner's Consultant for verification and recording.
- E. No work shall be performed while there are students or children under eighteen (18) years of age present in the building or on school grounds.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 01 60

ASBESTOS ABATEMENT SCHEDULING AND PHASING

PART - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Related Sections:
 - 1. Section 01 01 00: Asbestos Abatement General Conditions
 - 2. Section 01 02 20: Asbestos Abatement Unit Prices
 - 3. Section 01 70 01: Asbestos Abatement Contract Closeout
 - 4. Section 02 07 50: Selective Demolition for Asbestos Abatement
 - 5. Section 02 08 00: Asbestos Abatement

1.02 GENERAL REQUIREMENTS

- A. The abatement work for this project may be conducted in phases. The work of this project shall begin upon receipt of the "Notice to Proceed" from the Owner. A Pre-Construction Meeting shall be scheduled by the Owner and must be attended by the Asbestos Abatement Contractor (AAC) and any Sub-Contractors. The assigned Site Supervisor(s) must also attend this meeting.
- B. A working schedule for each phase of work shall be presented by the AAC at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed and the Owner will inform the AAC of additions or changes in the scheduling requirements for the project.
- C. As a result of the Pre-Construction Meeting, the AAC shall submit a revised schedule no later than three (3) business days from the Pre-Construction Meeting. Upon approval from the Owner/Consultant, the AAC will receive a "Notice to Proceed" with the work of the Contract.
- D. Refer to all other applicable sections of the specification for coordination with other trades. The abatement AAC shall coordinate work with all other activities at this occupied site.
- E. The abatement work of this project may be performed while school is in session under full or partial occupancy. Abatement work is anticipated to be performed during full occupancy (during the normal school academic calendar) and partial occupancy (during academic recesses, holidays, weekends, off-hours, etc.).
- F. If the school building is under full or partial occupancy at the time of the work, asbestos abatement work shall be performed in accordance with an approved variance to perform abatement while school is in session. The AAC shall comply with all provisions of the approved variance.

1.03 TIME FOR COMPLETION AND WORKING HOURS

- A. Upon award of contract from the Owner, the AAC shall immediately submit state and federal notifications, order materials, supplies, and components for the work of this project.
- B. The AAC shall begin the work immediately upon receipt of the written "Notice to Proceed" from the Owner. The date of the commencement of the work is termed the "Construction Start Date." The AAC 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 AAC and force delays in the performance of the Work, the Owner shall be immediately notified. The AAC 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 and Owner's Consultant.
- E. Any extra hours or days per week worked by the AAC 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. The AAC shall be responsible for all overtime payment to cover Consultant's overtime fees for work performed above and beyond normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 02 20

ASBESTOS ABATEMENT UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Related Sections:
 - 1. Section 01 01 00: Asbestos Abatement General Conditions
 - 2. Section 01 01 60: Asbestos Abatement Scheduling and Phasing
 - 3. Section 01 70 01: Asbestos Abatement Contract Closeout
 - 4. Section 02 07 50: Selective Demolition for Asbestos Abatement
 - 5. Section 02 08 00: Asbestos Abatement

1.2 SUMMARY

- A. A unit price is an amount proposed by Bidders and stated on the Bid Form 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 shall include costs of all materials, all direct or indirect expenses of the Contractor or Sub-Contractors, profit, insurance, bonding, and any applicable taxes. For deleted work, the net credit to the contract shall be 0% less.
- C. Unit prices shall be used for work outside of the base bid and to quantify actual value of quantity allowances.
- D. Section Includes the following:
 - 1. Unit Price Schedule

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 UNIT PRICE SCHEDULE

- A. Unit Prices in accordance with the following schedule will apply to this Contract. Unit prices include labor, disposal, and all necessary fees.

Item No. 1 – SPOT REPAIR REMOVAL OF < 3 SF OF ACM USING GLOVEBAG METHOD AND DISPOSAL AS ASBESTOS WASTE

\$ _____ per glovebag.

Item No. 2. – REMOVAL AND DISPOSAL OF CLOTH VIBRATION DAMPENER 60”X24” AND DISPOSAL AS ASBESTOS WASTE

\$ _____ per vibration dampener.

Item No. 3. – REMOVAL OF FIBERGLASS DUCT INSULATION AND DISPOSAL AS NON-ASBESTOS WASTE

\$ _____ per square foot.

Item No. 4. – REMOVAL OF DUCT PIN TAB ADHESIVE AND DISPOSAL AS ASBESTOS WASTE

\$ _____ per square foot of pin tab adhesive.

Item No. 5. – REMOVAL OF THERMAL SYSTEM MUDDER PIPE FITTING INSULATION AND DISPOSAL AS ASBESTOS WASTE

\$ _____ per fitting.

END OF SECTION 01 02 20

SECTION 01 70 01

ASBESTOS ABATEMENT CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Related Sections:
 - 1. Section 01 01 00: Asbestos Abatement General Conditions
 - 2. Section 01 01 60: Asbestos Abatement Scheduling and Phasing
 - 3. Section 01 02 20: Asbestos Abatement Unit Prices
 - 4. Section 02 07 50: Selective Demolition for Asbestos Abatement
 - 5. Section 02 08 00: Asbestos Abatement

1.02 FINAL CLEANING

- A. Unless otherwise specified under Sections of this Specification, the Asbestos Abatement Contractor (AAC) shall perform final cleaning operations as herein 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 other trades.
- C. Cleaning shall include all surfaces, interior and exterior, in which the AAC has had access.
- D. Use only those materials that will not create hazards to health or property.

1.03 ABATEMENT CLOSEOUT DOCUMENTS

- A. Submit to the Owner/Consultant, final completed hard copies, via mail, all asbestos Waste Shipment Records (WSR) signed by all transporters and the designated disposal site owner/operator. WSRs shall be submitted to the Owner's Consultant within thirty-five (35) calendar days from shipment of waste from Site.
- B. Final payment will be withheld until receipt of all the above documentations to Owner's/Consultant's satisfaction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 02 07 50

SELECTIVE DEMOLITION FOR ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections:
 - 1. Section 01 01 00: Asbestos Abatement General Conditions
 - 2. Section 01 01 60: Asbestos Abatement Scheduling and Phasing
 - 3. Section 01 02 20: Asbestos Abatement Unit Prices
 - 4. Section 01 70 01: Asbestos Abatement Contract Closeout
 - 5. Section 02 08 00: Asbestos Abatement

1.2 SUMMARY

- A. The Asbestos Abatement Contractor (AAC) shall be responsible for providing selective demolition of galvanized duct work as necessary, to access all asbestos-containing materials specified for removal. Refer to the Engineers plans and specifications for locations of duct demolition.
- B. The AAC shall be responsible for making all disconnects, cutting and capping to all mechanical and electrical systems in order to perform asbestos abatement activities. The AAC shall obtain required permits to accomplish this work at no additional cost to the Owner.
- C. The AAC shall be responsible for the selective demolition of all mechanical equipment that may impede the AACs ability to complete the scope of asbestos abatement work.
- D. Coordinate all selective demolition work with the Owner, Engineer, and Owners' Consultant.

1.3 PROJECT CONDITIONS

- A. Occupancy:
 - 1. Areas of the building in which selective demolition will occur include the basement pool mechanical room and Fan Rooms 1 and 2.
 - 2. Asbestos abatement may be performed while the building is under full or partial occupancy. Refer to Section 010160 Scheduling and Phasing for additional requirements.
- B. Existing Conditions:
 - 1. The AAC shall review the Engineers plans and specifications and become familiar with equipment and components that are scheduled to remain and

- shall protect equipment to remain during their work.
 - 2. After the project has begun, the AAC is responsible for the condition of the structures to be selectively demolished and surfaces to remain.
 - 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 Architect/Consultant. While awaiting a response, reschedule operations if necessary to avoid delay of overall project.
- C. Work under this project may be performed in phases to accommodate Owner's/Architect's requirements and remaining construction phases. Coordinate abatement schedule and operations with the Owner/Owner's Consultant and other trades.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and locked out/tagged out.
- B. Insofar as is 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, unplanned collapse, or damage to systems.
 - 1. All open mechanical ducts where interior of ducts could become contaminated as a result of selected demolition or asbestos abatement shall be sealed with two layers of six-mil polyethylene sheeting.
 - 2. Disconnect, remove, or demolish mechanical equipment as required to access asbestos containing materials for abatement. Selective demolition that impacts asbestos-containing materials shall be performed with engineering controls in place.

3.2 PREPARATION

- A. Traffic: 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 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 and abatement work.

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 results in freezing or flooding.
- D. Do not allow adjacent improvements scheduled to remain to become soiled by demolition operations.

3.4 DEMOLITION - GENERAL

- A. Remove: Items indicated to be removed shall be removed by the AAC.
- B. Existing to Remain: Construction or items indicated to remain shall be protected against damage during demolition operations. Where practical, and with the Owner's permission, the AAC may elect to remove items to a suitable storage location during demolition and then properly clean and reinstall the items.
- C. Perform work in a systematic manner.
- D. Demolish and remove existing structures only to the extent required, as indicated in the Contract Documents.
- E. Perform selective demolition using methods that are least likely to damage work to remain and which will provide proper surfaces for patching.
- F. Remove debris daily.
- G. Use any methods permitted by governing regulations and the requirements of the Contract Documents.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. Promptly dispose of materials resulting from demolition operations. Non-contaminated material may be disposed of as construction waste. 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. Off-site disposal location shall not be within one-half mile of any portion of the project site or within sight of the project site.
- E. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
- F. All disposal containers, receptacles, dumpsters shall be properly labeled and sealed from the onset of waste accumulation. Exterior waste containers shall be

locked.

3.6 CLEANING

- A. Throughout the abatement period, the AAC shall maintain the building and Site free of rubbish, debris, surplus materials, and other items not required for the Work.
- B. 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 02 08 00

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Related Sections:
 - 1. Section 01 01 00: Asbestos Abatement General Conditions
 - 2. Section 01 01 60: Asbestos Abatement Scheduling and Phasing
 - 3. Section 01 02 20: Asbestos Abatement Unit Prices
 - 4. Section 01 70 01: Asbestos Abatement Contract Closeout
 - 5. Section 02 07 50: Selective Demolition for Asbestos Abatement

1.02 GENERAL PROVISIONS

- A. Waterbury Public Schools is performing an Air Handling Unit (AHU) Replacement Project (Project) at the John F. Kennedy High School located at 422 Highland Avenue Waterbury, CT (Site). Pre-renovation asbestos-containing materials testing has identified asbestos-containing materials that will be impacted by the project.
- B. Asbestos containing material (ACM) testing has identified building materials scheduled for demolition as well as materials that will be impacted during the Project that contain asbestos. The work covered in this section includes the minimum procedures that shall be employed during the abatement of the ACM.
- C. 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.
- D. Peter J. Folino of Eagle Environmental, Inc. is the designer of this Specification. Mr. Folino is a State of Connecticut Department of Public Health (CTDPH) Licensed Asbestos Project Designer (License #000195).
- E. The Base Bid asbestos abatement work of this project is listed on the Asbestos Containing Materials Scope of Work (Table I below) and Asbestos Abatement Plans HM 100 and HM 101.
- F. Refer to the Engineers Drawings and Specifications for additional information.

1.03 PROJECT DESCRIPTION

- A. The work to be performed includes but is not limited to the proper removal, handling, and disposal of all ACM that will be impacted by the Project. Detailed description of materials and locations of ACM scheduled for removal are shown on Table I below and on Asbestos Abatement Plans HM 100 and HM 101.

- B. The Base Bid asbestos abatement work shall include but not be limited to the ACM identified in the following Table 1 - Table of ACM. The Table provides information on the magnitude of the project. It is the sole responsibility of the Asbestos Abatement Contractor (AAC) to visit the site, review the Contract Documents and determine the quantities of ACM to be removed when developing their bid. Locations and estimated quantities of specific items noted in paragraph A above include:

TABLE I – BASE BID - TABLE OF ACM

LOCATION(S)	MATERIAL	ESTIMATED QUANTITY
Pool Basement Mechanical Room	Fiberglass duct insulation on interior of ducts (non-asbestos)	~160 SF
	Duct pin tab adhesive	~8 SF (5% of total surface area)
Fan Room 1	Fiberglass duct insulation on exterior of ducts	~2,895 SF
	Duct pin tab adhesive	~145 SF (5% of total surface area)
	Mudded pipe fitting insulation >6" diameter	~6 Each
	Mudded pipe fitting insulation <6" diameter	~11 Each
	Fiberglass pipe insulation >6" diameter (non-asbestos)	~250 LF
	Fiberglass pipe insulation <6" diameter (non-asbestos)	~160 LF
Fan Room 2	Fiberglass duct insulation on exterior of ducts	~3,115 SF
	Duct pin tab adhesive	~156 SF (5% of total surface area)
	Mudded pipe fitting insulation >6" diameter	~6 Each
	Mudded pipe fitting insulation <6" diameter	~15 Each
	Cloth vibration dampeners	1 @ ~2'x2' 3 @ ~5'x2'
	Fiberglass pipe insulation >6" diameter (non-asbestos)	~120 LF
	Fiberglass pipe insulation <6" diameter (non-asbestos)	~750 LF

- C. The asbestos abatement work includes but is not limited to the abatement of interior friable and non-friable ACM within the Basement Pool Mechanical Room and Fan Rooms 1 and 2. The AAC shall also be responsible for the removal and disposal of non-asbestos fiberglass duct and pipe insulation within the areas to facilitate asbestos removal.
- D. The fiberglass insulation on the interior of the duct work within the Basement Pool Mechanical Room shall be disposed of as asbestos-contaminated waste. The fiberglass duct insulation on the exterior of the ducts and fiberglass pipe insulation within Fan Rooms 1 and 2 may be disposed of as non-asbestos waste.

- E. All fiberglass duct and pipe insulation within Fan Rooms 1 and 2 shall be removed prior to removal of duct pin tab adhesive, mudded pipe fitting cement, and cloth vibration dampeners. The AAC shall ensure that the pin tabs are not comingled with the fiberglass duct insulation.
- F. The asbestos abatement work may be performed while school is in session, either under partial or full occupancy. Requests to perform abatement while school is in session will be submitted to the State of Connecticut Department of Public Health (CT DPH) by the Owner's Consultant to accommodate the abatement work of this project within each school, if required. The AAC shall be bound to and shall comply with the requirements of the Variance Applications and approvals.
- G. During the work of this project, if school will be in session and there are students present in the building and/or on the school grounds. Refer to Part 3.19 OWNER'S CONSULTANT RESPONSIBILITY for specific air sampling requirements and courses of action should elevated levels of fibers be recorded on daily air samples.
- H. Asbestos abatement work shall be restricted to dates and times established in any Variance to perform abatement while school is in session. Abatement may not be performed outside of the established time frames or areas of abatement identified in the approved Variance for each school. Additional asbestos abatement requirements established in each Variance approval shall become the responsibility of the AAC.
- I. The AAC shall submit unit pricing consistent with the unit price schedule in the event that work outside of the Base Bid Scope of Work is necessary.
- J. The intent of the project is to remove only the identified and assumed ACM that will be impacted by the Project.
- K. Work under this project may be performed in phases to accommodate Owner and Engineer requirements and construction phases. Coordinate abatement schedule and operations with the Owner/Engineer/Owner's Consultant and other trades to include, if any, remobilization fees to support the phasing.
- L. The AAC shall determine the quantities of asbestos-containing materials requiring removal prior to submission of bid. Any discrepancies must be submitted in writing in RFI format to the Owner and Architect for interpretation prior to submission of bid. The quantities provided above are estimates only.
- M. The AAC shall be responsible for the removal of mechanical equipment to facilitate asbestos removal. Refer to Section 02 07 50 Selective Demolition for Asbestos Abatement for additional requirements.
- N. If rental equipment will be utilized during abatement activities, the AAC shall provide written acknowledgement to the rental equipment provider and copy the Owner's Consultant stating that equipment will be used during asbestos removal and will be thoroughly decontaminated prior to being returned.
- O. The working hours for the project have not been determined. Coordinate working hours with the Owner and Owner's Consultant prior to the start of the project.
- P. The Owner shall provide power and water sources for use by the AAC. The AAC shall make all temporary connections utilizing only licensed plumbers and

electricians as necessary for the work.

- Q. The Owner shall be responsible for relocating all stored moveable objects within each work area.

1.04 QUALITY ASSURANCE

- A. The AAC shall be licensed by the State of Connecticut Department of Public Health (DPH) to perform asbestos abatement at areas where > 3 SF or 3 linear feet (LF) of interior ACM is disturbed and/or where exterior abatement of > 3 SF or >3 LF of ACM is rendered friable.
- B. The Asbestos Abatement Supervisor(s) and Asbestos Abatement Workers shall be accredited in accordance with EPA regulation 40 CFR Part 763, subpart E, Appendix C; and shall be licensed by the State of Connecticut Department of Public Health.

1.05 APPLICABLE CODES

- A. The AAC shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state and local regulations and guidelines pertaining to asbestos abatement. Specifically, the AAC shall comply with the requirements of the following:
 - 1. USEPA AHERA Regulation (40 CFR 763 Final Rule and Notice);
 - 2. USEPA NESHAP Regulations (40 CFR 61, Subpart M);
 - 3. OSHA Asbestos Regulations (29 CFR 1910.1001 and 1926.1101);
 - 4. Connecticut DEEP Regulations (Section 22a-209-8 (I) and Section 22a-220 of the Connecticut General Statutes);
 - 5. Connecticut DPH Standards for Asbestos Abatement Sections 19a-332a-1 to 19a-332a-16;
 - 6. Connecticut DPH Asbestos-Containing-Materials in Schools Regulations (19a-333-1 through 19a-333-13);
 - 7. Connecticut DPH Licensure and Training Requirements Section 20-440-1 to Section 20-440-9.
 - 8. Connecticut Basic Building Code (BOCA);
 - 9. Connecticut Fire Safety Code (NFPA);
 - 10. Local health and safety codes, ordinances or regulations pertaining to asbestos remediation and all national codes and standards including ASTM, ANSI, and Underwriter's Laboratories.

1.06 EXEMPTIONS

- A. This project was designed by a State of Connecticut Department of Public Health licensed Asbestos Abatement Designer. Any deviation from these specifications requires the written approval and authorization from the Designer.
- B. Any deviations from CTDPH Standards for Asbestos Abatement Sections 19a-332a-1 through 19a-332a-16 must be requested in writing and must be approved in writing by CTDPH.

1.07 NOTIFICATIONS, POSTINGS AND PERMITS

- A. The AAC shall make the following notifications and provide the submittals to the following agencies prior to the commencement of removal work involving greater

than ten (10) linear feet or twenty-five (25) square feet of ACM per site. This notification is required ten (10) days (10 calendar days for CTDPH and 10 business days for USEPA) prior to the start of the abatement project:

1. State of Connecticut
Department of Public Health
Indoor Air Program, MS #12 AIR
410 Capitol Avenue
P.O. Box 340308
Hartford, CT 06134-0308
2. USEPA New England Headquarters
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912

Note: Effective December 14, 2017, EPA needs to be notified directly for all asbestos abatement projects involving >160 square feet or >260 linear feet or 35 cubic feet of ACM.

The minimum information included in the notification includes:

1. Name and address of building owner/operator
2. Building location
3. Building size, age, and use
4. Amount of friable asbestos
5. Work schedule, including proposed start and completion date
6. Asbestos removal procedures to be used
7. Name and location of disposal site for generated asbestos waste, residue, and debris

Ten day notifications shall be posted for each individual phase of the project.

1.08 WORK SITE SAFETY PLAN

- A. The AAC 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. A method to notify workers in the event of a fire or other emergency requiring evacuation of the building.
 6. 24 hour site security program.

The AAC is responsible for training all workers in these procedures.

1.09 ALTERNATIVE WORK PRACTICES (AWP)

- A. No AWP's have been submitted or approved for this project.
- B. Any deviations from these specifications require the written approval and authorization from the Owner and the Owner's Consultant.

- C. Any deviations from CTDPH Standards for Asbestos Abatement Sections 19a-332a-1 through 19a-332a-16 must be requested in writing and must be approved in writing by CTDPH.

1.10 RE-OCCUPANCY CLEARANCE

- A. Re-occupancy air sampling will be required within all interior work areas involving the disturbance of >3 SF or > 3 LF of ACM. The Owner's Consultant reserves the right to collect re-occupancy air samples within spot repair work areas where less than three (3) linear or three (3) square feet of ACM is removed.
- B. The Owner shall be responsible for payment of the sampling and analysis of initial final air clearance samples only. The AAC shall be responsible for payment of all costs associated with the collection and analysis of additional final air clearance samples for areas that failed the initial test.
- C. Phase Contrast Microscopy (PCM) air samples will be analyzed by the Owner's Consultant. Transmission Electron Microscopy air samples will be analyzed by an independent laboratory on a 24-hour turnaround time. It is anticipated that each work area will require re-occupancy air clearance monitoring utilizing TEM analysis.

1.11 CONTROL OVER REMOVAL WORK

- A. All AAC work procedures shall be monitored by the AAC's "Competent Person" to ensure that areas outside the designated work locations do not become contaminated. The following controls shall be implemented each working day to help ensure this:
 - 1. Prior to work on any given day, the AAC's designated "Competent Person" shall evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the building or the employees. This includes a visual survey of the work area and the decontamination enclosure systems.
- B. The AAC shall maintain control of and be responsible for access to all work areas to ensure the following requirements:
 - 1. Nonessential personnel are prohibited from entering the area;
 - 2. All authorized personnel entering the work area shall sign the work area entry log;
 - 3. 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;
 - 4. All personnel who are exiting from the decontamination enclosure system shall be properly decontaminated;
 - 5. 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 or immediately placed in locked, posted temporary storage on site, and be removed within 24 hours of the project conclusion.
 - 6. 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.

1.12 SITE SECURITY

- A. The AAC shall be responsible for the security of regulated areas. Post asbestos abatement warning signs at entrances to the work area including the waste load out and worker decontamination chamber. The AAC shall have a supervisor monitoring the entrance of the worker decontamination chamber during abatement work.
- B. The supervisor shall maintain a work area access log for each work area. The access log shall document each person that enters the work area, the time entered and the time exited. Copies of the work area access logs shall be provided to the Owner's Consultant during the course of the project.
- C. If the building will be occupied during the abatement project. The HMAc shall maintain all signage and barriers as defined in the Variance Approval for each phase of work.
- D. The HMAc shall use only those entrances and exits to the building established for contractors use.

1.13 PERSONNEL PROTECTION

- A. Prior to commencing work, instruct all workers in all aspects of personnel protection, work procedures, emergency procedures use of equipment including procedures unique to this project.
- B. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134, 29 CFR 1926.11, 29 CFR 1926.62 and the requirements of the CTDPH Standards for Asbestos Abatement (19a-332a-1 through 16). A formal respiratory protection program must be implemented in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134. The AAC shall conduct exposure assessment air sampling, analysis and reporting to ensure the workers are using appropriate respiratory protection.
- C. The AAC shall provide appropriate respiratory protection for each worker and ensure usage during potential asbestos exposure.
- D. The AAC shall provide respirators from among those approved as being acceptable for protection by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part II.
- E. The AAC shall provide an adequate supply of filter for respirators in use.
- F. Minimum respiratory protection shall be as follows:

Air borne Asbestos Level:

Not in excess of 1 f/cc (10 x PEL)

Required Respirator:

Half mask air purifying or otherwise as required respirator other than a disposable respirator, equipped with HEPA P 100 filters.

Not in excess of 5 f/cc (50 x PEL)	Full facepiece air purifying respirator equipped with HEPA P 100 filters.
Not in excess of 10 f/cc (100 x PEL)	Any powered air purifying respirator equipped with HEPA P 100 filters or any supplied air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1000 x PEL)	Full facepiece supplied air respirator operated in pressure demand mode.
Greater than 100 f/cc (1000 x PEL)	Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.

Notes:

1. Respirators assigned for higher airborne fiber concentrations may be used at lower concentrations.
 2. A high efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.
 3. In addition to the selection criteria in paragraph 1.15F, the AAC shall provide a tight-fitting powered air purifying respirator equipped with high efficiency filters or a full facepiece supplied air respirator operated in the pressure demand mode equipped with HEPA egress cartridges or an auxiliary positive pressure self-contained breathing apparatus for all employees within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced and the exposure assessment indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions if the exposure assessment indicates exposure levels above 1 f/cc as an 8 hour time weighted average.
 4. If compresses air is used for supplied air respirators, this air will meet the requirements for grade D breathing air as described by the Compresses Gas association commodity Specification G-7.1-1966. The compressor will be equipped with the necessary safety devices and sorbends/filters, and be situated to avoid entry of contaminated air. In addition, the compressor will be equipped with alarms to indicate failure or overheating, and additional alarms for indicating the presence of carbon monoxide. Air line couplings will be incompatible with outlets for other gas system to prevent inadvertent servicing of air line respirators with non-respirable gases.
- G. The AAC shall provide and require all workers to wear protective clothing in Work Areas where asbestos fiber concentration exceeds permissible limits established by the OSHA or where contamination exists. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.
- H. The AAC shall ensure that all authorized persons entering contaminated areas are equipped with proper respirators and protective clothing.

1.14 WORKER PROTECTION PROCEDURES

- A. The AAC shall monitor airborne asbestos concentrations in the workers' breathing

zone to establish conditions and work procedures for maintaining compliance with OSHA Regulations 29 CFR 1910.1001 and 1926.1001.

- B. The AAC's air sampling professional shall document all air sampling results and provide all air sampling reports as soon as feasible. OSHA air monitoring results shall be posted at a conspicuous location at the job site.
- C. All personnel air sampling shall be conducted in accordance with methods described in OSHA standards 29 CFR 1910.1001 and 1926.1101.

1.15 SUBMITTALS

- A. The AAC will submit one (1) copy of the following submittals to the Owner's Consultant ten (10) calendar days prior to the commencement of removal work:
 - 1. AAC's construction schedule
 - 2. Shop drawings showing work area configuration with decontamination facility and negative air exhaust locations for each site
 - 3. Waste generator label to be used at each site including facility address, Owner's information and name of AAC
 - 4. Waste shipment and disposal form to be used with generator information completed for each site.
 - 5. Waste hauling contractor and associated licenses
 - 6. Asbestos abatement training (initial and current refresher), licenses, medical and respirator fit-test records of each employee who may be on the project site
 - 7. The qualifications of the hygiene firm that the AAC proposes to use for this project to analyze AAC employee OSHA exposure monitoring samples
 - 8. Copies of all notifications and permits
 - 9. Copies of the written respirator plan compliant with the most current issue of OSHA 1910.134
 - 10. Copies of all SDS sheets for materials to be used on site
 - 11. Work Site Safety Plan
 - 12. Negative Exposure Assessment, if any
 - 13. AAC's State of Connecticut Asbestos Contractor license
 - 14. State and EPA Asbestos Notifications
- B. The AAC will submit the following to the Consultant during the work:
 - 1. Results of all personal air sampling
 - 2. Certificate of training (initial and current certification), medical, and fit-test records for new employees to start work (24 hours in advance of work).
 - 3. AAC site logs and containment access logs
 - 4. Revised Notifications, if any.
- C. The following shall be submitted to the Consultant at the completion of work:
 - 1. Completed copies of Waste Shipment Records (WSR).
 - 2. Remaining personal air sampling results and site logs.

1.16 DEFINITIONS

- A. ABATEMENT - Procedures to control fiber release from asbestos-containing

materials; includes removal, encapsulation, and enclosure.

- B. AIRLOCK - A system for permitting ingress and egress while assuring air movement to a contaminated area from an uncontaminated area. Two curtained doorways spaced a minimum of six feet apart can form an airlock.
- C. AIR MONITORING - The process of measuring the fiber concentration of an area or of a person.
- D. AIR SAMPLING PROFESSIONAL – A licensed professional capable of developing air sampling protocols and conducting air monitoring and analysis. 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 1926.1101.
- E. ADEQUATELY WETTED - means sufficiently mixed or coated with water, amended or an aqueous solution; or the use of removal encapsulant to prevent dust emissions.
- F. AMENDED WATER - Water to which a surfactant has been added.
- G. 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 that have been chemically altered.
- H. ASBESTOS ABATEMENT - Means the removal, encapsulation, enclosure, renovation, or repair of asbestos-containing materials except activities that are related to the removal or repair of asbestos cement pipe and are performed by employees of a water company as defined in Section 25-32a of the Connecticut General Statutes.
- I. ASBESTOS ABATEMENT SITE SUPERVISOR - Means any licensed individual who is employed or engaged by an AAC to supervise an asbestos abatement project.
- J. ASBESTOS ABATEMENT WORKER - Means any employee of an AAC who engages in asbestos abatement.
- K. ASBESTOS CONSULTANT - Any person who engages in any activity directly involved with asbestos consultation services and who has been issued a certificate by the commissioner and a license by the department.
- L. ASBESTOS CONTAINING MATERIAL (ACM) - A material composed of asbestos of any type and in an amount greater than one percent by weight, either alone or mixed with other fibrous or nonfibrous material.
- M. ASBESTOS CONTRACTOR - Any person or entity engaged in asbestos abatement whose employees actually perform asbestos abatement work.
- N. ASBESTOS CONTROL AREA - An area where asbestos abatement operations are performed which is isolated by physical boundaries to prevent the spread of asbestos dust, fibers, or debris.

- O. ASBESTOS FIBERS - Those particles with a length greater than five (5) microns and a length to diameter ratio of 3: 1 or greater.
- P. ASBESTOS PERMISSIBLE EXPOSURE LIMIT (PEL) - The maximum airborne concentration of asbestos fibers to which an employee is allowed to be exposed. The current level established by OSHA is 0.1 fibers per cubic centimeter of air as an eight (8) hour time weighted average and 1.0 fibers/cc averaged over a sampling period of 30 minutes as an excursion limit. The AAC is responsible for maintaining work areas in a manner that this standard is not exceeded.
- Q. ASBESTOS PROJECT MONITOR - The licensed asbestos consultant who is certified as a project monitor and who functions as an on-site representative of the facility Owner or other persons by over-seeing the activities of the asbestos abatement contractor.
- R. AUTHORIZED VISITOR - Any person authorized by the Owner to enter the building.
- S. BUILDING OWNER - For this Contract only, the building Owner is Waterbury Public Schools.
- T. CLEAN ROOM - An uncontaminated area or room, which is a part of the workers' decontamination enclosure with provisions for storage of workers' street clothes and protective equipment.
- U. CLEARANCE SAMPLING - Final air sampling performed aggressively after the completion of the abatement project in a regulated area. Five (5) air samples collected by the asbestos abatement project monitor inside the work area, and having a fiber concentration of less than 0.010 fibers/cc of air will denote acceptable clearance sampling by Phase Contrast Microscopy. Five air samples collected by the asbestos abatement project monitor having an average asbestos concentration of less than 70 asbestos structures mm/sq. will denote acceptable clearance sampling for Transmission Electron Microscopy.
- V. COMMISSIONER - Means the Commissioner of the Connecticut Department of Health Services or his/her authorized agent.
- W. COMPETENT PERSON - A representative of the AAC who is capable of identifying an asbestos hazard and who has the authority to take prompt corrective measures to eliminate the hazard during asbestos removal.
- X. CONFINED SPACE - A work zone where access and egress are restricted, a potential for gaseous vapors to accumulate exist, or a potential for low oxygen content exists.
- Y. 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.
- Z. DEPARTMENT - The State of Connecticut Department of Public Health.
- AA. EPA - Means the U.S. Environmental Protection Agency.

- BB. ENCAPSULANT - A liquid material that can be applied to asbestos-containing material that controls the possible release of asbestos fibers from the materials by either creating a membrane over the surface (bridging encapsulant) or penetrating the material and binding its components together (penetrating encapsulant).
- CC. ENCAPSULATION - A specified asbestos remediation strategy involving the application of an encapsulant to asbestos containing materials to control the release of asbestos fibers into the air.
- DD. EQUIPMENT DECONTAMINATION ENCLOSURE - That portion of a decontamination enclosure system designed for controlling the transfer of materials and equipment, typically consisting of a washroom and a holding area.
- EE. EQUIPMENT ROOM - A contaminated area or a room, which is part of the workers' decontamination enclosure with, provisions for storage of contaminated clothing and equipment.
- FF. FACILITY - Means any private or public building or structure including but not limited to those used for institutional, residential (including single family homes), commercial or industrial purposes and vessels while ashore or in dry-dock.
- GG. FIXED OBJECT - A unit of equipment or furniture in the work areas which cannot be removed from the work area.
- HH. FRIABLE ASBESTOS MATERIAL - Any material that contains more than 1% asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.
- II. GLOVE BAG - An impervious plastic bag-like enclosure affixed around asbestos containing material, with glove-like appendages through which materials and tools may be handled.
- JJ. ASBESTOS ABATEMENT CONTRACTOR (AAC) - Means the Asbestos Contractor.
- KK. HEPA FILTER - A high efficiency particulate air (HEPA) filter in compliance with ANSI Z9.2-1979.
- LL. HEPA VACUUM EQUIPMENT - Vacuum equipment with a HEPA filter system for filtering the effluent air from the unit.
- MM. HOLDING AREA - An air-locked chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.
- NN. INSPECTOR (ASBESTOS ABATEMENT PROJECT MONITOR)- An individual, retained by the Building Owner, who is a "qualified asbestos abatement project monitor" as defined by the State of Connecticut Department of Public Health, and who will be responsible for monitoring the AAC during the asbestos abatement project.
- OO. MOVABLE OBJECT - A unit of equipment or furniture in the work area, which can be removed from the work area.
- PP. NEGATIVE AIR FILTRATION EQUIPMENT - A portable local exhaust 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.

- QQ. OWNER'S CONSULTANT - The Asbestos Consultant for the project.
- RR. NESHAPS - National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.
- SS. PLASTICIZE - To cover floors and walls with plastic sheeting as specified herein.
- TT. SEPARATION BARRIER - A rigid barrier sealed with two (2) layers of six (6) mil polyethylene sheeting installed between an occupied area and the asbestos abatement work area.
- UU. SHOWER ROOM - A room between the clean room and the equipment room in the workers' decontamination enclosure with hot/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.
- VV. STRIPPING - Removing asbestos materials from any structural member, pipe surface, HVAC, or other equipment.
- WW. WASHROOM - A room between the work area and the holding area in the equipment decontamination enclosure with provisions for storage of contaminated clothing and equipment.
- XX. WET CLEANING - The process of reducing asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools, which have been dampened by amended water, and by then disposing of these cleaning items as asbestos contaminated waste.
- YY. WORK AREA - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are occurring and which may become contaminated as a result of such abatement actions. The work area must be totally self-contained by sealing, plasticizing and equipping the area with a decontamination enclosure system.
- ZZ. WORKER DECONTAMINATION ENCLOSURE SYSTEM - That portion of a decontamination enclosure system designated for controlled passage of workers, other personnel, and authorized visitors, typically consisting of a clean room, a shower room, and an equipment room.
- AAA. WORK STOPPAGE CLEANUP PROCEDURE - A process following the issuance of a written stop work order, whereby the AAC thoroughly cleans and decontaminates the work area, the decontamination enclosure system, and any other areas of the building affected by the removal project, to the satisfaction of the Asbestos Project Monitor.
- BBB. WORK ZONE - The area of the decontamination enclosure system where asbestos is being removed.

1.17 PRECONSTRUCTION MEETING

- A. The AAC shall be required to attend a preconstruction meeting with his/her site supervisor, any subcontractor they employ on site for the purpose of reviewing the contract requirements.

PART 2 - MATERIALS AND EQUIPMENT

2.01 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 job site with factory label indicating 4 or 6 mil.
- D. Polyethylene disposable bags shall be true six (6) mil with preprinted labels.
- E. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheets 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. 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.
- H. Labels and signs, as required by OSHA Standard 29 CFR 1926.1001 will be used.
- I. Encapsulant shall be bridging or penetrating type which has been found acceptable to Eagle Environmental. Usage shall be in accordance with manufacturer's printed technical data.
- J. Disposal labels shall be preprinted on self-adhesive labels with the generator name, abatement Site and AAC's name and address. Labels shall not be photocopied and applied with spray adhesive.
- K. Glovebags shall be a minimum of 6-mil thick and shall comply with OSHA standards.

2.02 TOOLS AND EQUIPMENT

- A. Provide suitable tools for asbestos removal, encapsulation and enclosure.
- B. The AAC shall have air monitoring equipment of type and quantity to monitor

operations and conduct personnel exposure surveillance per OSHA requirements.

- C. The AAC shall have available sufficient inventory on site 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 AAC shall provide temporary electrical power sources such as generators (when required).
- E. The AAC shall have available shower stalls and sufficient hose length and a drain system equipped with 5-micron filters.
- F. Exhaust air filtration system units shall contain HEPA filter(s) capable of sufficient air exhaust to create negative pressure of -0.02 inches of water within the enclosure with respect to the outside area. Equipment shall be checked for proper operation by smoke tubes or a differential pressure gauge before the start of each shift and at least twice during the shift. 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.
- G. Vacuum units, of suitable size and capacities for project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers in diameter or larger.
- H. The AAC will have reserve exhaust air filtration system units in order to maintain negative air filtration in the event that a unit malfunctions during use.
- I. The AAC shall have available and use recording manometers to monitor pressure differential between the work area and occupied areas of the building. A minimum negative pressure differential of 0.02 inches of water column shall be maintained.
- J. The AAC shall have available spray equipment capable of mixing a wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all areas with asbestos.
- K. HEPA filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports where asbestos-containing materials may be disturbed.

PART 3 - EXECUTION

3.01 INTERIOR WORK AREA PREPARATION (>3 LF/SF ACM) - GENERAL

- A. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All temporary installations are to be made by a licensed electrician.
- B. Shut down electrical power, including receptacles and light fixtures. Lock and tag out circuits associated with the electrical components in the work area(s). Under no circumstances during the abatement procedures will lighting fixtures be permitted to be energized.
- C. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to

prevent contamination and fiber dispersal to other areas of the structure. Lock and tag out circuits associated with heating and cooling units. During the work, vents within the work area shall be sealed with duct tape and polyethylene sheeting.

- D. Seal off all openings, including but not limited to windows, corridors, doorways, skylights, ducts, grills, diffuser, and any other penetration of the work areas, with polyethylene sheeting minimum of six (6) mil thick sealed with duct tape. This includes doorways and corridors which will not be used for passage during work areas and occupied areas. Install 5 micron water filtration socks in all floor drains and toilet waste drains prior to sealing.
- E. Where friable asbestos containing materials are present, establish worker decontamination facility, air tight barriers and negative air filtration prior to conducting pre-cleaning activities. Pre-clean fixed objects within the work areas, using HEPA vacuum equipment and/or wet cleaning methods as appropriate, and enclose with minimum six (6) mil plastic sheeting sealed with duct tape.
- F. Pre-clean movable objects within the work areas, using HEPA vacuum equipment and wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.
- G. After HEPA vacuum pre-cleaning, conduct work area preparation in accordance with this Specification section.
- H. Where fixed walls are not used, one layer of six (6) mil polyethylene sheeting will be applied to a rigid framework of wood, metal, or PVC.
- I. Install two (2) layers of four (4) mil polyethylene wall sheeting over all wall surfaces and airtight barriers. All overlaps shall be sealed with tape or spray adhesive.
- J. Spray glue shall not be permitted on walls to remain. Protect all walls from damage during installation and removal of wall sheeting and associated tape. The AAC shall be responsible for all repairs to walls damaged by installation or removal of wall sheeting and associated tape.
- K. Cover all floors in the work area with two (2) layers of six (6)-mil polyethylene sheeting (where flooring materials are not being removed as ACM). Extend the polyethylene flooring a minimum of twelve (12) inches up the walls. Ensure that each layer of wall sheeting overlaps each layer of floor sheeting from the top.
- L. Maintain emergency and fire exits from the work area, or establish alternative exits satisfactory to fire officials.
- M. Create pressure differential between work areas and occupied areas by the use of acceptable negative air pressure equipment. The AAC shall ensure required negative air pressure is obtained throughout the containment and the total volume of air within the work area is changed every fifteen (15) minutes.
- N. Install and maintain a manometer for each negative pressure enclosure where Class I work will be performed.
- O. Post all approaches to each work area with Asbestos Warning signs. Warning signs shall be of size and type that are easily readable and are visible from all

approaches to the work areas.

- P. Prepare and modify work area preparation in accordance with any Variances where applicable.
- Q. Establish work area access log at clean room to worker decontamination system.

3.02 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM

- A. In areas where greater than three (3) linear or square feet of ACM will be removed, the AAC shall establish contiguous to each work area, where feasible, a personnel decontamination system consisting of equipment room, shower room and clean room in series. Access between the contaminated and uncontaminated areas shall be through this decontamination enclosure only. The decontamination system shall be constructed of two (2) layers of six-mil polyethylene sheeting. Pre-fabricated "pop-up" decontamination chambers in poor condition will not be permitted on this project.
- B. Access between rooms in decontamination system shall be through double flap-curtained openings. Clean room, shower room and equipment room within decontamination system shall be completely sealed ensuring that the sole source of air flow through this area originates from uncontaminated areas outside the work area.
- C. The shower unit shall be equipped with an adequate supply of warm water. A shower filtration pump containing two (2) 5-micron sock filters or the best available technology shall be installed to filter shower water. Filtered shower water shall be discharged into sanitation drains and shall not be discharged into storm drains or onto floor or ground surfaces.
- D. The shower room shall have soap and an adequate supply of drying towels. Provide an adequate number of shower units in accordance with OSHA 29 CFR 1926.1101.

3.03 REMOTE PERSONNEL DECONTAMINATION SYSTEM

- A. The AAC shall establish a remote personnel decontamination system where contiguous decontamination systems are not feasible and where spot repair procedures will be performed. The use of such remote decontamination unit must be indicated in the State Notification if applicable. The decontamination system shall be constructed of two (2) layers of six-mil polyethylene sheeting. Pre-fabricated "pop-up" decontamination chambers in poor condition will not be permitted on this project. Two (2) contiguous chambers shall be established at the entry to each containment when remote decontamination unit is utilized.
- B. Access between rooms in decontamination system shall be through double flap-curtained openings. Clean room, shower room and equipment room within decontamination system shall be completely sealed ensuring that the sole source of air flow through this area originates from uncontaminated areas outside the work area.
- C. The shower unit shall be equipped with an adequate supply of warm water. A shower filtration pump containing two (2) 5-micron sock filters or the best available technology shall be installed to filter shower water. Filtered shower water shall be discharged into sanitation drains and shall not be discharged into storm drains or onto floor or ground surfaces.

- D. The shower room shall have soap and an adequate supply of drying towels. Provide an adequate number of shower units in accordance with OSHA 29 CFR 1926.1101.
- E. The remote personnel decontamination unit shall be located in the vicinity of the asbestos abatement work for easy access by asbestos workers.

3.04 WASTE LOAD OUT SYSTEMS

- A. The AAC shall establish waste load out systems, attached to the work areas. Waste load out systems shall consist of a minimum of two (2) chambers that are of suitable size for transporting waste and/or equipment out of the work area. Waste load out systems shall be constructed of two layers of six-mil polyethylene sheeting.
- B. Access between rooms in the waste load out system shall be through double flap-curtained openings. The waste load out system shall be used for decontaminating waste containers, bags, bundles, etc. prior to removal from the work area and transporting waste from the work area to the non-work area.
- C. Persons working inside the contaminated work area are not permitted to pass from the work area to the non-work area through the waste load out system. Persons inside the contaminated work area shall not be permitted to enter into the clean area of the waste load out system.
- D. The waste load out system shall remain sealed at all times except during decontamination of waste containers and transport of waste from the work area to the non-work area.

3.05 ASBESTOS REMOVAL PROCEDURE - GENERAL

- A. The AAC shall have a designated "Competent Person" on the job at all times where > 3 SF or > 3 LF of ACM is disturbed to ensure establishment of a proper enclosure system and proper work practices throughout the project. At a minimum, the AAC Competent Person shall perform or supervise the following duties, as applicable:
 - 1. Ensure the integrity of the containment or enclosure.
 - 2. Set up procedures to control entry to and exit from the enclosure.
 - 3. Supervise employee exposure monitoring.
 - 4. Ensure that employees set up, use and remove engineering controls, use work practices and personal protective equipment in compliance with OSHA regulations.
 - 5. Ensure that employees use the worker decontamination facilities and observe decontamination procedures.
- B. Abatement work will not commence until all work area preparation is completed in accordance with this technical specification section.
- C. Spray asbestos materials with amended water using airless spray equipment or apply removal wetting agent to reduce the release of fibers during removal operation.
- D. Spraying of amended water shall be adequate enough to allow the ACM to absorb the water. Actual removal of ACM shall not be allowed until all ACM has

become adequately wet.

- E. Do not create any visible emissions during asbestos removal. Ensure all ACM is adequately wet prior to removal.
- F. Fill disposal containers as removal proceeds. Seal filled containers before moving to waste load out system. Wet clean each container thoroughly, double bag, drum or use other approved containerization methods and apply a caution label before moving to holding area.
- G. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos- contaminated debris.
- H. Solidify all liquid waste prior to containerization for disposal.
- I. 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 waste load out system at an appropriate time in the cleaning sequence.
- J. The AAC shall remove from each containment all abated asbestos containing materials at the end of each work shift.
- K. At any time during asbestos removal, should the competent person suspect contamination of areas outside the work area(s), they shall cause to stop all abatement work until steps to decontaminate these areas and eliminate causes of such contamination are completed. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections certify decontamination.
- L. Upon acceptance of the work area by the Owner's Consultant, the AAC shall apply an even coating of bridging encapsulant with airless spray equipment to all exposed surfaces contained within the work area. Apply encapsulant in accordance with manufacturer's recommendation.

3.06 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – MUDDERED PIPE FITTING CEMENT

- A. Minimum specific requirements relative to the removal of thermal system insulation, including mudded pipe fitting cement are as follows.
 - 1. Prior to the removal of any mudded pipe fitting cement, the AAC shall ensure the work area is prepped in accordance with the requirements of Part 3.01 INTERIOR WORK AREA PREPARATION – (>3SF/LF) GENERAL and Part 3.03 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM.
 - 2. Prior to the removal of any mudded pipe fitting cement, removal all non-asbestos fiberglass duct and pipe insulation within the work area. Leave a minimum of six inches of fiberglass pipe insulation from the mudded pipe fittings.
 - 3. Utilizing an airless sprayer, the AAC shall adequately wet all mudded pipe fitting cement. Do not wet fiberglass pipe insulation scheduled to remain.
 - 4. Remove thermal systems pipe and fitting insulation from piping and place directly into disposal bags. Do not allow to accumulate on floors of the

containment.

5. Cut fiberglass pipe insulation back a minimum of three inches from each fitting.
6. Ensure material is adequately wet prior to sealing disposal bag.
7. Remove all visible residues from pipes and fittings using nylon scrub pads. Wire brushes are prohibited.
8. Clean all lengths of pipes, fittings, hangars, saddles, supports and threads until they are free of visible residue.

3.07 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – CLOTH VIBRATION DAMPENERS

- A. Minimum specific requirements relative to the removal of vibration dampeners are as follows.
 1. The AAC may remove the entire component following CTDPH guideline dated April 7, 2003 for “intact removal of non-friable ACM”. Removal shall be performed within a regulated area posted with asbestos warning signs and drop clothes installed within work area.
 2. Vibration dampeners shall be removed by unscrewing connector from base duct work or cutting duct work on either side of connector without disturbing vibration dampener. HEPA vacuum and wet wipe remaining duct work following vibration dampener removal.
 3. Removed vibration dampeners shall be made wet and properly packaged and labeled for disposal as asbestos waste.

3.08 MINIMUM SPECIFIC ASBESTOS REMOVAL PROCEDURE – NON-FRIABLE DUCT PIN TAB ADHESIVE

- A. Prior to the removal of any asbestos-containing pin tab adhesive or fiberglass removal, the AAC shall ensure the work area is prepared in accordance with the requirements of Part 3.01 INTERIOR WORK AREA PREPARATION – (>3SF/LF) GENERAL and Part 3.03 CONTIGUOUS PERSONNEL DECONTAMINATION SYSTEM..
- B. The AAC shall remove all fiberglass insulation within the interior duct work of the Pool Basement Area and dispose of as asbestos waste.
- C. The AAC shall remove all fiberglass insulation on the exterior duct work and piping in Fan Rooms 1 and 2 and dispose of as non-asbestos waste. The removal of non-asbestos fiberglass duct and pipe insulation shall be completed prior to any asbestos removal within the work area. Fiberglass insulation that becomes contaminated or comingled with asbestos materials shall be disposed of as asbestos-contaminated waste at the AACs expense.
- D. The AAC shall request a visual inspection by the Owner’s Asbestos Project Monitor at the completion of fiberglass removal in order to review existing conditions of pin tabs and associated adhesive.
- E. The AAC shall remove pin tabs and adhesive from ducts, where present. Pin tab adhesive shall be manually removed. Mechanical grinders, if used, shall be

equipped with HEPA filtered dust collection devices.

- F. The AAC may remove portions of duct that are scheduled for demolition and which contain pin tab adhesive and dispose of duct sections as asbestos waste. The AAC must review Engineers plans to determine extent of duct insulation in each area.
- G. Remove all pin tab adhesive until no visible residue remains.
- H. Waste shall be packaged per Part 3.11 WASTE PACKAGING AND REMOVAL PROCEDURE before being removed from the regulated area.
- I. Waste shall be transported to the appropriate lined waste container by the end of each work shift.
- J. Final clean work area in accordance with Section 3.10 FINAL CLEANING AND ENCAPSULATION.

3.10 FINAL CLEANING AND ENCAPSULATION

- A. Upon completion of gross removal of all ACM specified for removal, the AAC shall begin final cleaning of the effected work area. The AAC shall HEPA vacuum and wet wipe all surfaces contained within the work area.
- B. All tools or equipment that are not necessary for final cleaning shall be decontaminated or bagged and removed from the work area enclosure.
- C. The AAC shall begin final cleaning procedures at the furthest and highest most points from the personnel decontamination unit and move towards the unit. The AAC shall ensure that all exposed building components and or surfaces are thoroughly HEPA vacuumed and wet wiped.
- D. The AAC shall HEPA vacuum and wet wipe any component specified to remain inside the work area enclosure.
- E. The AAC shall thoroughly wet wipe all polyethylene sheeting inside the work area enclosure.
- F. Remove and replace all pre-filters on negative air filtration equipment. Decontaminate all negative air filtration equipment including wheels.
- G. Remove all waste from Equipment Room in Decontamination System. Decontaminate entire personnel decontamination facility. Pump standing water from shower basin through filtration system
- H. Once all surfaces and components within the work area have been thoroughly cleaned, AND THE WORK AREA IS DRY, the AAC's Competent Person shall perform a visual inspection of all surfaces and components within the work area enclosure. The AAC's Competent Person shall sign off on the work area stating that all abatement has been completed for that portion of work and that the work area has met the no visible residue criteria.
- I. The AAC's Competent Person shall then request a final visual inspection to be

performed by the Owner's Consultant. The Owner's Consultant shall visually inspect all surfaces and components in the work area for residual debris and or dust. Work areas must be dry for final visual inspection. Inspections will not be performed in work areas where there is standing water or wet surfaces. Additional cleaning shall be performed at the AAC's expense if the Owner's Consultant identifies visual debris and/or dust during the visual inspection. Additional cleaning shall be performed until the work area meets the no visible residue/dust criteria.

- J. Upon acceptance of the work area by the Owner's Consultant, the AAC shall apply an even layer of bridging encapsulant to all surfaces contained within the work area. The Owner's Consultant shall verify the completeness of work area encapsulation.

3.11 WASTE PACKAGING AND REMOVAL PROCEDURE

- A. The AAC shall strictly adhere to the requirements of this section for ACM waste packaging and transporting waste from the work area enclosure to the disposal dumpster.
- B. Waste disposal bags and drums shall be affixed with pre-printed OSHA warning labels, DOT labels and NESHAP labels.
- C. Each container of ACM waste shall be made adequately wet prior to sealing the container. Bags shall be sealed immediately following additional wetting procedures. Bags of ACM waste shall not be permitted to remain unsealed while in the work area enclosure.
- D. Each bag of ACM waste shall be double-bagged during waste load out procedures. The following waste load out procedure shall be strictly adhered to:
 - 1. Wet wipe inner bag or drum to remove all ACM contamination. Ensure the inner bag is sealed.
 - 2. Transport bag or drum to the equipment room located in the worker decontamination enclosure.
 - 3. One worker, equipped with personal protective equipment, shall be inside the clean room of the worker decontamination enclosure.
 - 4. The worker in the clean room of the decontamination enclosure shall open a six-mil disposal bag and hold it open inside the shower room where the inner bag containing the ACM waste shall be placed.
 - 5. The outer bag shall be sealed with duct tape inside the shower room.
 - 6. The double bagged or drummed waste shall be removed from the decontamination enclosure and waste generator labels shall be immediately affixed to the outer bag or drum.
 - 7. Waste generator labels shall be printed self-adhering labels and shall contain the Owner's name, the site location address, and the AAC's name.
 - 8. The properly labeled waste shall be transported directly to the lined waste container.
 - 9. The waste container shall be double lined with 6-mil polyethylene sheeting.
 - 10. OSHA warning signs shall be secured to the waste container prior to any loading and unloading operations.
 - 11. The waste container shall be kept locked at all times other than loading and unloading.

3.12 DISPOSAL OF ASBESTOS AND ASBESTOS CONTAMINATED WASTE

- A. All disposal of asbestos containing and or asbestos contaminated material must be in compliance with requirements of the State of Connecticut Department of Energy and Environmental Protection (CT DEEP), CT DPH and the USEPA NESHAP regulations.
- B. Materials shall be properly packaged, labeled and disposed of as regulate asbestos waste.
- C. Disposal approvals shall be obtained from the CT DEEP before commencing asbestos removal if waste will be disposed of in Connecticut.
- D. Waste container storage locations shall be pre-approved by the Owner and Owner's Consultant.
- E. A copy of approved disposal authorization shall be provided to the Owner and Owner's Consultant and any required federal, state or local agencies.
- F. Copies of all landfill receipts will be retained by the Owner's Consultant as part of the project file. The receipts will be signed by the landfill operator on receipt, and the quantity of asbestos debris leaving the job site and arriving at the landfill acknowledged.
- G. All asbestos debris shall be transported in covered, sealed vans, boxes or dumpsters, which are physically isolated from the driver by an airtight barrier. All vehicles must be properly licensed to meet United States Department of Transportation (USDOT) requirements.
- H. Friable ACM waste shall be placed in double lined enclosed waste containers equipped with a lockable hasp. Waste containers shall be posted with OSHA warning signs during loading and unloading.
- I. All liquid waste generated during the work shall be solidified. At no time will liquid wastes be permitted to be stored on site. Liquid waste generated during this project shall be solidified prior to the end of each work shift.
- J. Completed Waste Shipment Records (WSR) signed by the landfill must be returned to the Owner or Owner's Consultant no later than 45 days from the time the waste was transported off-site. Completed waste shipment records that are not received by the Owner within 35 days shall require the AAC to begin tracking the waste. The AAC must notify the Owner of intentions on tracking the waste.
- K. The AAC must take appropriate actions as outlined in 40 CFR Part 61 NESHAP regulations when completed WSR are not forwarded to the Owner or Owner's Consultant within 45 days from the time the waste was transported off-site.

3.13 REOCCUPANCY AIR CLEARANCE MONITORING

- A. After the presealant visual inspection has passed and all surfaces in the abatement area have dried, reoccupancy air clearance monitoring will be performed. The primary and secondary barriers, worker decontamination enclosure, and negative air filtration units shall remain in place. At no time shall tools, ladders, vacuums or waste remain inside the work area enclosure during final air clearance

sampling.

- B. Once the work area has dried, the Owner's Consultant shall collect aggressive re-occupancy air clearance samples. Aggressive air monitoring will be used. Selection of the locations of the air samples shall be the responsibility of the Owner's Consultant. Air monitoring volumes shall be sufficient to provide a detection limit of 0.010 f/cc (fiber per cubic centimeter of air) using NIOSH-7400 method by Phase Contrast Microscopy (PCM) or 0.005 s/mm² (structures per square millimeter) using the AHERA Level II Transmission Electron Microscopy (TEM) method.
- C. Re-occupancy air clearance monitoring criteria shall be <0.010 f/cc by PCM and <70 structures per square millimeter for TEM.
- D. Areas that do not comply with the re-occupancy air clearance criteria shall continue to be cleaned by and at the AAC's expense until the specified re-occupancy air clearance criteria is achieved as evidenced by results of air testing as previously specified.
- E. Laboratories conducting analysis of final air clearance samples shall be approved by the State of Connecticut Department of Health.

3.19 OWNER'S CONSULTANT RESPONSIBILITY

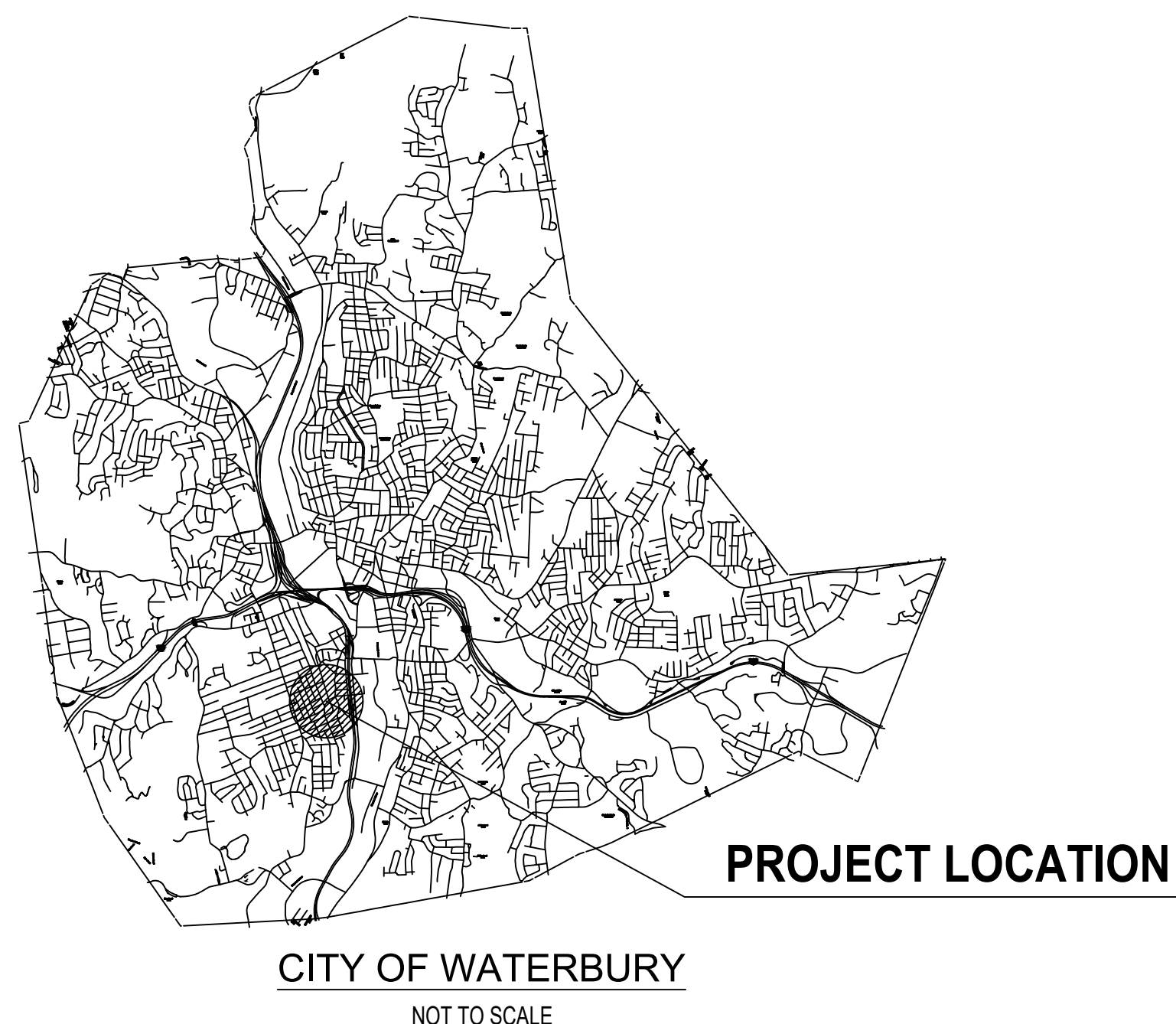
- A. The Owner's Consultant shall collect and analyze air samples to ascertain the integrity of controls, which protect the building from asbestos contamination. Independently, the AAC shall monitor air quality within the work area to ascertain the protection of employees and to comply with OSHA regulations.
- B. During phases of the work that are performed while school is in session, the Owner's Consultant shall perform additional background air sampling with same day sample analysis and submitted to CT DPH as required by the Variance approval.
- C. CT DPH has stipulated during review of the Scope of Work for this project, that ambient air sampling be conducted during the work at the interior and exterior areas of the site building where exterior non-friable material removal is occurring.
- D. The Owner's Consultant shall collect and analyze air samples during a minimum of two time periods:
 - 1. Abatement Period: The Asbestos Abatement Project Monitor shall collect samples on a daily basis during the work period. A sufficient number of background samples shall be taken outside of the work area, at the exhaust of the negative pressure filtration equipment, and outside of the building to evaluate the degree of cleanliness or contamination of the building during asbestos removal. Additional samples may be taken inside the work area and decontamination enclosure system, at the discretion of the Asbestos Abatement Project Monitor.
 - a. The Asbestos Abatement Project Monitor shall provide a continual evaluation of the air quality of the building during asbestos abatement, using his/her best professional judgments in respect to the State Department of Public Health guideline of 0.010 f/cc or

- the background air quality established during the pre-abatement period, whichever is higher.
- b. If the Asbestos Abatement Project Monitor determines that the building air quality has become contaminated from the project, he/she shall immediately inform the AAC to cease all removal operations and implement a work stoppage clean up procedure. The AAC shall conduct a thorough cleanup of areas of the building designated by the Asbestos Abatement Project Monitor. No further asbestos abatement work shall take place until the Asbestos Abatement Project Monitor has determined that the building's air has been decontaminated.
 - c. Abatement air samples shall be collected for a minimum period of ninety minutes at a minimum flow rate of 12 liters per minute, or as required to obtain a volume of 1,000 liters. Samples shall be analyzed by phase contrast microscopy (PCM) using the NIOSH 7400 protocol.
2. Reoccupancy Clearance Period: The Asbestos Abatement Project Monitor shall conduct air sampling following the final cleanup phase of the project, once the "no visible residue" criterion as established by the site supervisor and the Asbestos Abatement Project Monitor has been met.
- a. Phase Contrast Microscopy (PCM) - For work areas containing less than 260 linear feet or 160 square feet of ACM, post abatement analysis of the samples to determine if reoccupancy clearance standards have been met shall be conducted by PCM. A minimum of five (5) samples shall be collected inside each containment utilizing aggressive methods to comply with State of Connecticut DPH Standard for Asbestos Abatement sections 19a-332a-12, and 19a-332a-13. The project shall be considered complete when the results of samples collected in the work area and analyzed by phase contrast microscopy using the most current National Institute for Occupational Safety and Health (NIOSH) method 7400, to show that the concentration of fibers for each of the five samples is less than or equal to a limit of quantification for PCM (0.010 fibers per cubic centimeter of air).
 - b. Transmission Electron Microscopy (TEM) - For work areas containing greater than 260 linear feet or 160 square feet of ACM, post abatement analysis of the samples to determine if reoccupancy clearance standards have been met shall be conducted by TEM. A minimum of five (5) samples shall be collected inside containment utilizing aggressive methods to comply with State of Connecticut DPH Standard for Asbestos Abatement sections 19a-332a-12, and 19a-332a-13. An asbestos abatement project shall be considered complete when the average concentration of asbestos fibers of five air samples collected within the work area and analyzed by the TEM method in Appendix A of 40 CFR Part 763 subpart E is less than 70.0 structures per square millimeter (s/mm²) of filter surface or is not statistically significantly different, as determined by the Z-test calculation found in Appendix A of 40 CFR Part 763, subpart E, from the average asbestos concentration of five air samples collected at the same time outside the work area and

analyzed in the same manner, and the average asbestos concentration of the three field blanks described in Appendix A of 40 CFR Part 763, subpart E, is below the filter background level, as defined in Appendix A of 40 CFR Part 763 subpart E, of 70 s/mm².

- E. Inspections shall be conducted by the Owner's Consultant 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 AAC. The Asbestos Abatement Project Monitor shall perform the following inspections during the course of abatement activities.
1. Precommencement Inspection: Precommencement inspections shall be performed at the time requested by the AAC. The Asbestos Abatement Project Monitor shall be informed 24 hours prior to the time the inspection is needed. During the course of the precommencement inspection, the Asbestos Abatement Project Monitor shall inspect the containment. This shall include, but not be limited to, inspection of barrier integrity, the worker decontamination, facility, negative air filtration equipment etc. If during the course of the precommencement inspection, deficiencies are found, the AAC shall perform the necessary adjustments in order to obtain compliance.
 2. Work Area Inspections: Work area inspections shall be conducted on a daily basis at the discretion of the Asbestos Abatement Project Monitor. During the course of the work area inspections, the Asbestos Abatement Project Monitor shall observe the AAC removal procedures, verify barrier integrity, monitor negative air filtration devices, assess project progress, and inform the AAC of specific remedial activities if deficiencies are noted.
 3. Presealant Inspection: Upon the request of the AAC, The Asbestos Abatement Project Monitor shall conduct a presealant inspection. The presealant inspection shall be conducted after completion of the initial final cleaning procedures, but prior to work area encapsulation. The presealant inspection shall verify that all ACM and residual debris have been removed from the work area. If, during the course of the presealant inspection, the Asbestos Abatement Project Monitor identifies residual dust or debris, the AAC shall comply with the request of the Asbestos Abatement Project Monitor, in order to render the area is free of visible residue.
 4. Final Visual Inspection: Following receipt of acceptable reoccupancy air monitoring results and concurrent with removal of the work area containment, the Asbestos Abatement Project Monitor shall conduct a final visual inspection. If residual dust or debris is identified during the course of the final inspection, the AAC shall comply with the request of the Asbestos Abatement Project Monitor, in order to render the area free of visible residue.

END OF SECTION



KENNEDY HIGH SCHOOL AHU REPLACEMENT 422 HIGHLAND AVENUE CITY OF WATERBURY, CT

100% CONSTRUCTION DOCUMENTS

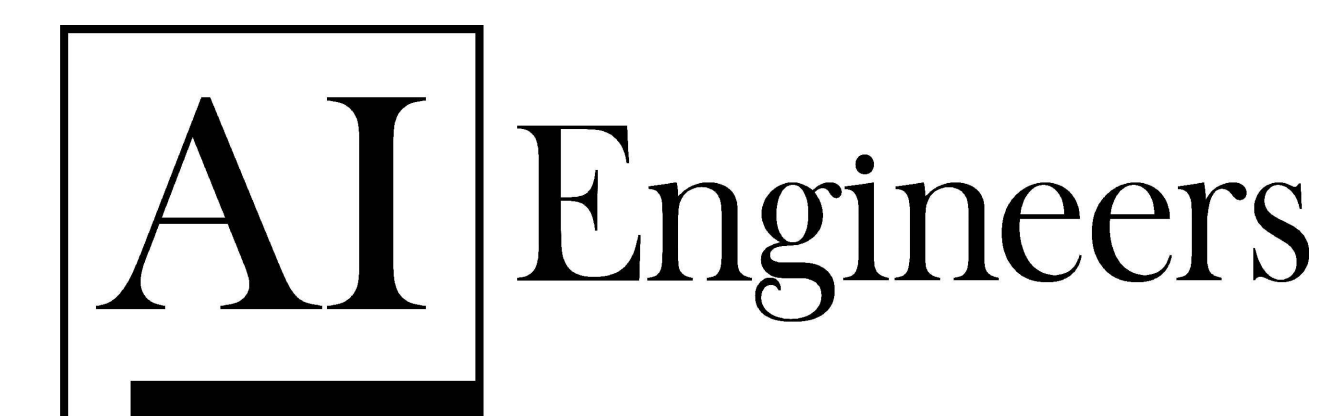
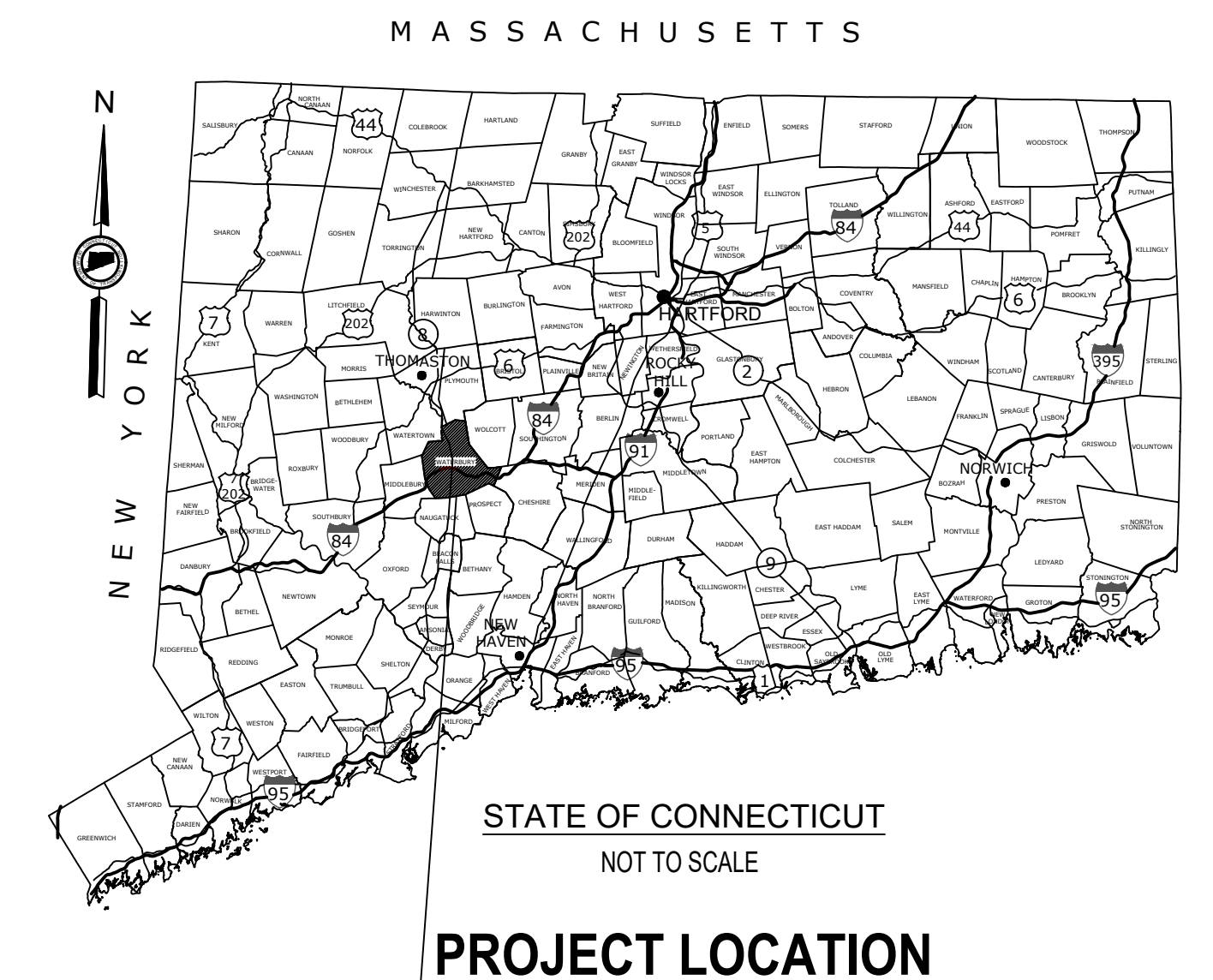
AUGUST 8TH, 2023



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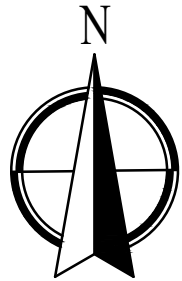


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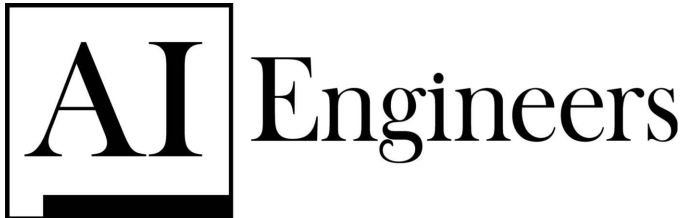
W:\2022\22580C-09_Waterbury Kennedy High School_AHU Replacement\22580C-09_AHU Replacement.dwg (22580C-09) 08/08/2023 5:10pm Howard



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E601	ELECTRICAL SCHEDULES & RISERS
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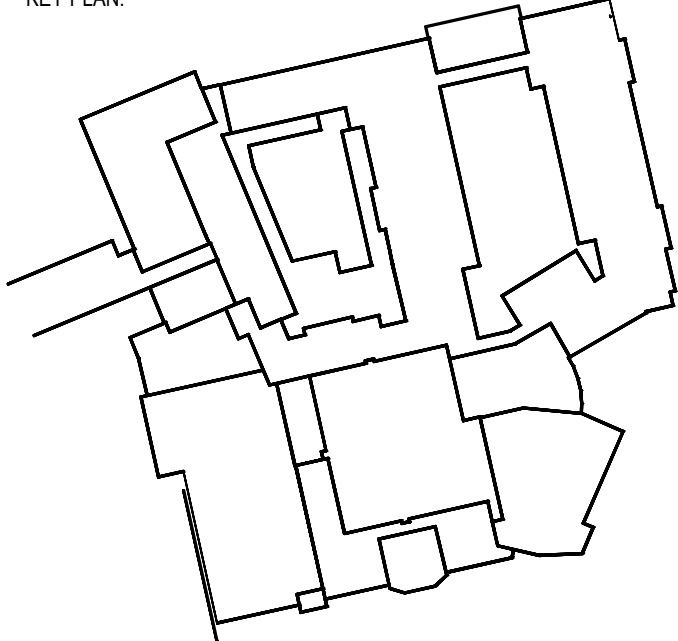
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KEY PLAN:



CLIENT:
CITY OF WATERBURY

**235 GRAND STREET
WATERBURY, CT 06702**

THIS SQUARE APPEARS 1/2"x1/2"
ON FULL SIZE SHEETS

NO	DATE	RELEASE
	08/08/2023	100% CD

STAMP:

PROJECT NAME:
**KENNEDY HIGH
SCHOOL AHU
REPLACEMENT**

**422 HIGHLAND AVENUE
WATERBURY, CT 06708**

DRAWING TITLE:
**INDEX OF
DRAWINGS**

FILE: 2022/32580C-9
DRAWN BY: HB
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

G002

ASBESTOS ABATEMENT NOTES:
AC = ASBESTOS-CONTAINING
AAC = ASBESTOS ABATEMENT CONTRACTOR

①

REMOVE AND DISPOSE OF ALL AC PIN TAB INSULATION ASSOCIATED WITH FIBERGLASS DUCT INSULATION ON INTERIOR OF DUCTS.

②

REMOVE AND DISPOSE OF ALL AC PIN TAB INSULATION ASSOCIATED WITH FIBERGLASS DUCT INSULATION ON EXTERIOR OF DUCTS.

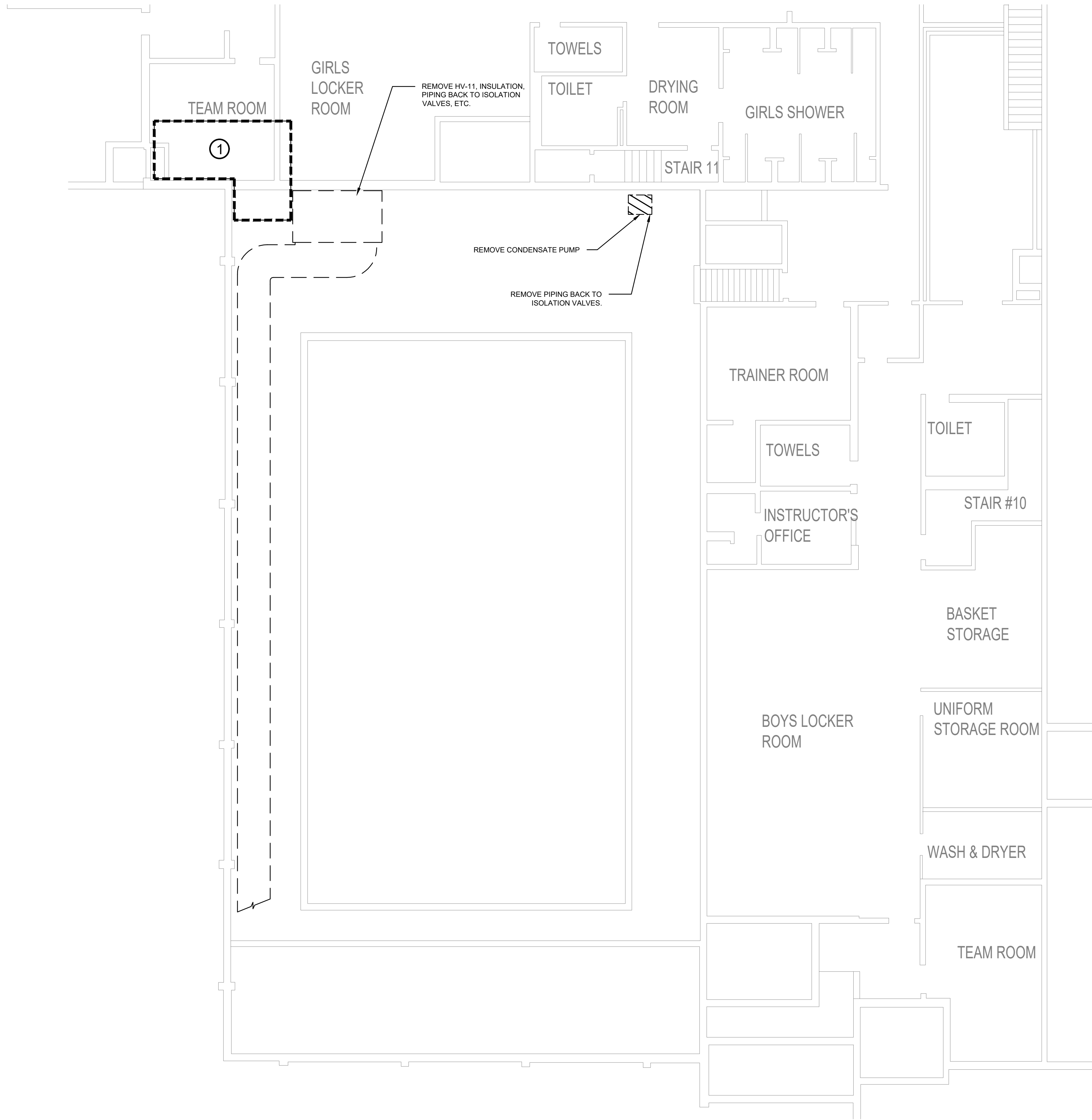
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REMOVE AND DISPOSE OF ALL AC MUDPACK FITTING INSULATION ON MECHANICAL PIPING AND ROOF DRAINS.

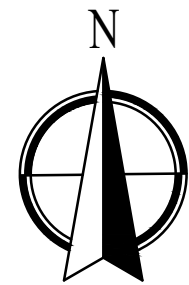
④

REMOVE AND DISPOSE OF ALL AC CLOTH VIBRATION DAMPENERS.

GENERAL NOTES:
THE AAC SHALL REMOVE ALL FIBERGLASS DUCT AND PIPE INSULATION WITHIN FAN ROOMS 1 AND 2 AND DISPOSE OF AS NON-ASBESTOS WASTE. THE AAC SHALL ENSURE THAT DUCT PIN TABS ARE NOT COMINGLED WITH THE FIBERGLASS WASTE. ALL FIBERGLASS INSULATION REMOVAL SHALL BE PERFORMED AFTER WORK AREA PREPARATION IS COMPLETE BUT PRIOR TO DISTURBANCE OF ANY ASBESTOS-CONTAINING MATERIALS. FIBERGLASS INSULATION WITHIN THE INTERIOR DUCT IN THE POOL BASEMENT MECHANICAL ROOM SHALL BE DISPOSED OF AS ASBESTOS-CONTAMINATED WASTE.



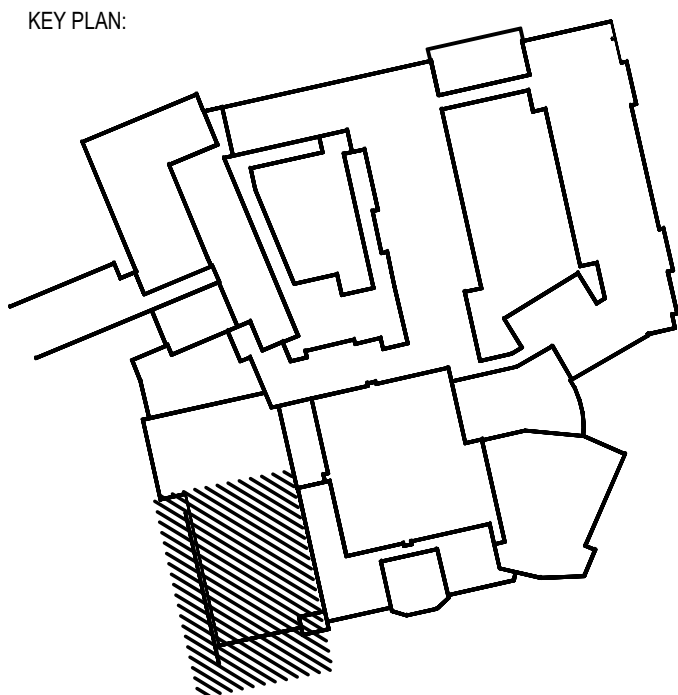
POOL BASEMENT ABATEMENT PLAN
1/8" = 1'-0"



AI Engineers

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422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
**POOL BASEMENT
ABATEMENT PLAN**

FILE: 2022/32580C-9
DRAWN BY: BB
CHECKED BY: PF
DATE: 07/17/2023
DRAWING NO:

HM100

ASBESTOS ABATEMENT NOTES:

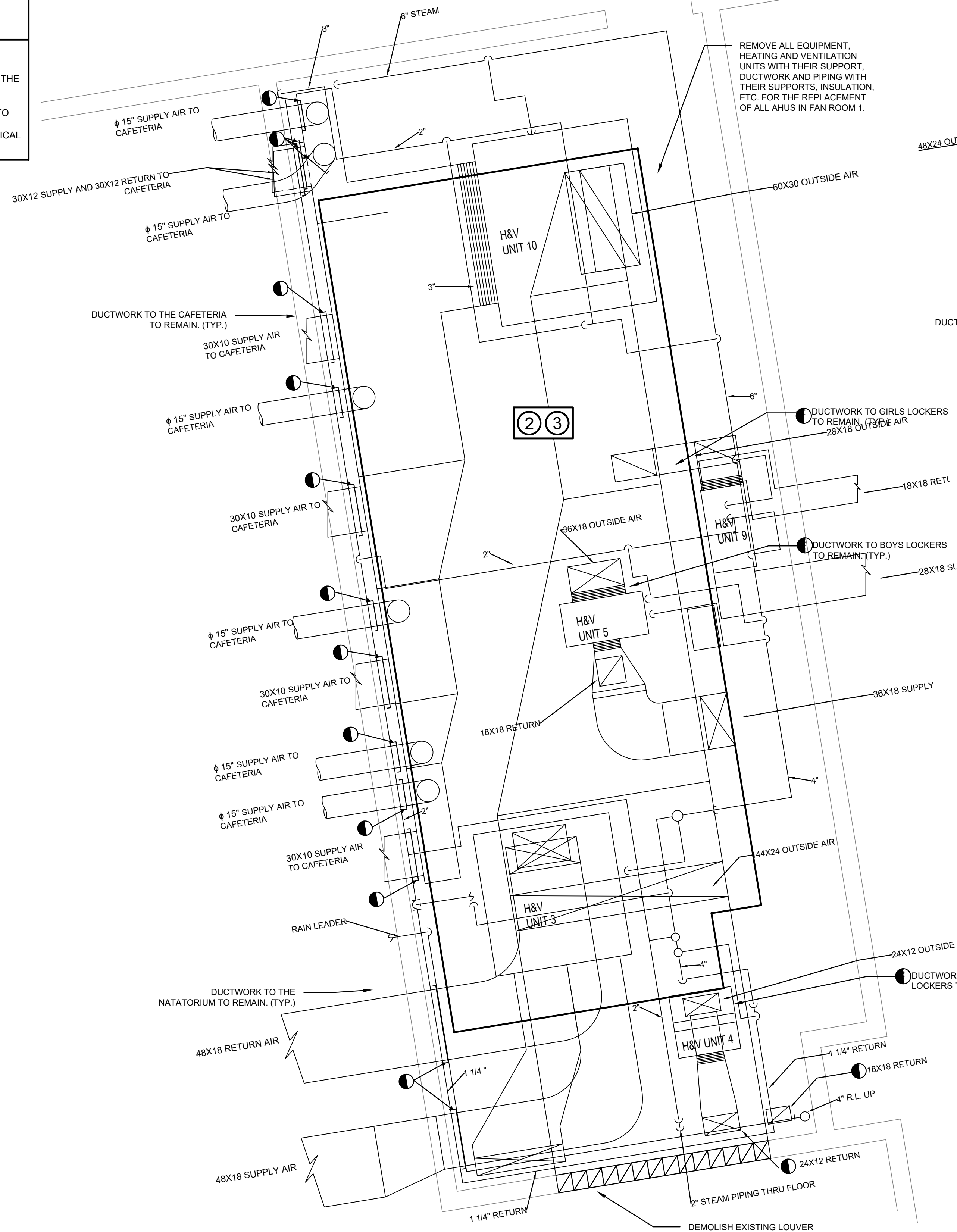
AC = ASBESTOS-CONTAINING

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- 3 REMOVE AND DISPOSE OF ALL AC MUDPACK FITTING INSULATION ON MECHANICAL PIPING AND ROOF DRAINS.
- 4 REMOVE AND DISPOSE OF ALL AC CLOTH VIBRATION DAMPENERS.

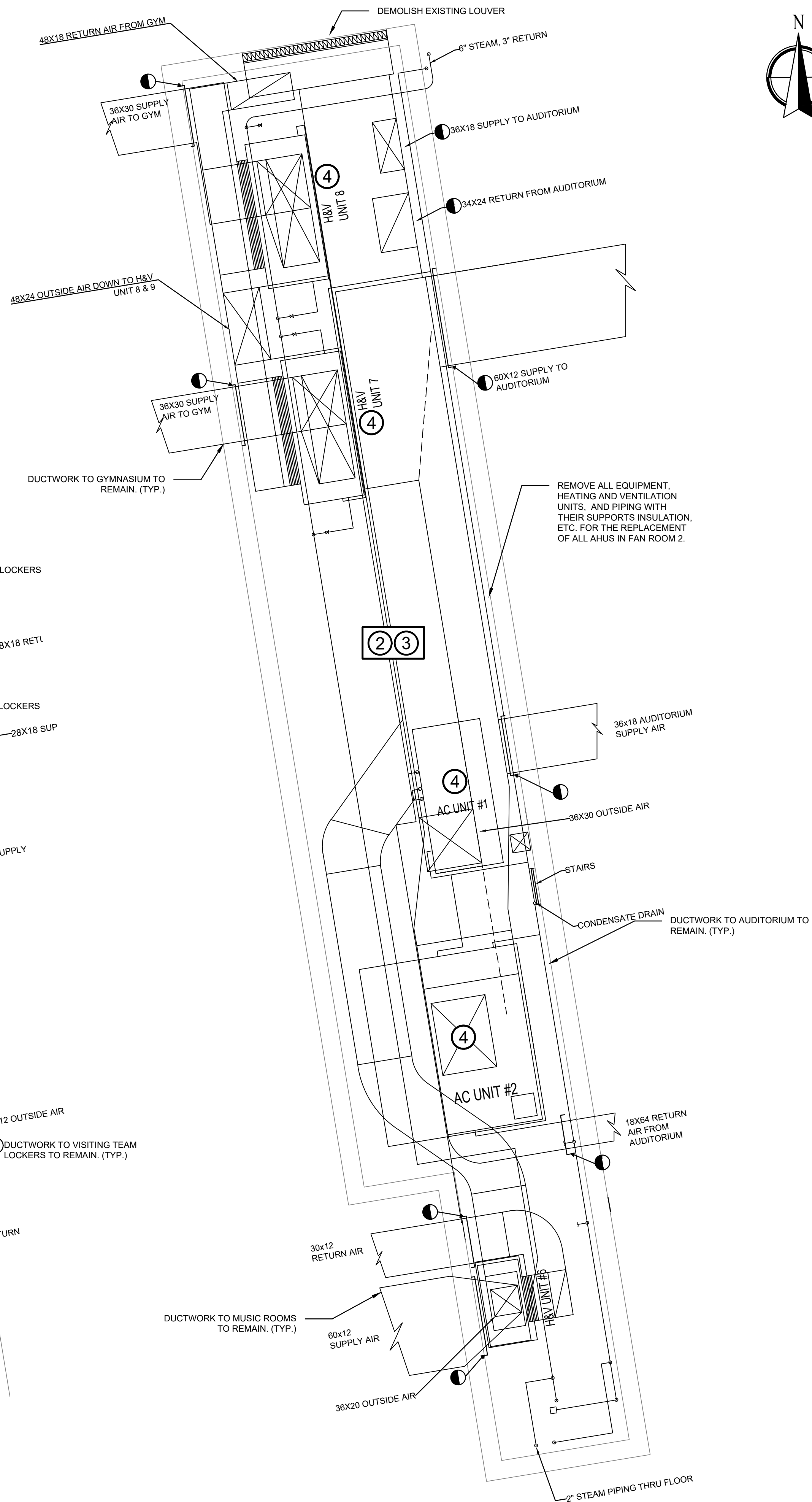
GENERAL NOTES:

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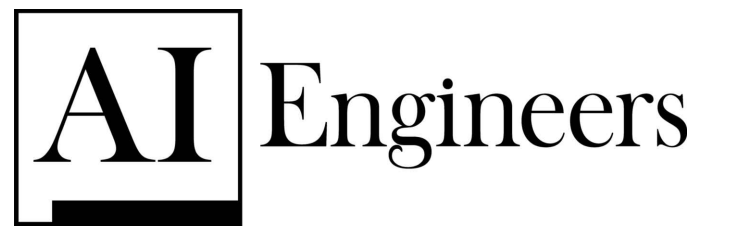
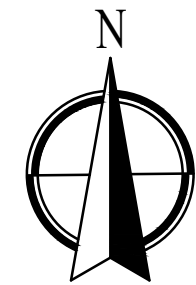
ABATEMENT PLAN FAN ROOM 1

1/4" = 1'-0"



ABATEMENT PLAN FAN ROOM 2

1/4" = 1'-0"



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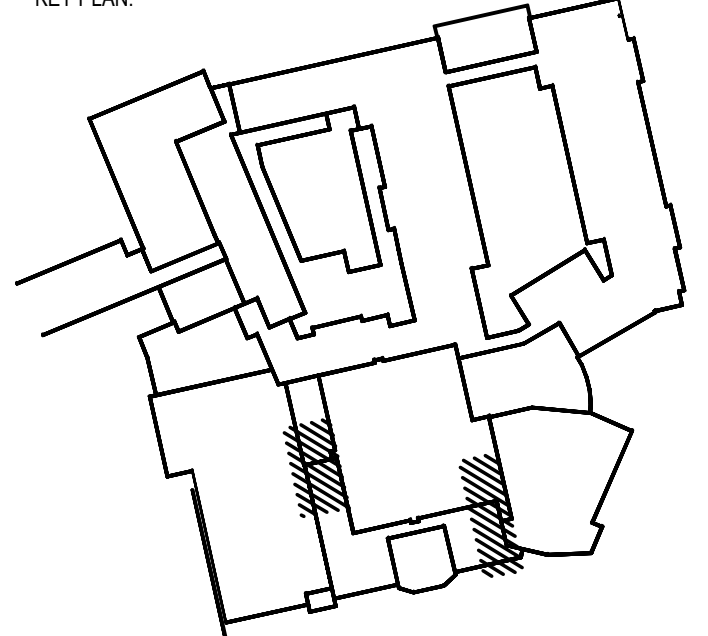
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SCHOOL AHU
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DRAWING TITLE:

**FAN ROOMS
ABATEMENT PLAN**

FILE: 2022/3258OC-9

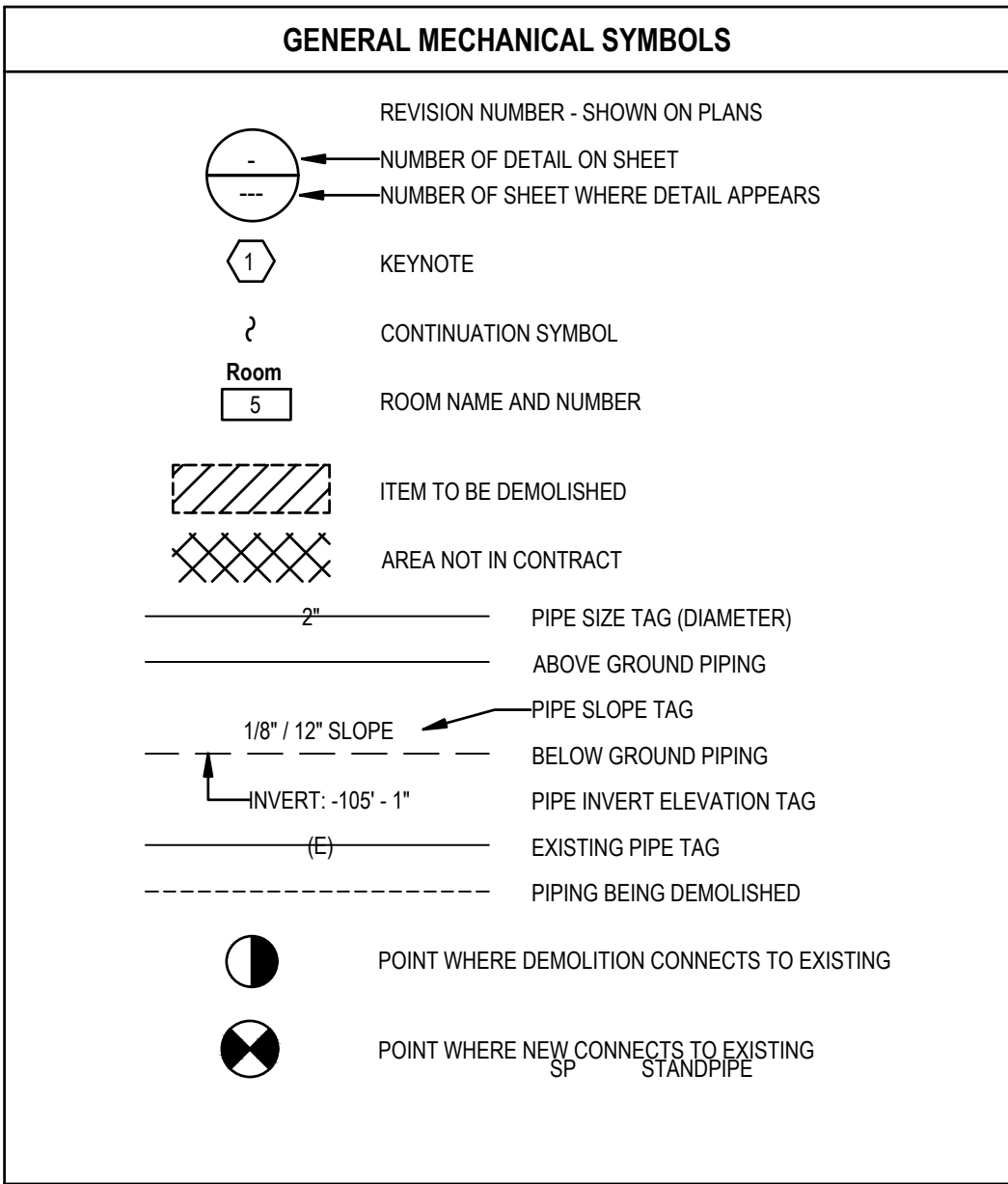
DRAWN BY: BB

CHECKED BY: PF

DATE: 07/17/2023

DRAWING NO:

HM101

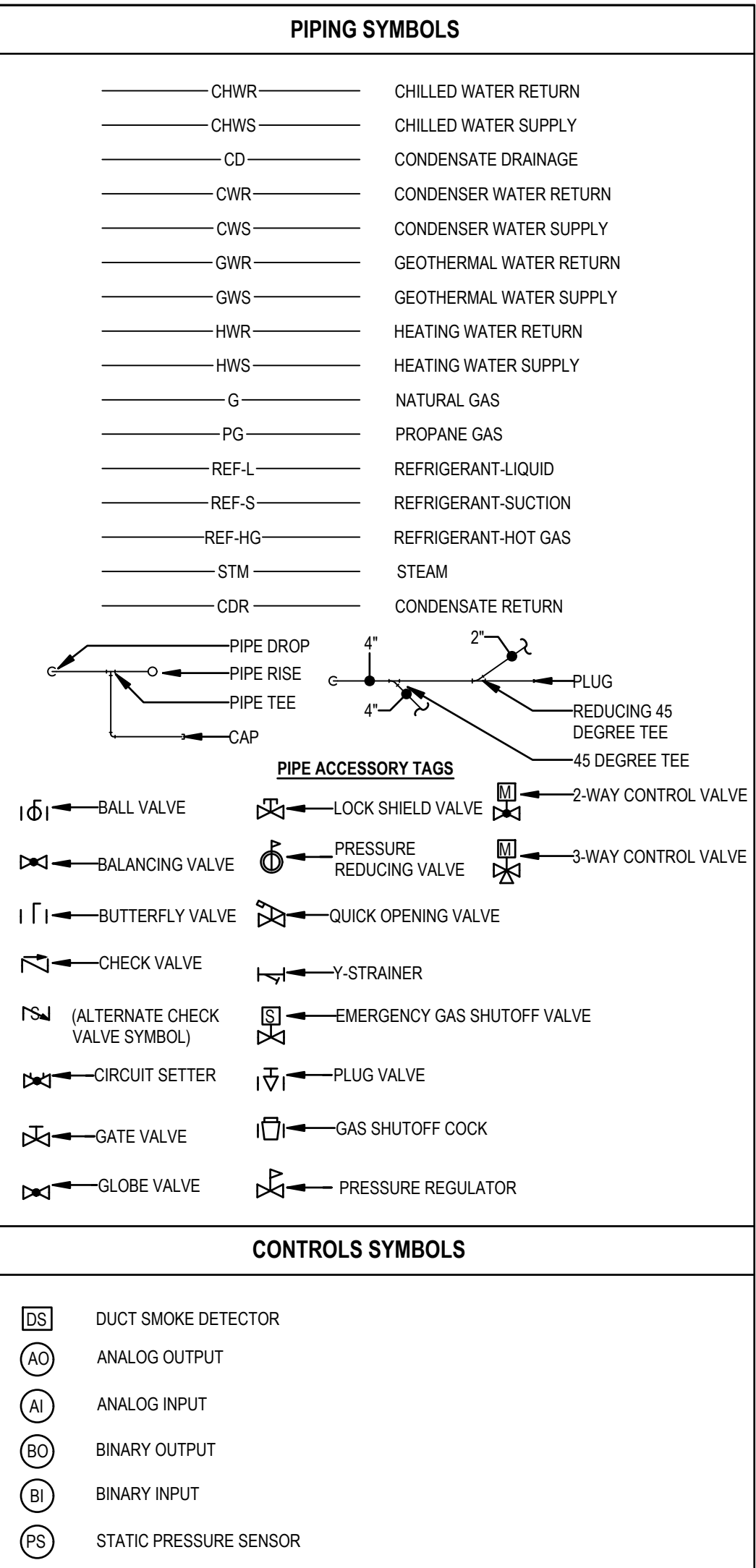
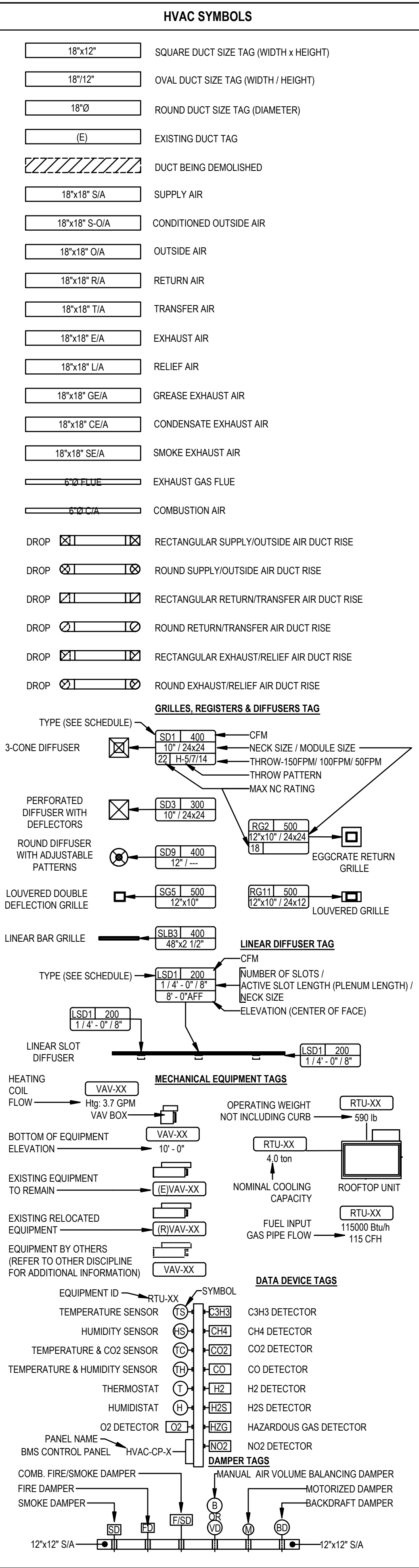


ABBREVIATIONS			
Ø	ROUND	LVR	LOUVER
ABV	ABOVE	LWT	LEAVING WATER TEMPERATURE
AC	AIR CONDITIONING	M/A	MIXED AIR
AD	AREA DRAIN	MAX	MAXIMUM
ADD	ADDENDUM	MBH	ONE THOUSAND BTU PER HOUR
AFF	ABOVE FINISHED FLOOR	MCF	ONE THOUSAND CUBIC FEET
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MD	MOTORIZED DAMPER
ALT	ALTERNATE	MECH	MECHANICAL
AP	ACCESS PANEL	MFR	MANUFACTURER
ARCH	ARCHITECT/ARCHITECTURAL	MIN	MINIMUM
BFF	BELOW FINISHED FLOOR	MISC	MISCELLANEOUS
BLW	BELOW	MTR	MOTOR
BTU	BRITISH THERMAL UNITS	MU/A	MAKE-UP/AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NOISE CRITERIA
CAP	CAPACITY	NC	NORMALLY CLOSED
CB	CATCH BASIN	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
CLG	CEILING	NO	NORMALLY OPEN
CO	CLEAN OUT	NTS	NOT TO SCALE
CW	COLD WATER	O	OXYGEN
D	DEGREE	O/A	OUTSIDE AIR
DB	DRY BULB	ORD	OVERFLOW ROOF DRAIN
DN	DIAMETER	PD	PRESSURE DROP
DOWN	DOWN	PIV	POST INDICATOR VALVE
DW	DISTILLED WATER	PLBG	PLUMBING
EA	EACH	PRSS	PRESSURE
EAT	ENTERING AIR TEMPERATURE	PRV	PRESSURE REDUCING VALVE
ELEC	ELECTRICAL	PSI	POUNDS PER SQUARE INCH
EQUIP	EQUIPMENT	PSIG	POUNDS PER SQUARE INCH GAUGE
EW	ELECTRIC WATER COOLER	PWR	POWER
EWT	ELECTRIC WATER TEMPERATURE	R	DUCT RISER
EIA	EXHAUST AIR	R/A	RETURN AIR
EXIST	EXISTING	RCP	RADIANT CEILING PANEL
F	DEGREES FAHRENHEIT	RD	ROOF DRAIN
FCO	FLOOR CLEAN OUT	REC	RECESSED
FD	FLOOR DRAIN	RED	REDUCER
FDC	FIRE DEPARTMENT CONNECTION	RH	RELATIVE HUMIDITY
FL	FLOOR	R/LA	RELIEF AIR
FO	FUEL OIL	RM	ROOM
FOV	FUEL OIL VENT	RPM	REVOLUTIONS PER MINUTE
FOR	FUEL OIL RETURN	RW	RAIN WATER
FOS	FUEL OIL SUPPLY	SF	SQUARE FOOT
FPM	FEET PER MINUTE	S/A	SUPPLY AIR
FS	FLOOR SINK	SAN	SANITARY
FT	FOOT/FEET	SF	SQUARE FOOT
FTR	FIN TUBE RADIATION	SD	SMOKE DAMPER
GAL	GALLON	SM	SURFACE MOUNT
GF	GAS-FIRED	SOO	SEQUENCE OF OPERATIONS
GC	GENERAL CONTRACTOR	SP	STANDPIPE
GPM	GALLONS PER MINUTE	SP	STATIC PRESSURE
GW	GREASE WASTE	STM	STEAM
HB	HOSE BIB	T	THERMOSTAT
HP	HORSE POWER	TD	TEMPERATURE DROP
HTG	HEATING	TDR	TRENCH DRAIN
HTR	HEATER	TEMP	TEMPERATURE
HW	HOT WATER	TYP	TYPICAL
HYD	HYDRANT	UG	UNDERGROUND
ID	INDIRECT	VAC	VACUUM
IN	INCH	V	VENT
INV	INVERT	VAV	VARIABLE AIR VOLUME
LB	POUND	VENT	VENTILATION
LBHR	POUNDS PER HOUR	VTR	VENT THROUGH ROOF
LAT	LEAVING AIR TEMPERATURE	W	WASTE
LP	LOW PRESSURE	WB	WET BULB
LPG	LIQUEFIED PETROLEUM GAS	WCO	WALL CLEAN OUT
		WH	WALL HYDRANT

EQUIPMENT ABBREVIATIONS			
AC	AIR CONDITIONING UNIT	ET	EXPANSION TANK
ACCU	AIR COOLING CONDENSING UNIT	EWH	ELECTRIC WATER HEATER
AHU	AIR HANDLING UNIT	FCU	FAN COIL UNIT
AS	AIR SEPARATOR	FP	FIRE PUMP
B	BOILER	GI	GREASE INTERCEPTOR
CH	CHILLER	GRV	GRAVITY ROOF VENTILATOR
CT	COOLING TOWER	HWP	HEATING WATER PUMP
CUH	CABINET UNIT HEATER	HRU	HEAT RECOVERY UNIT
CHWP	CHILLED WATER PUMP	PRV	POWER ROOF VENTILATOR
DBP	DOMESTIC WATER BOOSTER PUMP	RE	RETURN/EXHAUST FAN
DC	DUCT MOUNTED COIL	RTU	ROOFTOP UNIT
DCP	DOMESTIC WATER CIRCULATING PUMP	SP	SUMP PUMP
ED	EXHAUST FAN	UH	UNIT HEATER
EDC	ELECTRIC DUCT COIL	WH	WATER HEATER

NOTE

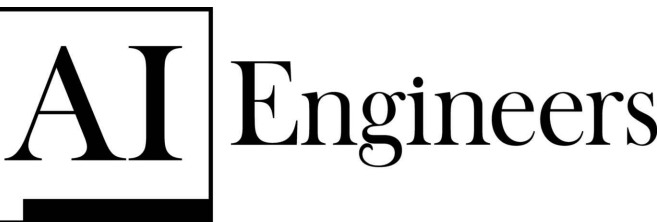
ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET. THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.



MECHANICAL NOTES

- PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
- VERIFY EXISTING CONDITIONS ON THE JOB SITE BEFORE BEGINNING ANY WORK. COORDINATE NEW WORK WITH THE OWNER PRIOR TO COMMENCEMENT OF WORK. COMMENCEMENT OF WORK SIGNIFIES ACCEPTANCE OF CONDITIONS.
- CONTRACT DOCUMENT DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. PROVIDE ADDITIONAL DUCTWORK AND FITTINGS AS REQUIRED.
- LOCATE DUCTWORK AND MECHANICAL EQUIPMENT AWAY FROM THE SPACE ABOVE ELECTRICAL PANELS. TRANSFORMERS AND OTHER ELECTRICAL EQUIPMENT.
- PENETRATIONS OF RATED ASSEMBLIES SHALL BE FIRE STOPPED. FIRE STOPPING SHALL BE AN APPROVED MATERIAL AS PRESCRIBED IN CSFM STANDARD 43-1 AND SHALL BE U.L. LISTED.
- PROVIDE SLEEVES AND/OR OPENINGS TO RUN DUCTS THROUGH FLOORS AND WALLS.
- MAINTAIN CLEAR ACCESS TO SERVICE EQUIPMENT AND OTHER ACCESSORIES REQUIRING SERVICE. VISUAL INSPECTION OR HAND OPERATION, WHERE INDICATED OR REQUIRED, PROVIDE ACCESS PANELS OF THE TYPE SELECTED TO SUIT MATERIALS IN WHICH INSTALLED.
- LOCATIONS, DUCTWORK AND EQUIPMENT AS INDICATED ON THE DRAWING, ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD. WORK SHALL BE COORDINATED WITH ALL OTHER TRADES TO AVOID INTERFERENCE IN THE FIELD.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL SPECIFICATIONS.
- ALL PRESSURES LISTED ARE GAUGE UNLESS OTHERWISE NOTED.
- PRIOR TO STARTING WORK, SUBMIT SHOP DRAWINGS AND SUBMITTALS FOR ALL MECHANICAL EQUIPMENT, DUCTWORK, AND DIFFUSERS.
- CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND SHALL ARRANGE FOR ALL INSPECTIONS AS REQUIRED.
- PROVIDE ONE YEAR WARRANTY FOR ALL WORKMANSHIP AND MATERIALS AFTER THE DATE OF FINAL ACCEPTANCE.
- FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL REQUIREMENTS OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES.
- MECHANICAL CONTRACTOR SHALL COORDINATE ALL HVAC EQUIPMENT (VOLTAGE, PHASE, HP, ETC.) WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDER OF ANY MECHANICAL EQUIPMENT. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MISMATCH BETWEEN MECHANICAL EQUIPMENT ELECTRICAL REQUIREMENTS AND THE ELECTRICAL SERVICE, AS DESIGNED. MECHANICAL AND ELECTRICAL COORDINATION STATEMENTS SHALL BE INCLUDED WITH EQUIPMENT SUBMITTALS AND SHOP DRAWINGS.
- MECHANICAL CONTRACTOR SHALL FURNISHED AND INSTALLED VFDs AND COMBINATION STARTERS/DISCONNECT SWITCHES (HOA). ELECTRICAL CONTRACTOR SHALL PROVIDE POWER WIRING. CONTROL WIRING BY ATC CONTRACTOR.
- ELECTRICAL/FA CONTRACTOR SHALL FURNISHED SMOKE DETECTORS FOR INSTALLATION BY MECHANICAL CONTRACTOR AND CONTROL WIRING BY ATC CONTRACTOR.
- ATC CONTRACTOR SHALL FURNISH CONTROL DAMPERS, CONTROL VALVES, SENSORS AND THERMOWELLS FOR INSTALLATION BY MECHANICAL CONTRACTOR.
- CONTROL POWER WIRING 120V/1PH AND LESS BY ATC CONTRACTOR.
- COORDINATE ROOF MOUNTED HVAC EQUIPMENT WITH OWNER'S ROOFING CONTRACTOR.
- PROVIDE FIRE PROOFING INSULATION FOR NEW WORK. RESTORE EXISTING FIRE PROOFING INSULATION TO ORIGINAL CONDITION.

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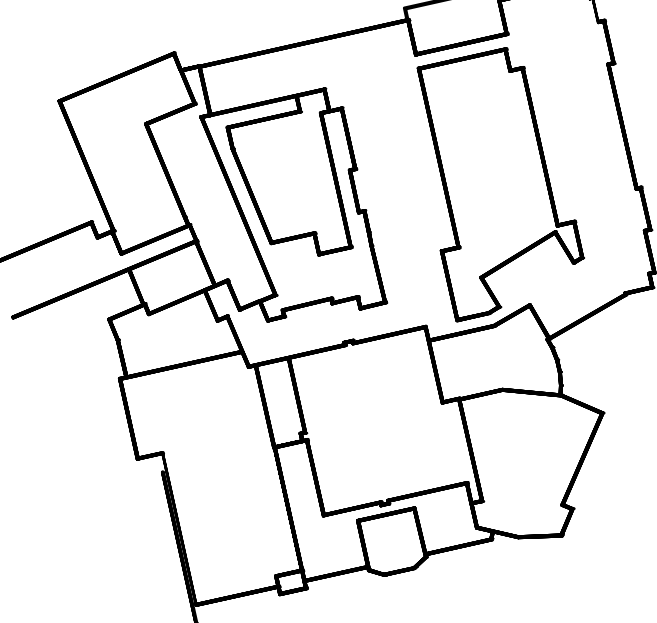


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KEY PLAN:



CLIENT:

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STAMP:

PROJECT NAME:

KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:

MECHANICAL NOTES,
SYMBOLS, AND
ABBREVIATIONS

FILE: 2022/32580C-9

DRAWN BY: HB

CHECKED BY: OA

DATE: 08/08/2023

DRAWING NO:

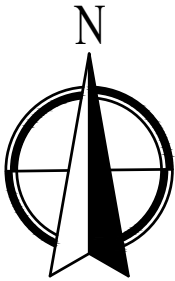
M001



MECHANICAL DEMOLITION POOL BASEMENT PLAN
SCALE: 1/8" = 1'-0"

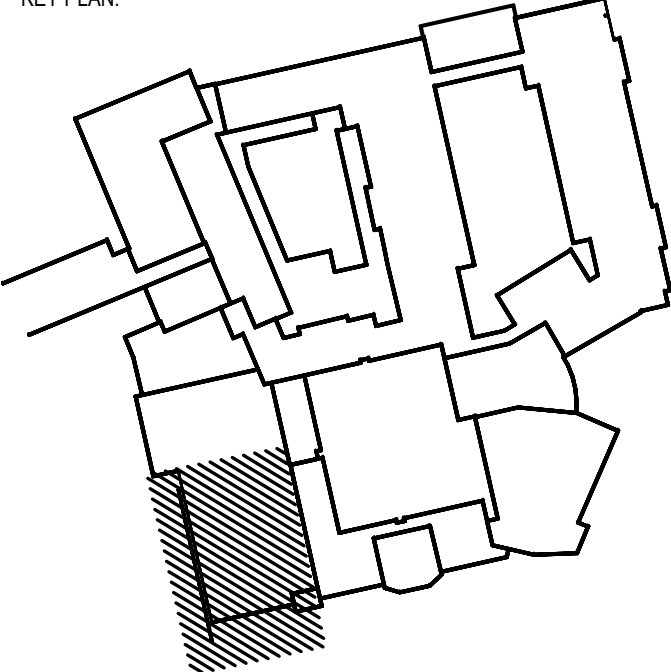
MECHANICAL DEMOLITION GENERAL NOTES:

1. LOCATION AND QUANTITIES OF EQUIPMENT IS BASED ON THE BEST AVAILABLE INFORMATION AT TIME OF DESIGN. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS PRIOR TO BID.
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4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVAL AND PROPER DISPOSAL OF DEMOLISHED ITEMS. THIS INCLUDES COSTS FOR RECYCLING OR RECLAMATION OF MATERIALS SUCH AS REFRIGERANT, AS WELL AS HAULING AND DUMPING OF ALL DEMOLISHED MATERIAL.
5. RESTORE EXISTING FIRE PROOFING DUE TO DEMOLITION SCOPE OF WORK.



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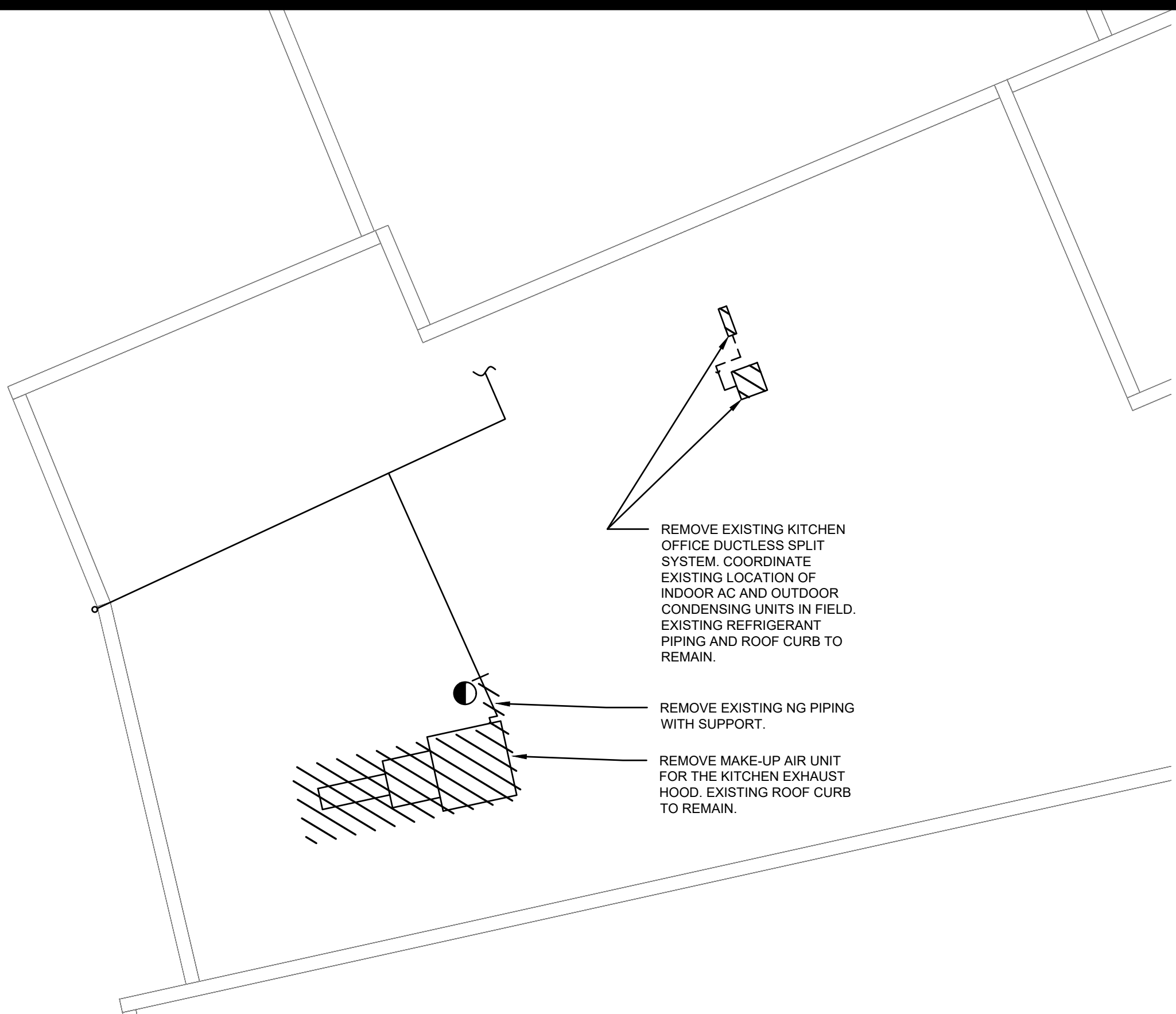
**422 HIGHLAND AVENUE
WATERBURY, CT 06708**

DRAWING TITLE:
**MECHANICAL DEMOLITION
POOL BASEMENT PLAN**

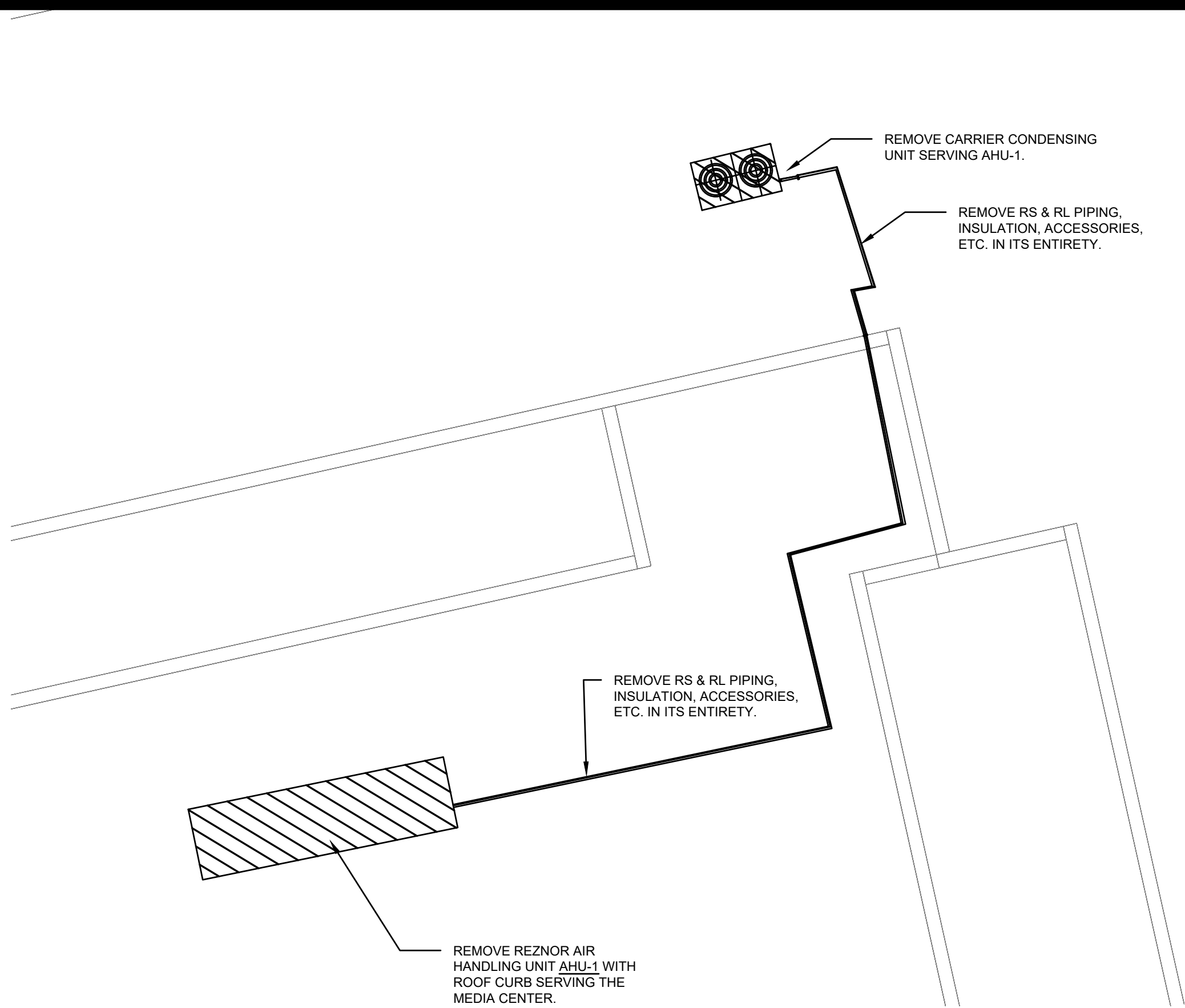
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DRAWN BY: HB
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

MD100

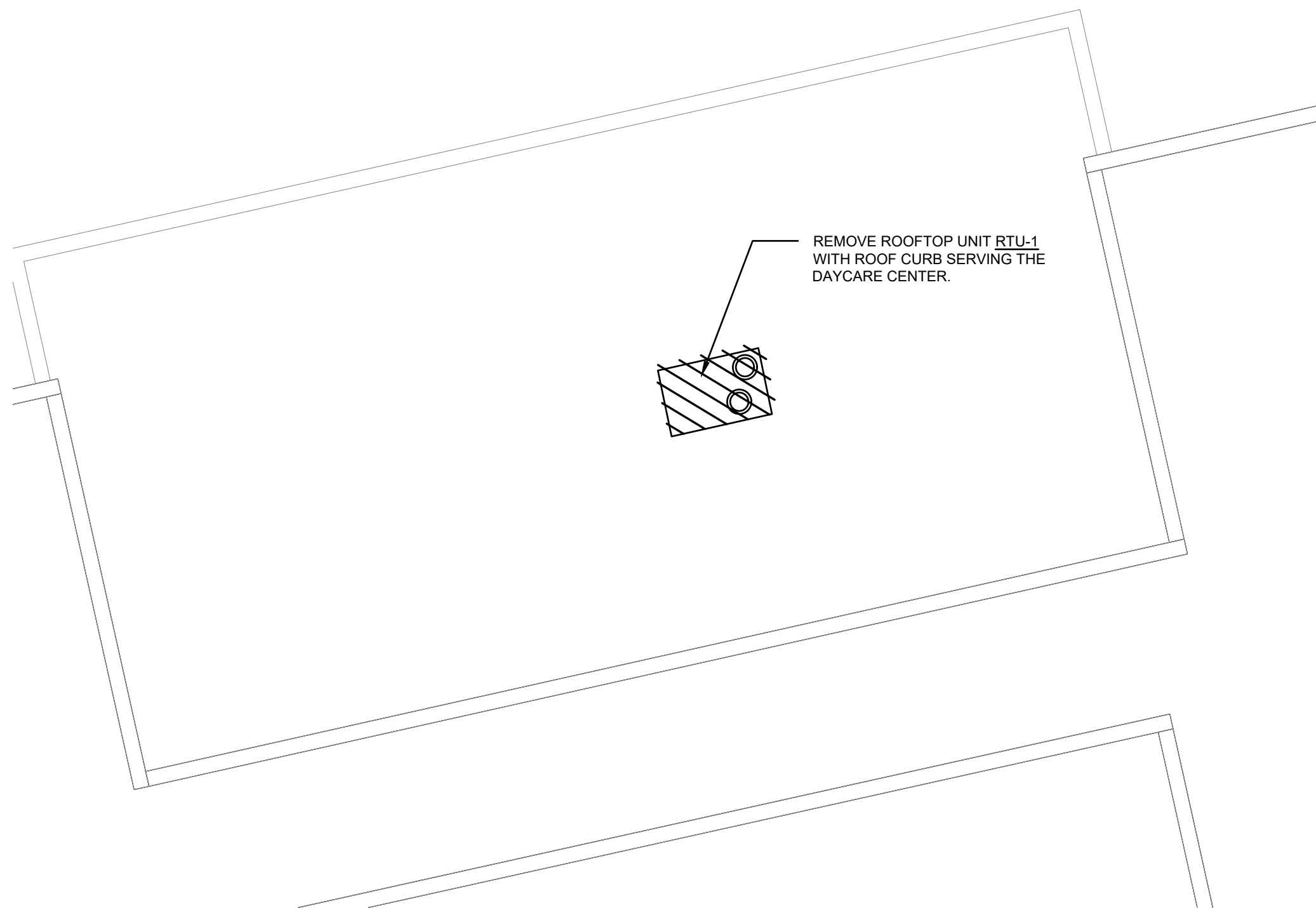
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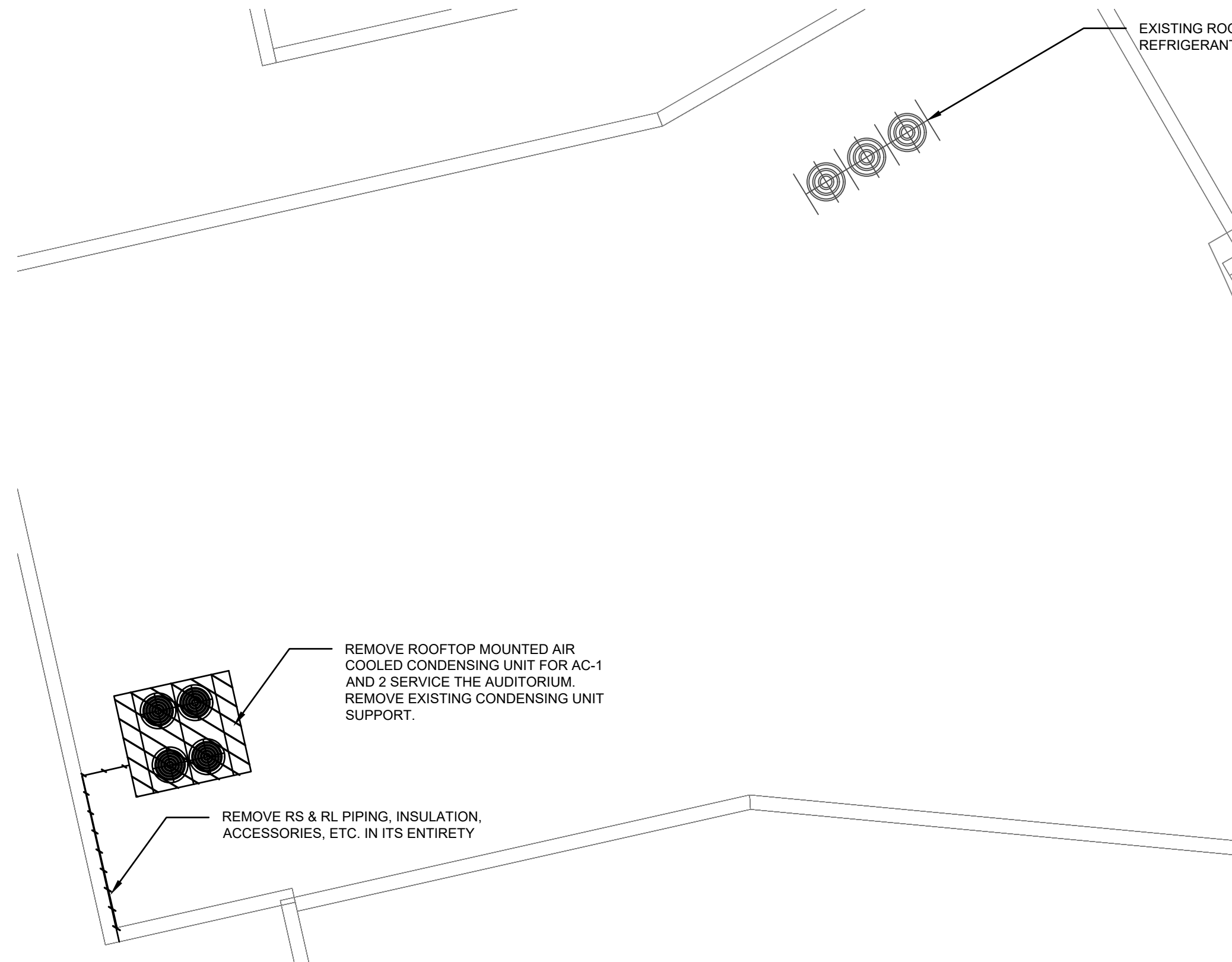
1 MECHANICAL DEMOLITION ROOF PLAN
KITCHEN
SCALE: 1/8" = 1'-0"



2 MECHANICAL DEMOLITION ROOF PLAN
MEDIA CENTER
SCALE: 1/8" = 1'-0"



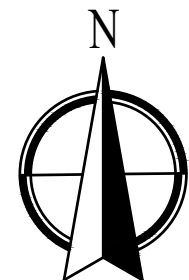
3 MECHANICAL DEMOLITION ROOF PLAN
DAYCARE CENTER
SCALE: 1/8" = 1'-0"



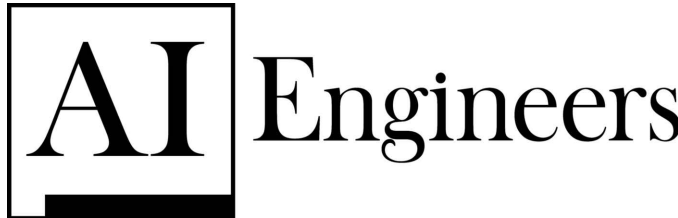
4 MECHANICAL DEMOLITION ROOF PLAN
LOWER LOBBY - FAN ROOM 2
SCALE: 1/8" = 1'-0"

MECHANICAL DEMOLITION GENERAL NOTES:

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5. RESTORE EXISTING FIRE PROOFING DUE TO DEMOLITION SCOPE OF WORK.



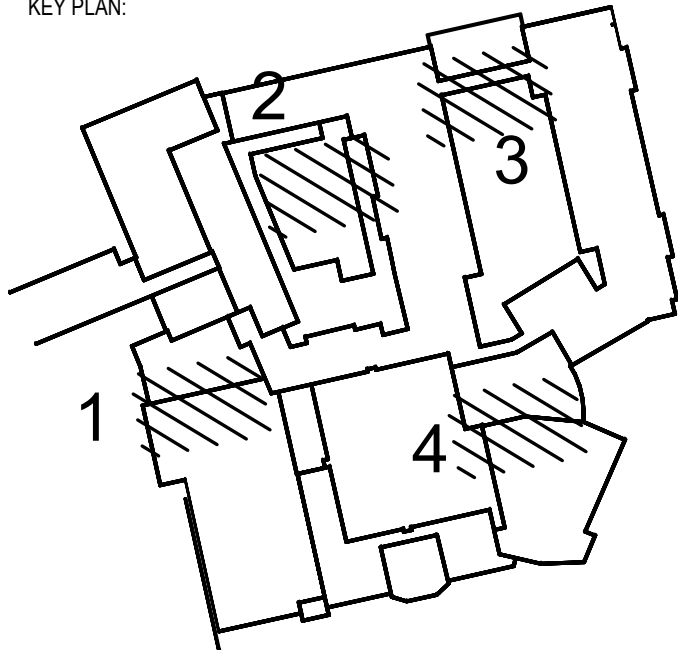
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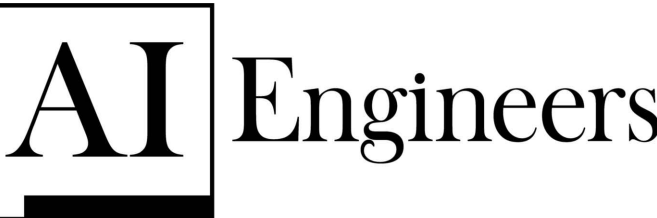
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MECHANICAL DEMOLITION
ROOF PART PLANS

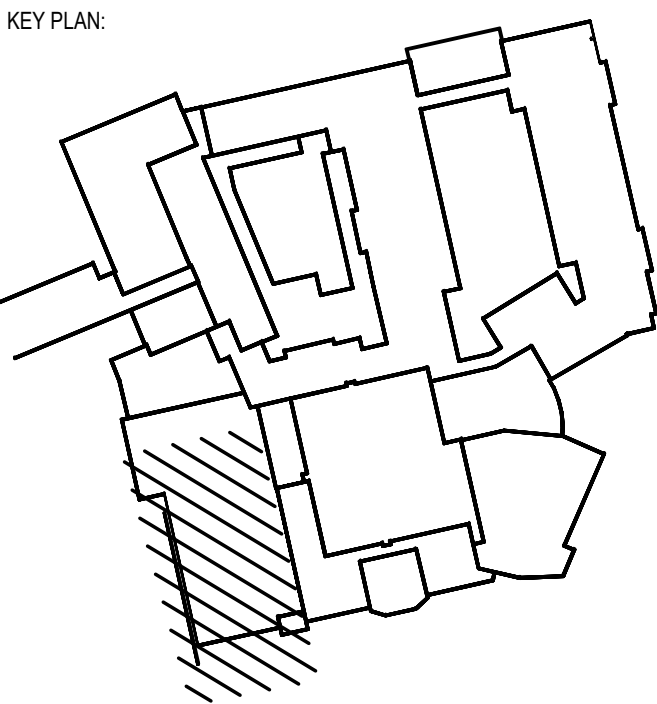
FILE: 2022/3258OC-9
DRAWN BY: HB
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DATE: 08/08/2023
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MD102

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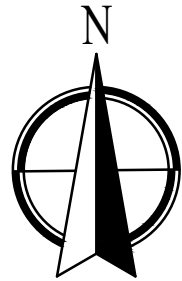
PROJECT NAME:
**KENNEDY HIGH
SCHOOL AHU
REPLACEMENT**

**422 HIGHLAND AVENUE
WATERBURY, CT 06708**

DRAWING TITLE:
**MECHANICAL DEMOLITION
POOL, MUSIC, AND GYM
ROOF PLANS**

FILE: 2022/32580C-9
DRAWN BY: HB
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

MD103



MECHANICAL DEMOLITION GENERAL NOTES:

1. LOCATION AND QUANTITIES OF EQUIPMENT IS BASED ON THE BEST AVAILABLE INFORMATION AT TIME OF DESIGN. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS PRIOR TO BID.
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5. RESTORE EXISTING FIRE PROOFING DUE TO DEMOLITION SCOPE OF WORK.

EXISTING
EF-33 TO
REMAIN

EXISTING
EF-34 TO
REMAIN

EXISTING
WALL
MOUNTED
EXHAUST
FAN TO
REMAIN

EXISTING
WALL
MOUNTED
EXHAUST
FAN TO
REMAIN

EXISTING
EF-37 TO
REMAIN

ABANDONED EXISTING EXHAUST
FAN IN PLACE. DISABLE EXISTING
EXHAUST FAN SEQUENCE OF
OPERATIONS AT THE FRONT
END. REMOVE EXISTING
DUCTWORK BACK TO
UNDERSIDE OF ROOF DECK. CAP
DUCTWORK WITH 20 GAUGE 316
SS.

ABANDONED EXISTING EXHAUST
FAN IN PLACE. DISABLE EXISTING
EXHAUST FAN SEQUENCE OF
OPERATIONS AT THE FRONT
END. REMOVE EXISTING
DUCTWORK BACK TO
UNDERSIDE OF ROOF DECK. CAP
DUCTWORK WITH 20 GAUGE 316
SS.

MECHANICAL DEMOLITION POOL, MUSIC, AND GYM ROOF PLAN

SCALE: 1/8" = 1'-0"

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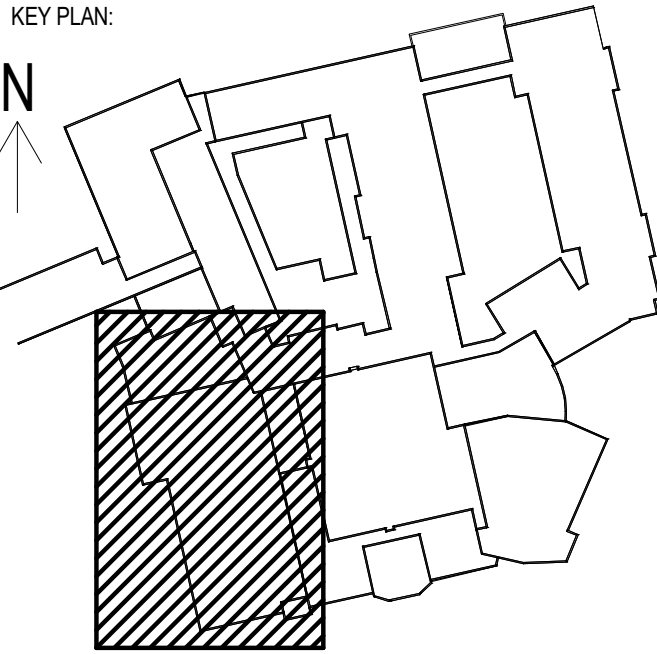


HEATING AND COOLING LOADS BY ZONE				
ZONE	LOCATION	SERVED BY	REQUIRED COOLING LOAD (TONS)	REQUIRED HEATING LOAD (MBH)
1	NATATORIUM	RTU-3	30	780
2	AUDITORIUM	AHU-1	40	610
3	MUSIC ROOMS	AHU-6	N/A	291
4	CAFETERIA	AHU-10	30	716
5	GYMNASIUM	AHU-7&8	N/A	966
6	MEDIA CENTER	RTU-2	20	283
7	DAYCARE	RTU-1	10	122
8	BOYS LOCKER ROOM	AHU-5	N/A	263
9	GIRLS LOCKER ROOM	AHU-9	N/A	233
10	VISITOR LOCKER ROOM	AHU-4	N/A	56

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PROJECT NAME:
KENNEDY HIGH SCHOOL
AHU REPLACEMENT

422 HIGHLAND AVE,
WATERBURY, CT 06708

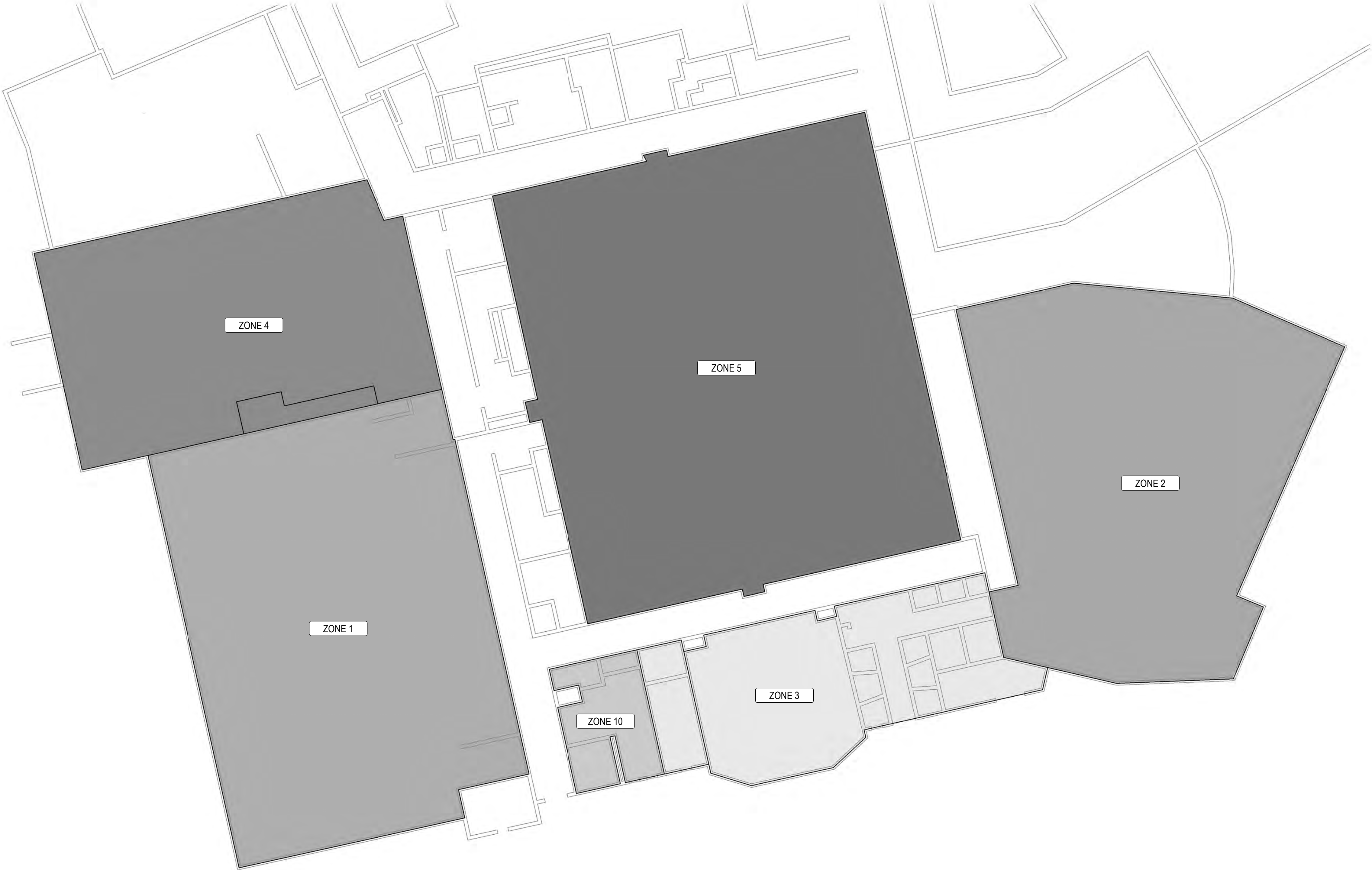
DRAWING TITLE:
BASEMENT THERMAL
ZONE DIAGRAM

FILE: 2022/3258OC-09
DRAWN BY: SA
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

M010

1 BASEMENT THERMAL ZONE DIAGRAM
M010 1/16" = 1'-0"

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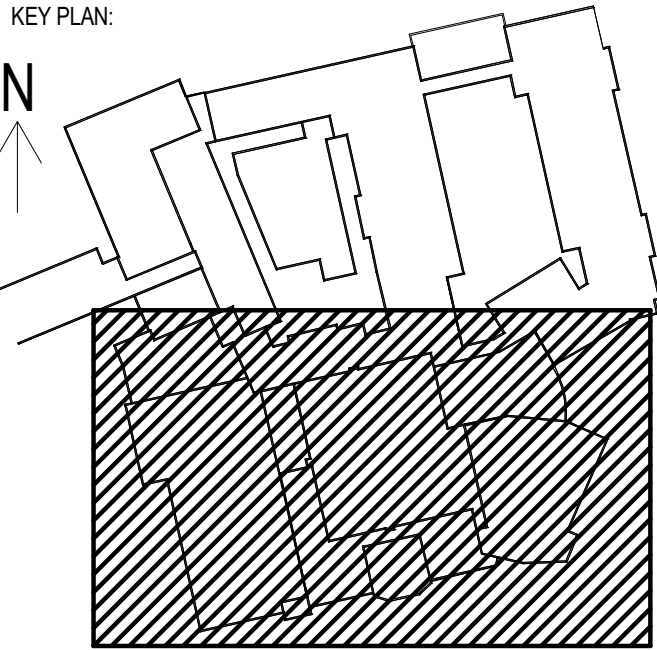


HEATING AND COOLING LOADS BY ZONE				
ZONE	LOCATION	SERVED BY	REQUIRED COOLING LOAD (TONS)	REQUIRED HEATING LOAD (MBH)
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5	GYMNASIUM	AHU-7&8	N/A	966
6	MEDIA CENTER	RTU-2	20	283
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8	BOYS LOCKER ROOM	AHU-5	N/A	263
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10	VISITOR LOCKER ROOM	AHU-4	N/A	56

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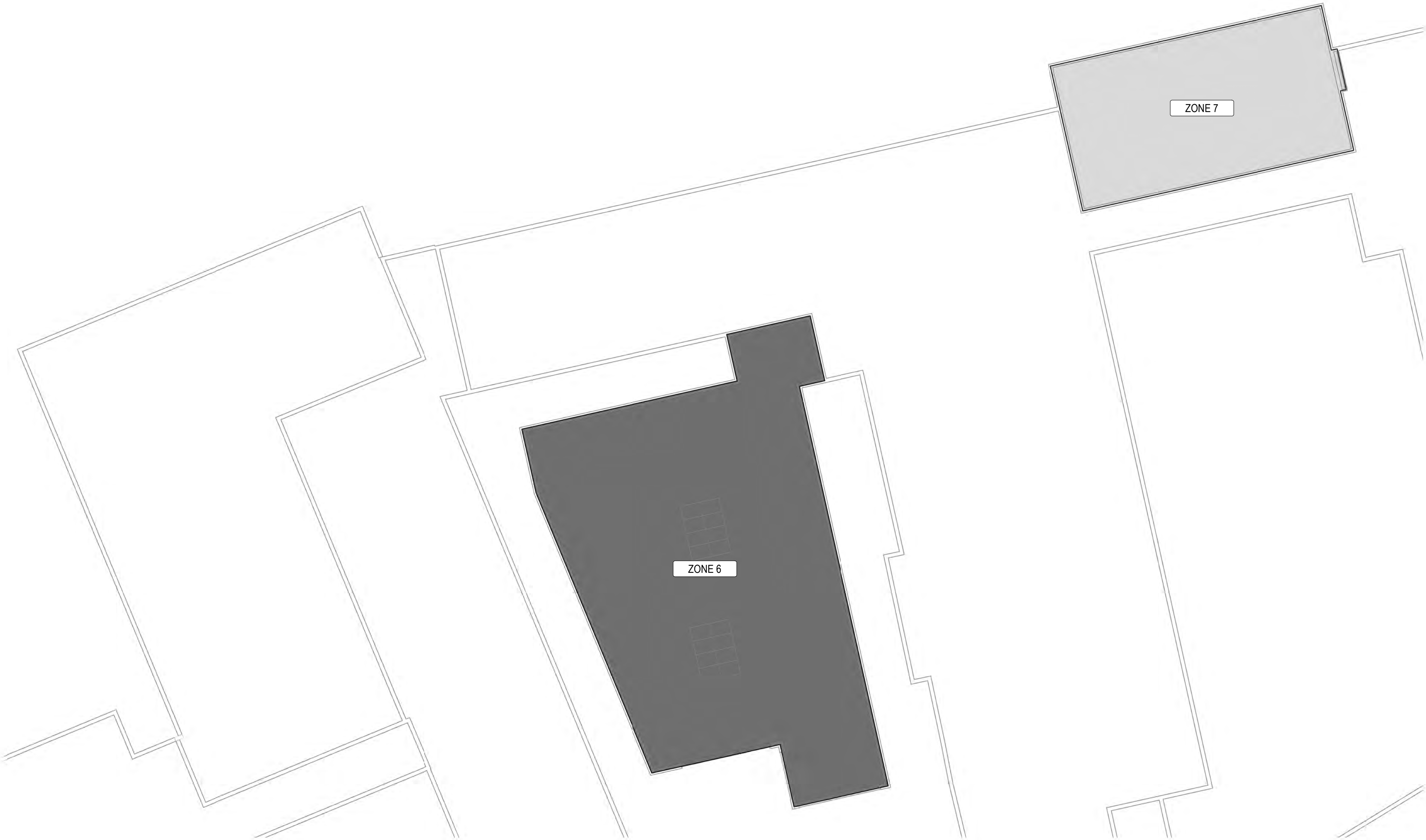
422 HIGHLAND AVE,
WATERBURY, CT 06708

DRAWING TITLE:
LEVEL 1 SOUTH
THERMAL ZONE
DIAGRAM

FILE: 2022/32580C-09
DRAWN BY: SA
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

M011

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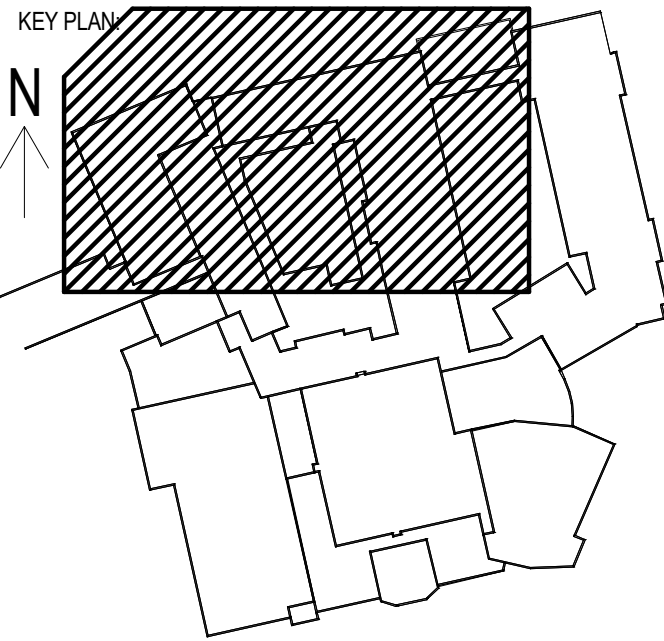


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4	CAFETERIA	AHU-10	30	716
5	GYMNASIUM	AHU-7&8	N/A	966
6	MEDIA CENTER	RTU-2	20	283
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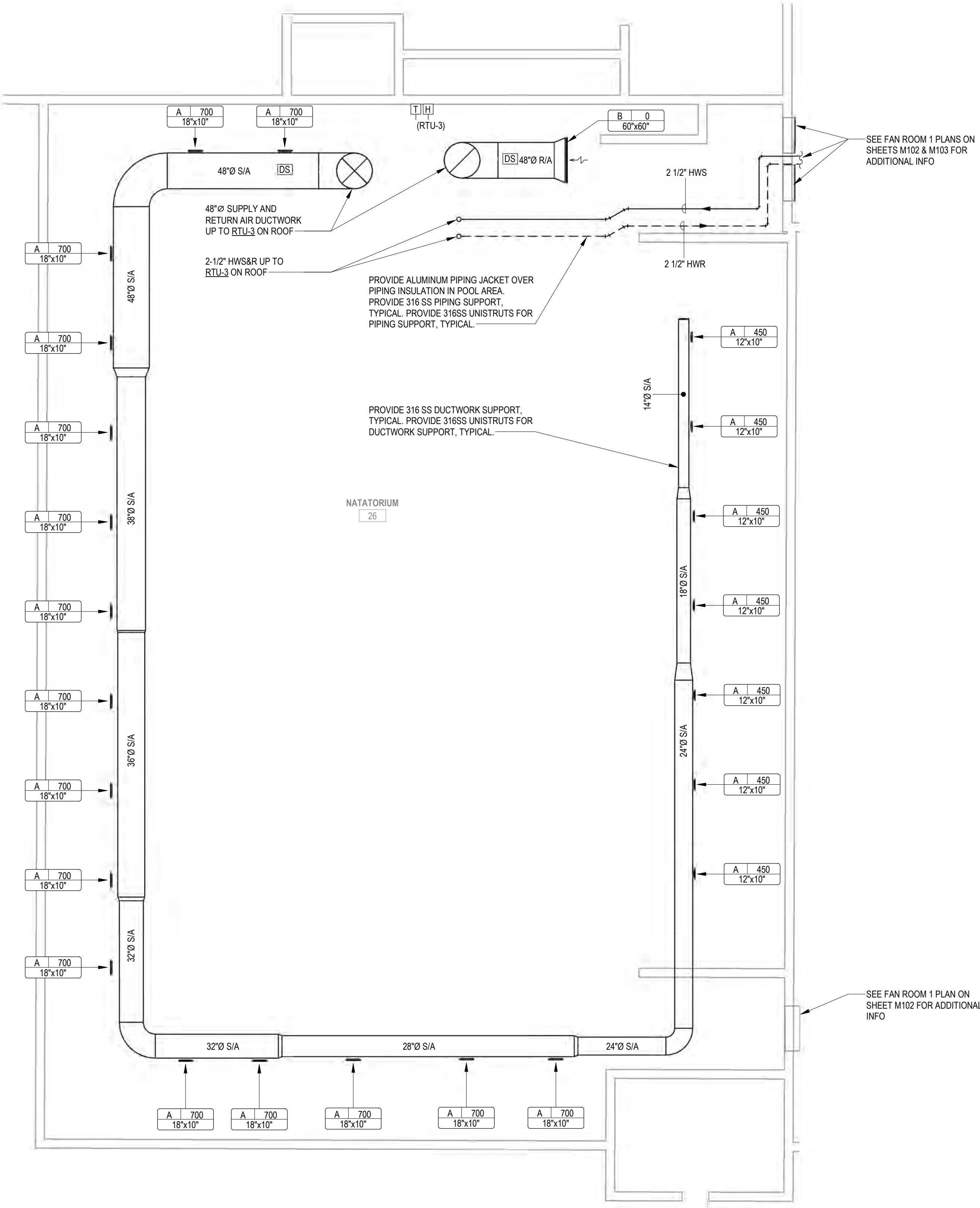
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WATERBURY, CT 06708

DRAWING TITLE:
LEVEL 1 NORTH
THERMAL ZONE
DIAGRAM

FILE: 2022/32680C-09
DRAWN BY: SA
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

M012

1
M101 MECHANICAL POOL PLAN
1/8" = 1'-0"



MECHANICAL GENERAL NOTES

- A CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A COMPLETE AND WORKING SYSTEM.
- B INSTALL, SUPPORT, & BRACE NEW DUCTWORK AND ACCESSORIES PER SMACNA GUIDELINES.
- C DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. CONTRACTOR SHALL MAKE ALLOWANCE FOR ANY INTERIOR LINING, INSULATION, ETC.
- D ALL NEW DUCT ELBOWS SHALL BE RADIUS TYPE. WHERE NECESSARY, CONTRACTOR MAY SUBSTITUTE MITERED ELBOWS WITH TURNING VANES.
- E PROVIDE FLAT BLADE MANUAL VOLUME DAMPERS AT ALL TERMINAL DUCT BRANCHES AND AS INDICATED.
- F INSTALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. ROOFTOP EQUIPMENT SHALL BE LOCATED NO CLOSER THAN 10'-0" FROM THE ROOF EDGE.
- G ALL PRIMARY CONDENSATE DRAIN PIPING SHALL BE INSULATED TO A MINIMUM THICKNESS OF 1/2" AND SHALL INCLUDE A VAPOR RETARDANT OUTSIDE THE INSULATION. SEAL ALL JOINTS AND PENETRATIONS.
- H COORDINATE ALL EXTERIOR PENETRATIONS INCLUDING ROOF PENETRATIONS WITH OTHER TRADES TO PROVIDE A COMPLETE AND FULLY WEATHER-PROOF INSTALLATION.
- I ALL TRANSFER DUCTWORK SHALL BE INTERNALLY LINED WITH MINIMUM 1/2" ACOUSTIC LINING.
- J CONTRACTOR SHALL ENGAGE A TESTING AND BALANCE FIRM CERTIFIED BY AABC TO PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN AABC'S 'NATIONAL STANDARDS. PROVIDE TWO COPIES OF THE CERTIFIED TAB REPORTS.
- K THIS DRAWING IS DIAGRAMMATIC IN NATURE AND SHALL NOT BE SCALED TO DETERMINE THE EXACT LOCATION OR EXTENT OF THE WORK. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF THE WORK. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A COMPLETE AND WORKING SYSTEM.
- L THIS DRAWING IS BASED ON VISUALLY OBSERVABLE EXISTING CONDITIONS AS OF THE TIME OF DESIGN. CONTRACTOR SHALL BE RESPONSIBLE TO FULLY VERIFY ALL EXISTING CONDITIONS, COMPONENTS, ETC. PRIOR TO THE START OF THE WORK. ANY DEVIATION FROM THIS DRAWING IN KIND, OR IN LOCATION EXCEEDING 1'-0", SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- M PROVIDE 316SS DUCTWORK EXPOSED TO VIEW.
- N COORDINATE SHUT DOWN OF EXISTING HVAC SYSTEMS WITH OWNER PRIOR TO COMMENCEMENT OF WORK.
- O PROVIDE FIRE PROOFING AT PIPING AND DUCTWORK SUPPORT. RESTORE EXISTING FIRE PROOFING TO ORIGINAL CONDITIONS.
- P REFER TO PIPING AND DUCTWORK DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

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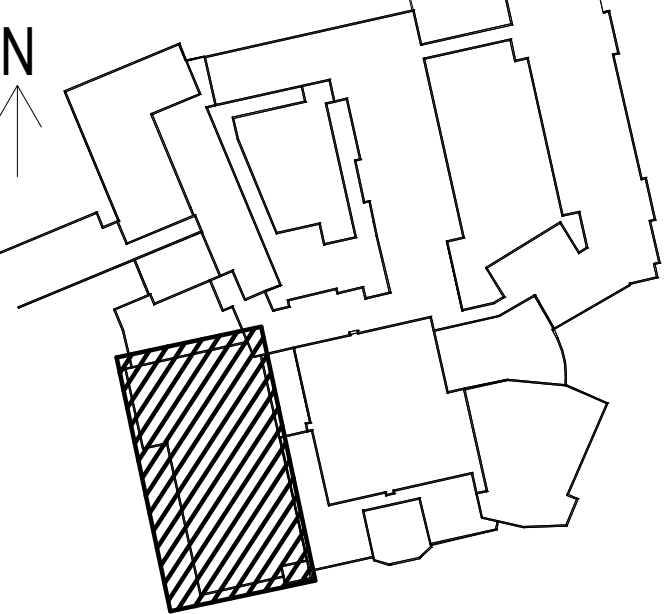


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STAMP:

PROJECT NAME:

KENNEDY HIGH SCHOOL
AHU REPLACEMENT

422 HIGHLAND AVE,
WATERBURY, CT 06708

DRAWING TITLE:

MECHANICAL POOL
PLAN

FILE: 2022/32580C-09

DRAWN BY: SA

CHECKED BY: OHA

DATE: 08/08/2023

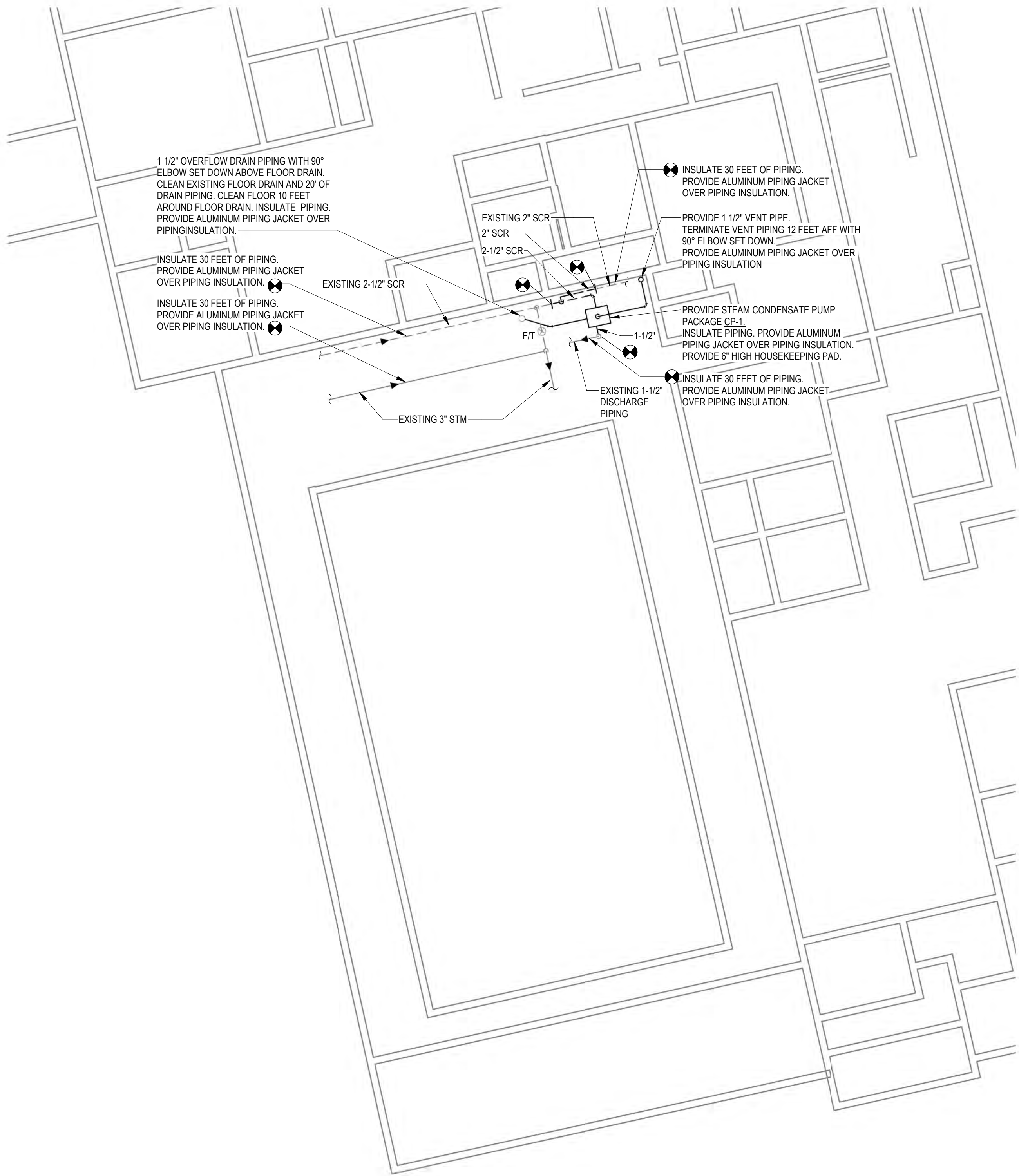
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M101



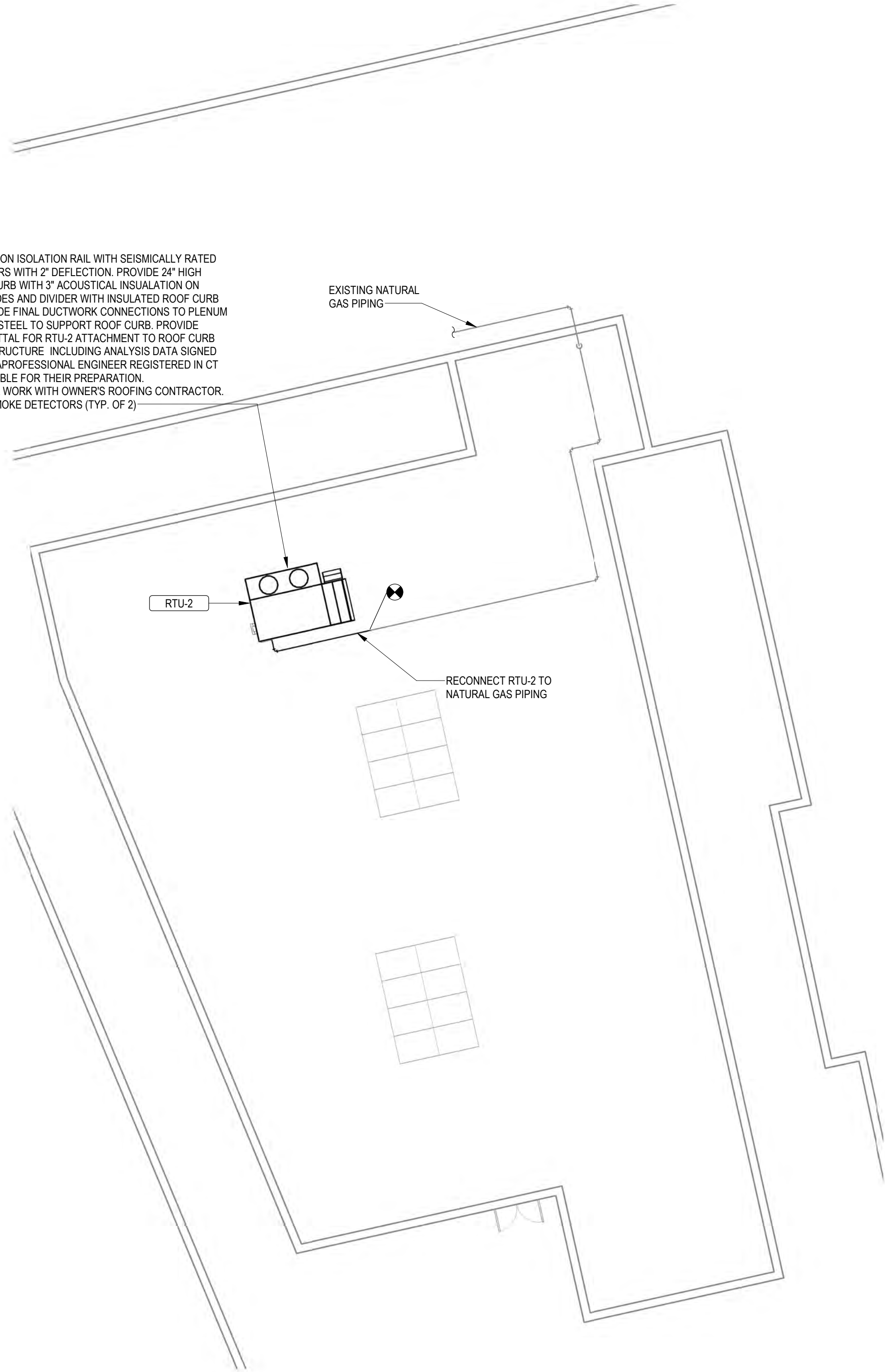
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8/8/2023 4:48:34 PM

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1 MECHANICAL BASEMENT PIPING PART PLAN
3/32" = 1'-0"

PROVIDE VIBRATION ISOLATION RAIL WITH SEISMICALLY RATED SPRING ISOLATORS WITH 2" DEFLECTION. PROVIDE 24" HIGH PLENUM ROOF CURB WITH 3" ACOUSTICAL INSULATION ON FLOOR, ROOF SIDES AND DIVIDER WITH INSULATED ROOF CURB ADAPTER. PROVIDE FINAL DUCTWORK CONNECTIONS TO PLENUM CURB. PROVIDE STEEL TO SUPPORT ROOF CURB. PROVIDE DETAILED SUBMITTAL FOR RTU-2 ATTACHMENT TO ROOF CURB AND TO ROOF STRUCTURE. INCLUDING ANALYSIS DATA SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CT. STATE RESPONSIBLE FOR THEIR PREPARATION. COORDINATE ALL WORK WITH OWNER'S ROOFING CONTRACTOR. INSTALL DUCT SMOKE DETECTORS (TYP. OF 2)



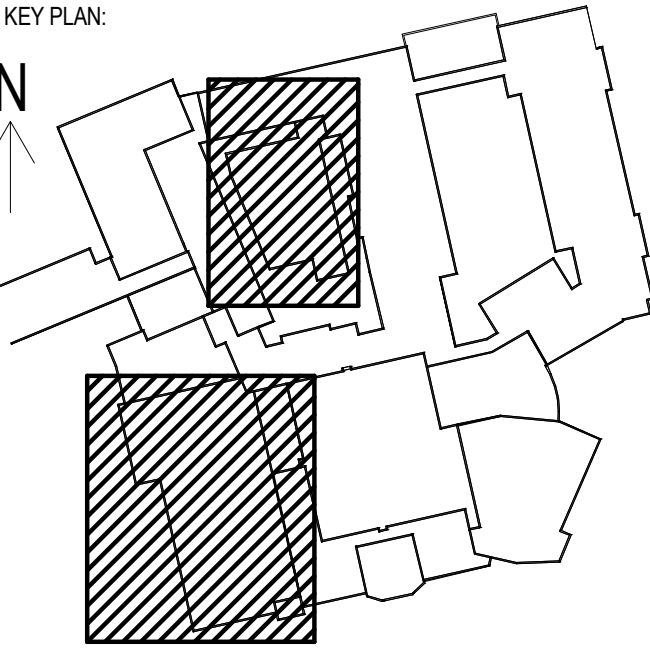
2 MECHANICAL NEW WORK ROOF PLAN - MEDIA CENTER
3/32" = 1'-0"

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PROJECT NAME:
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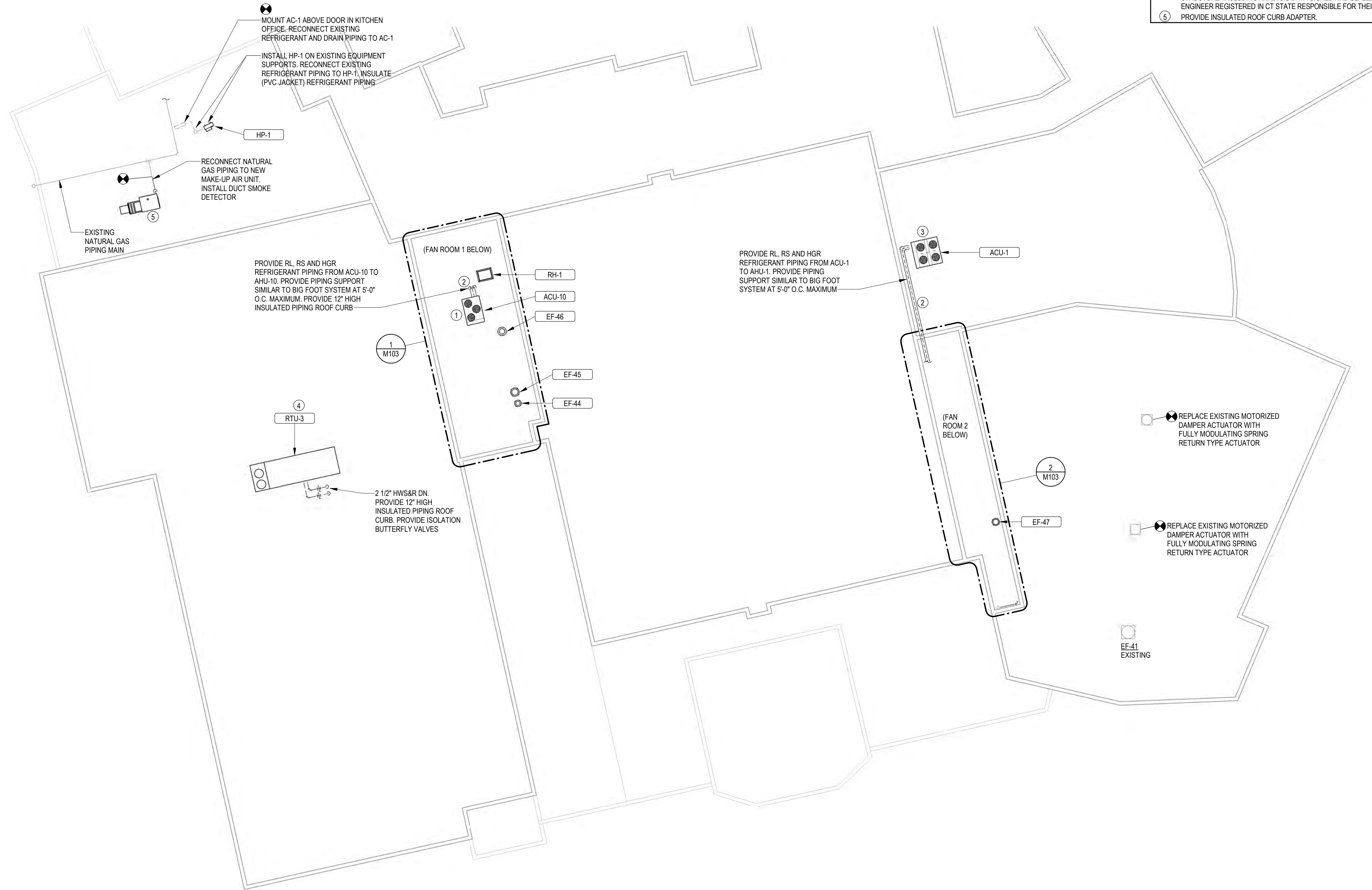
**422 HIGHLAND AVE,
WATERBURY, CT 06708**

DRAWING TITLE:
**MECHANICAL BASEMENT
AND ROOF PART PLANS**

FILE: 2022/32580C-09
DRAWN BY: SA
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DATE: 08/08/2023
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M111

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1
M112
MECHANICAL PIPING PLAN - SOUTH ROOF
1/16" = 1'-0"

MECHANICAL NEW WORK KEY NOTES

- 1 PROVIDE 18"HIGH, INSULATED EQUIPMENT MAUNTING SUPPORTS AS MANUFACTURER BY THYBAR CORP. OR APPROVED EQUAL. PROVIDE DETAILED SUBMITTAL FOR ACU-10 ATTACHMENT TO EQUIPMENT SUPPORTS AND TO ROOF STRUCTURE. INCLUDING ANALYSIS DATA SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CT STATE RESPONSIBLE FOR THEIR PREPARATION. IN BID CARRY QUOTE OF MONEY FOR ADDITIONAL REFRIGERANT PIPING LENGTH OF 40 FEET FOR EACH SPECIFIED PIPE.
- 2 REFRIGERANT PIPING SIZES SHALL BE BY UNIT MANUFACTURER BASED ON THE FINAL APPROVED COORDINATION DRAWINGS.
- 3 PROVIDE 18"HIGH, INSULATED EQUIPMENT MOUNTING SUPPORTS AS MANUFACTURER BY THYBAR CORP. OR APPROVED EQUAL. PROVIDE DETAILED SUBMITTAL FOR ACU-1 ATTACHMENT TO EQUIPMENT SUPPORTS AND TO ROOF STRUCTURE. INCLUDING ANALYSIS DATA SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CT STATE RESPONSIBLE FOR THEIR PREPARATION.
- 4 PROVIDE 24"HIGH, INSULATED ROOF CURB. PROVIDE STEEL TO SUPPORT ROOF CURB. PROVIDE DETAILED SUBMITTAL FOR RTU-3 ATTACHMENT TO ROOF CURB AND TO ROOF STRUCTURE. INCLUDING ANALYSIS DATA SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CT STATE RESPONSIBLE FOR THEIR PREPARATION.
- 5 PROVIDE INSULATED ROOF CURB ADAPTER.

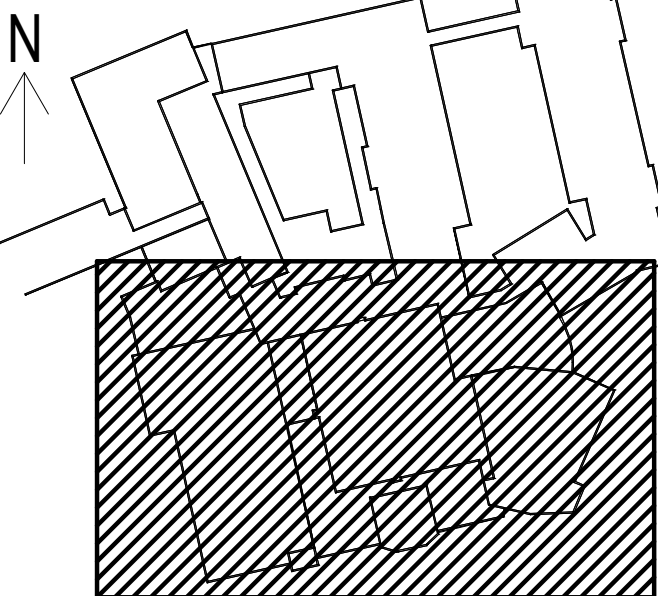
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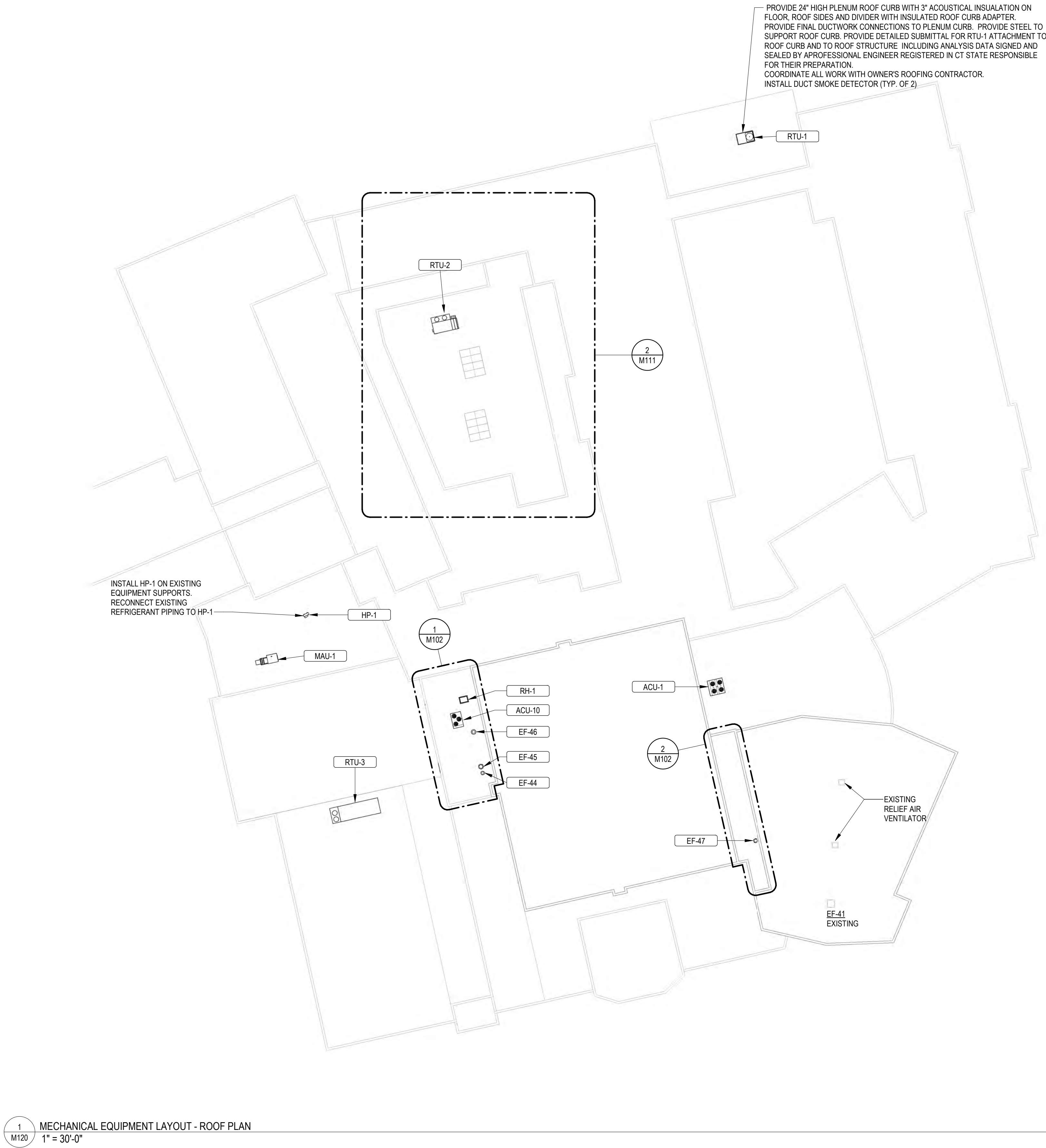
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DRAWING TITLE:
MECHANICAL PIPING
PLAN - SOUTH ROOF

FILE: 2022/32580C-09
DRAWN BY: SA
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DATE: 08/08/2023
DRAWING NO:

M112

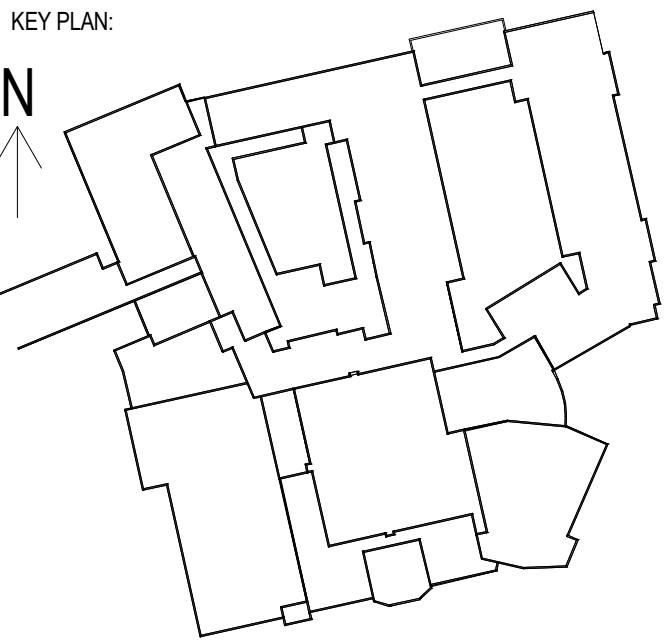
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DRAWING TITLE:
**MECHANICAL
EQUIPMENT LAYOUT -
ROOF PLAN**

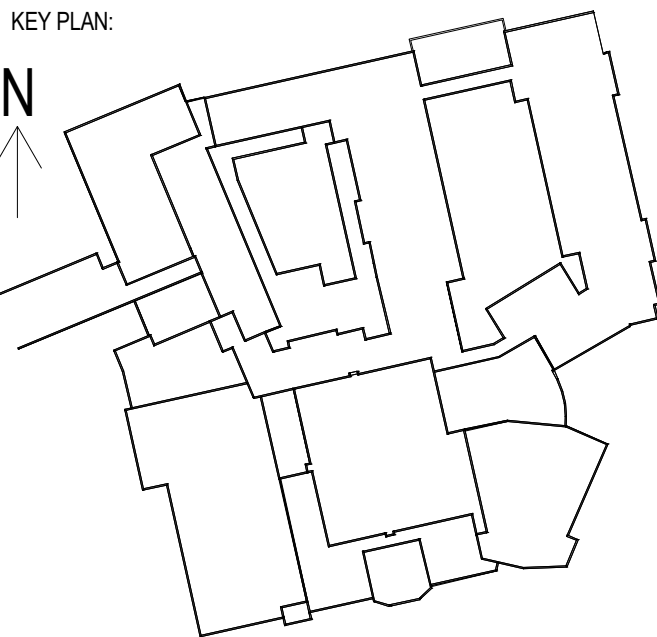
FILE: 2022/32580C-09
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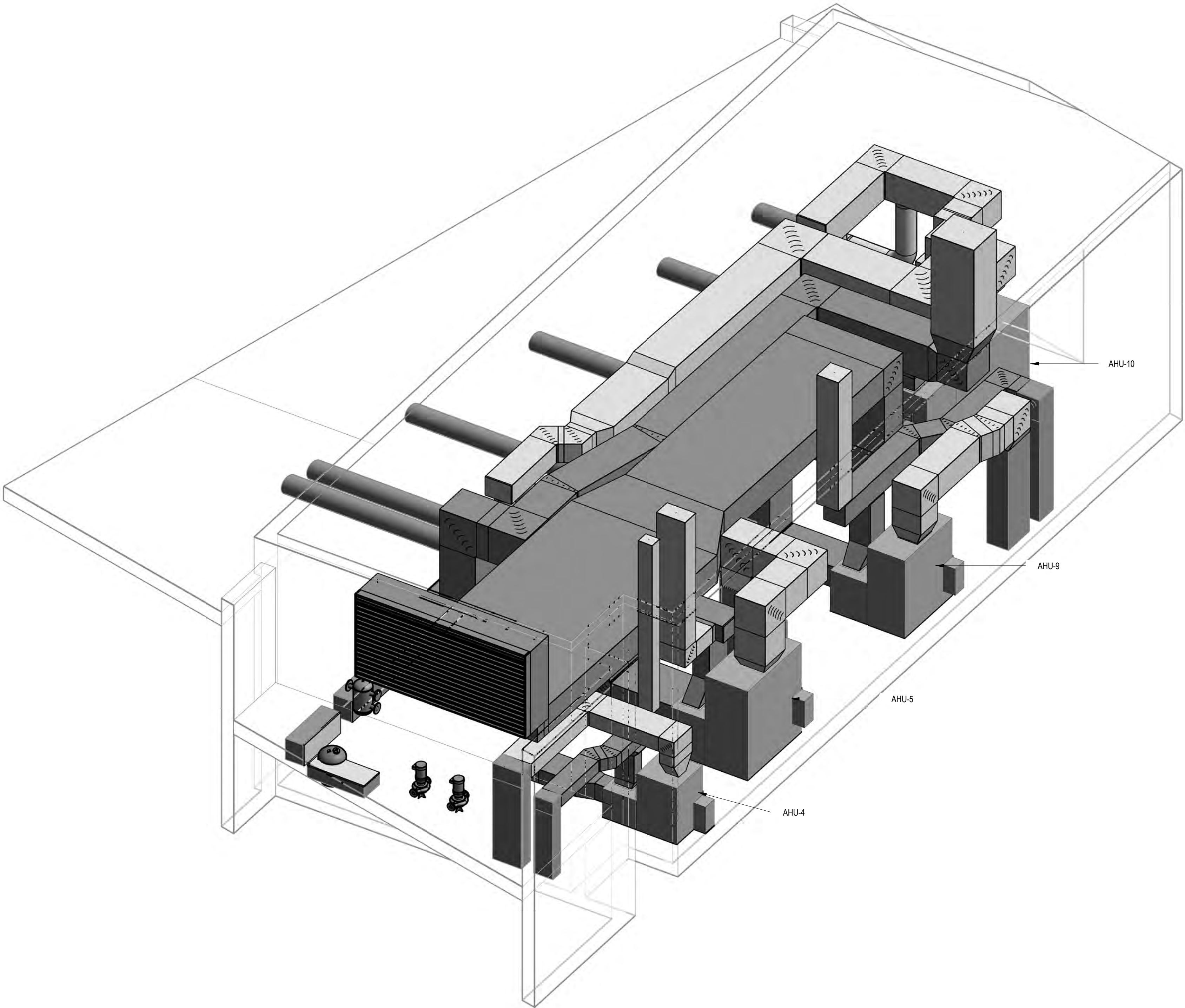
PROJECT NAME:
**KENNEDY HIGH SCHOOL
AHU REPLACEMENT**

**422 HIGHLAND AVE,
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DRAWING TITLE:
**MECHANICAL FAN ROOM
1 ISOMETRIC VIEW**

FILE: 2022/32680C-09
DRAWN BY: SA
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DATE: 08/08/2023
DRAWING NO:

M301

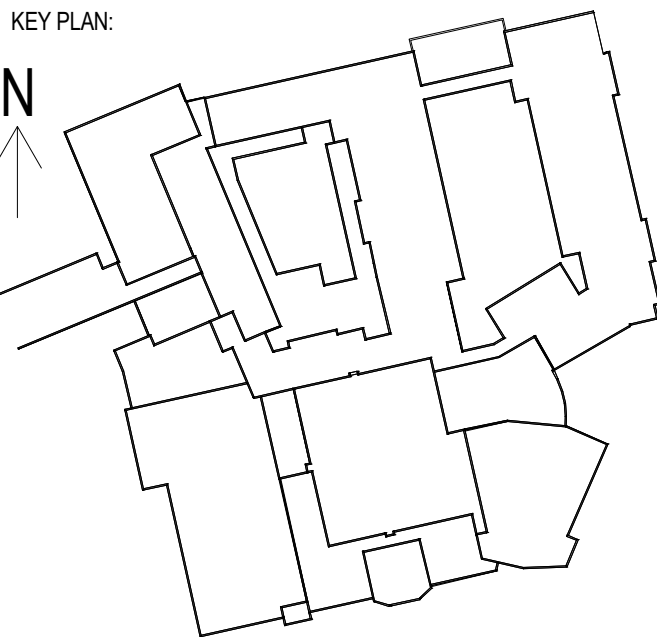


1
M301
MECHANICAL FAN ROOM 1 ISOMETRIC VIEW

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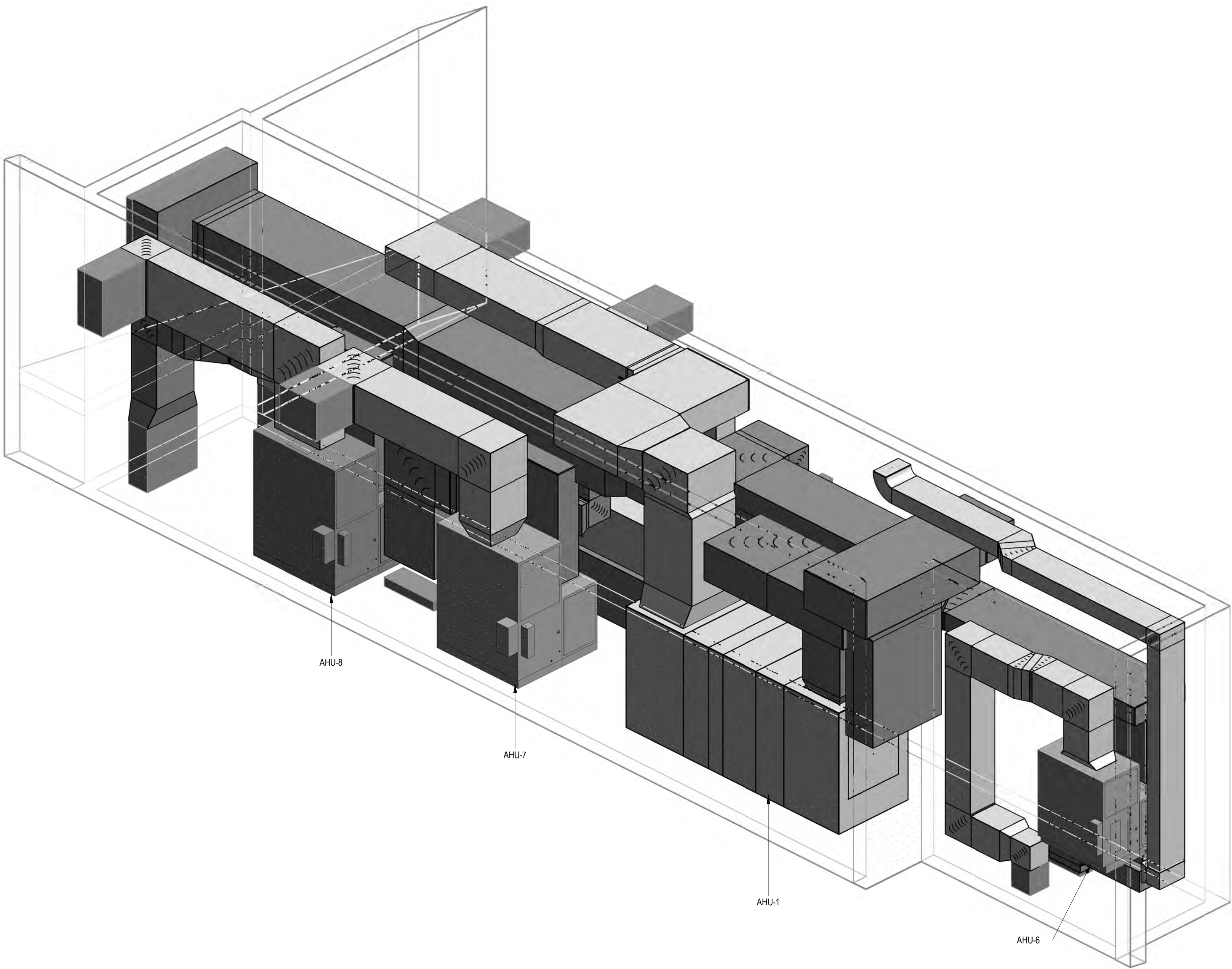
PROJECT NAME:
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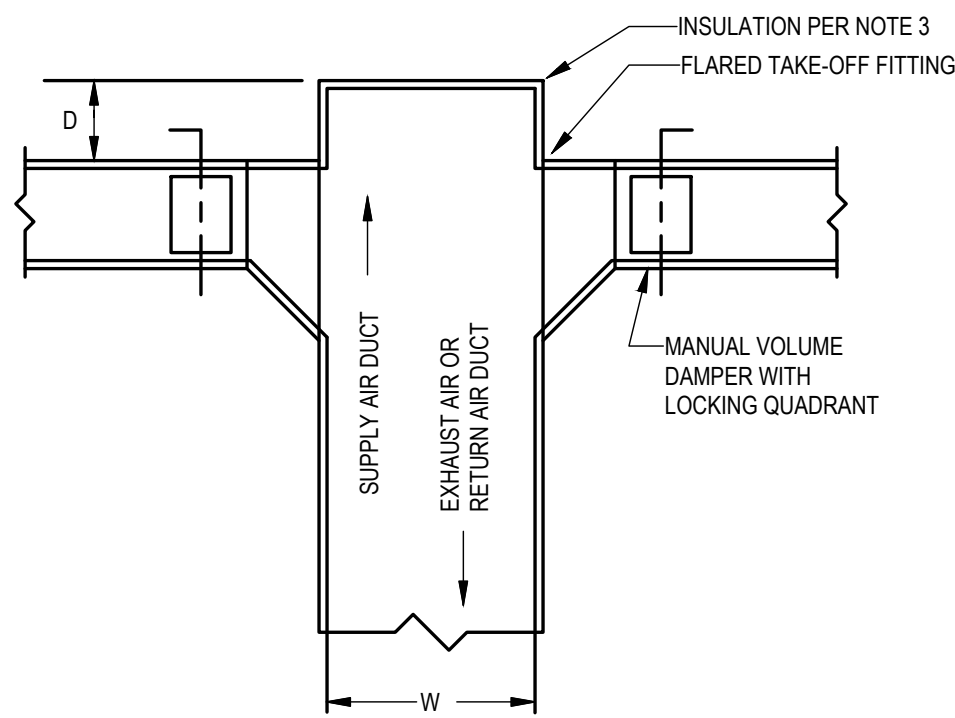
DRAWING TITLE:
**MECHANICAL FAN ROOM
2 ISOMETRIC VIEW**

FILE: 2022/32580C-09
DRAWN BY: SA
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

M302

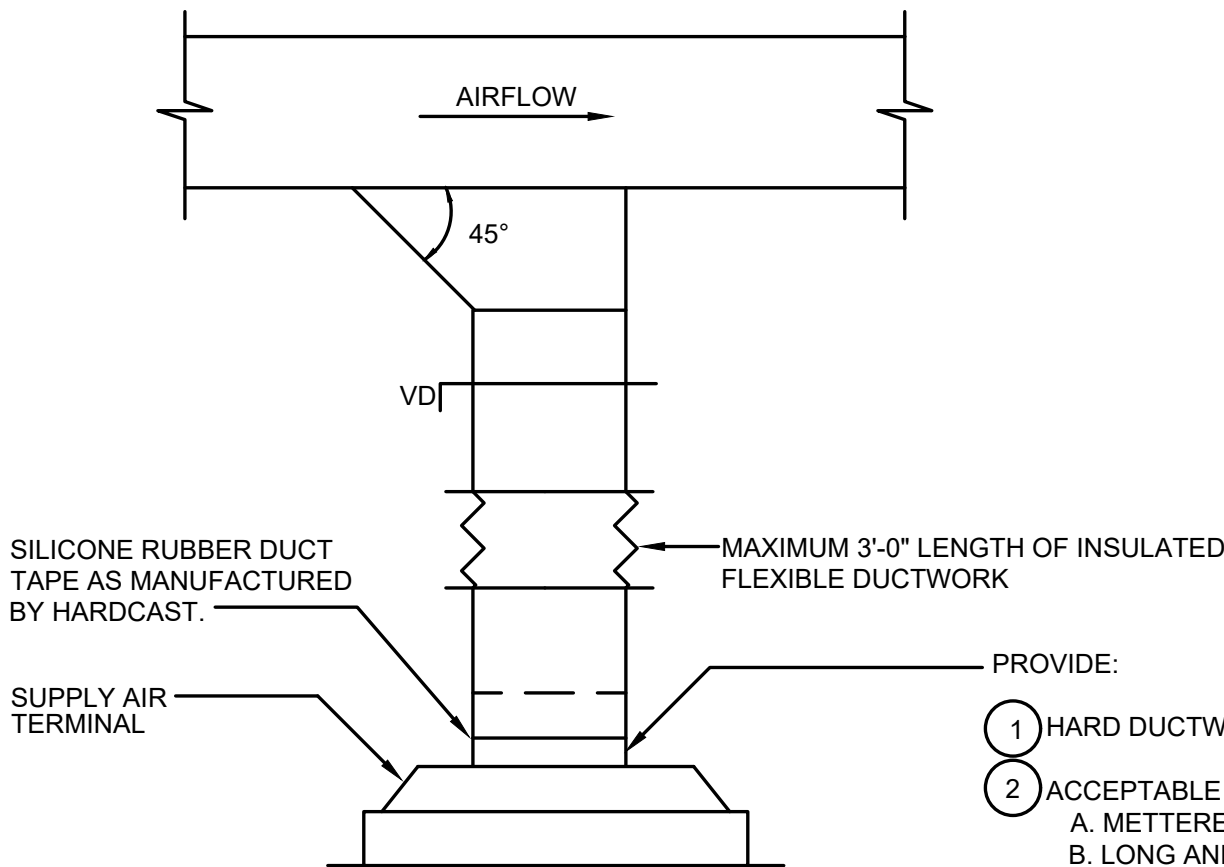


1
M302 MECHANICAL FAN ROOM 2 ISOMETRIC VIEW



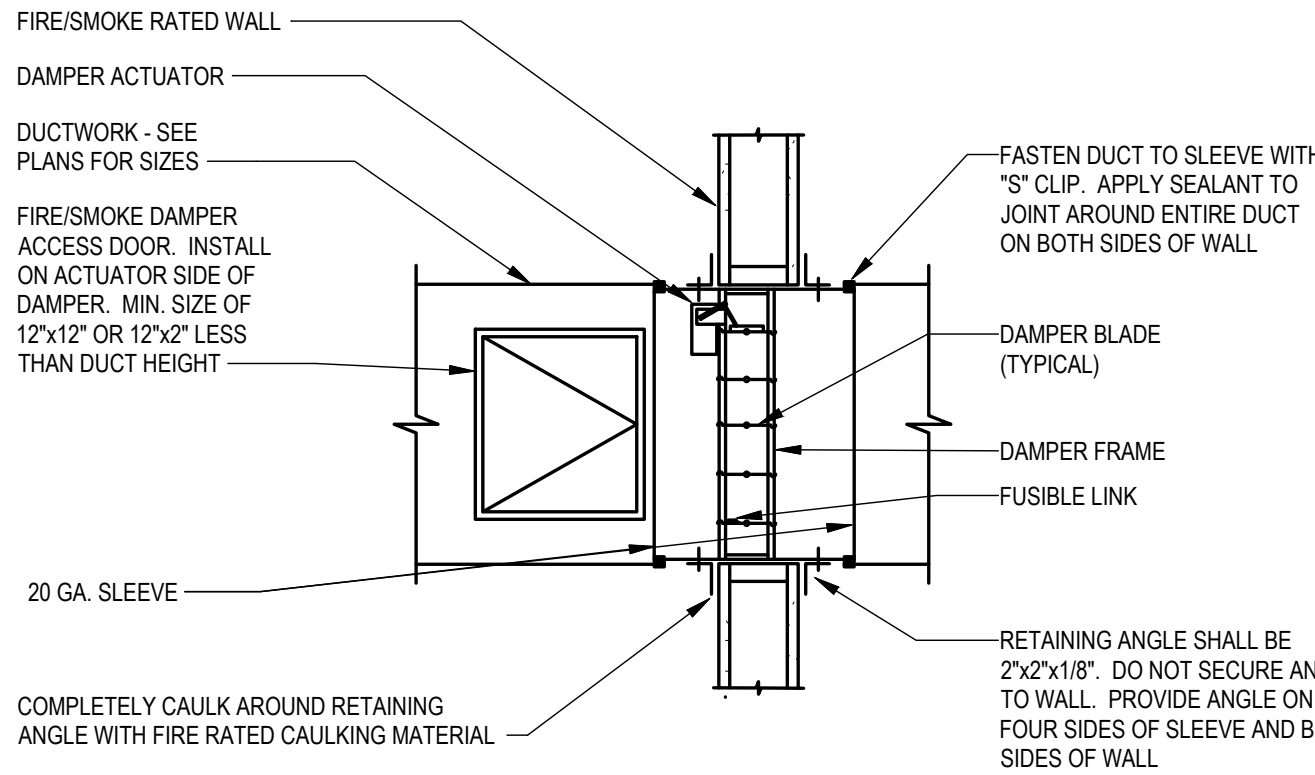
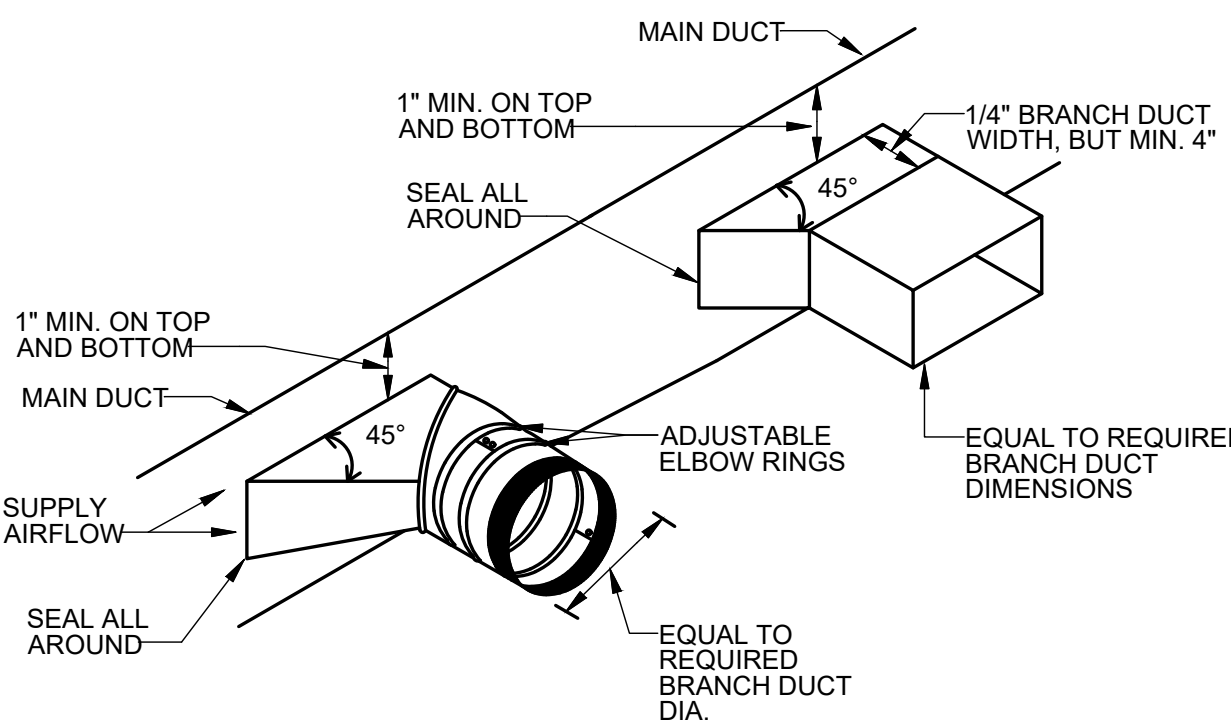
- NOTES:
- AIR CUSHION REQUIRED AT END OF RUN FOR BRANCH TAKE OFFS ILLUSTRATED
 - CUSHION DEPTH, D, EQUAL TO 1/2 THE GREATER OF H OR W, SUBJECT TO 6" MINIMUM, WHERE H = HEIGHT OF DUCT
 - SUPPLY AIR AND RETURN AIR DUCT SHALL BE EXTERNALLY INSULATED ONLY.

1
M401 EXTERNALLY INSULATED DUCTWORK TEE
NOT TO SCALE

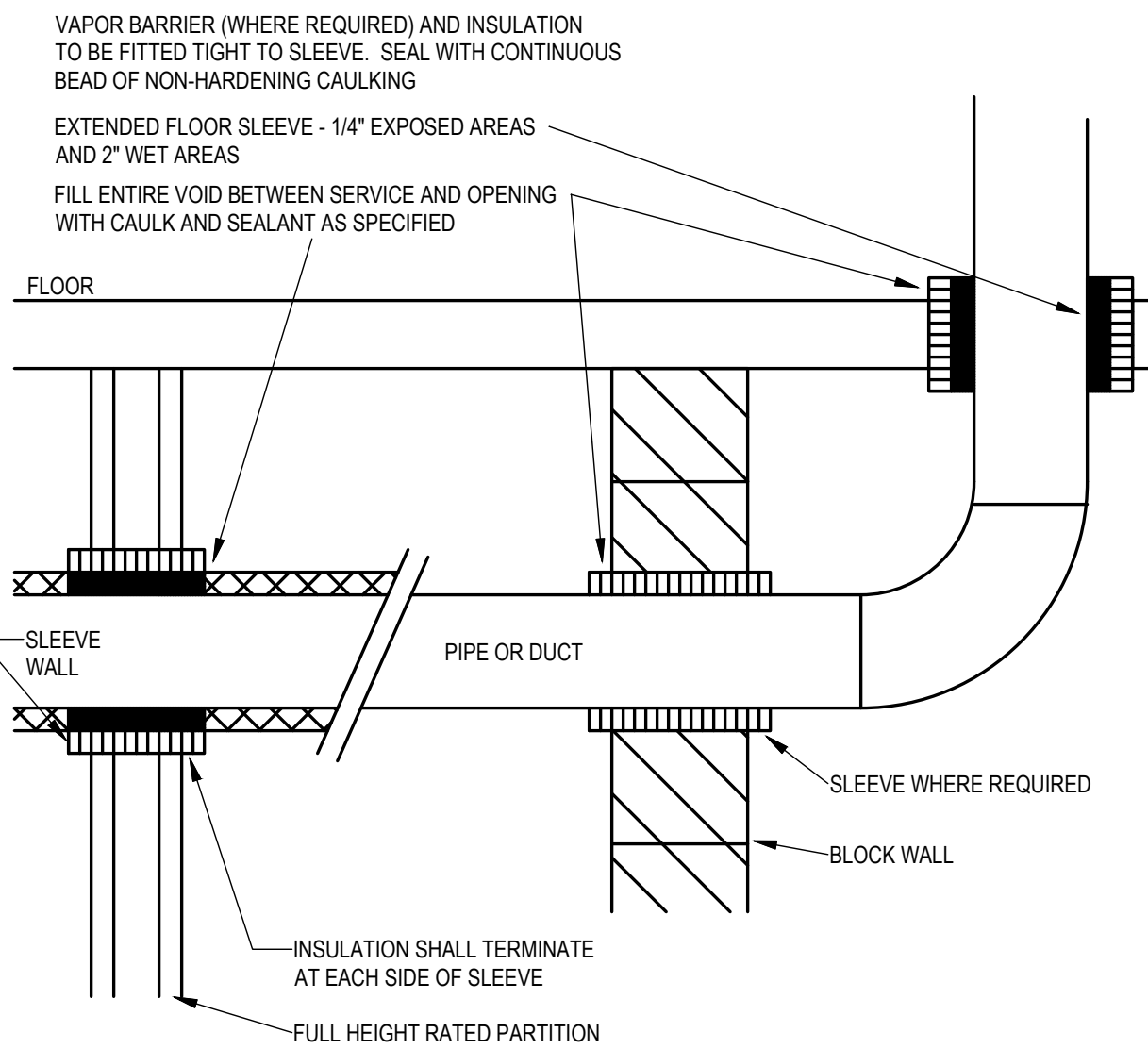


- PROVIDE:
- HARD DUCTWORK CONNECTION TO DIFFUSER.
 - METTERED WITH DOUBLE THICKNESS TURNING VANES.
 - LONG AND STANDARD ROUND ELBOWS.
 - ACCEPTABLE ELBOW TYPE TO DIFFUSERS.
 - METTERED WITH DOUBLE THICKNESS TURNING VANES.
 - LONG AND STANDARD ROUND ELBOWS.
 - INSULATED SA PLENUM CONNECTED TO DIFFUSER IN LIMITED SPACES ABOVE CEILINGS WHERE DUCT ELBOWS CANNOT BE PROVIDED.

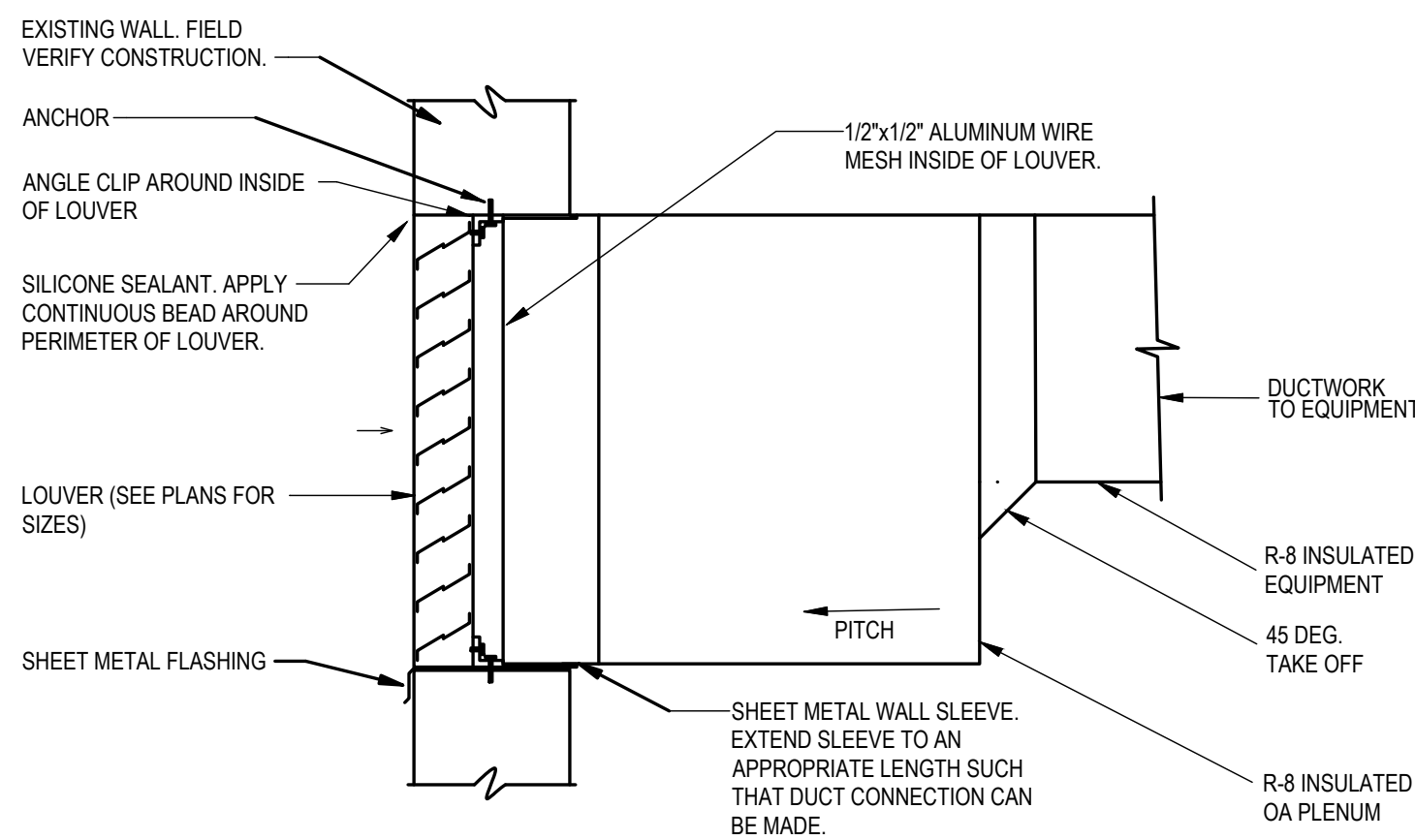
2
M401 DUCT BRANCH TAKE-OFF DETAIL
NOT TO SCALE



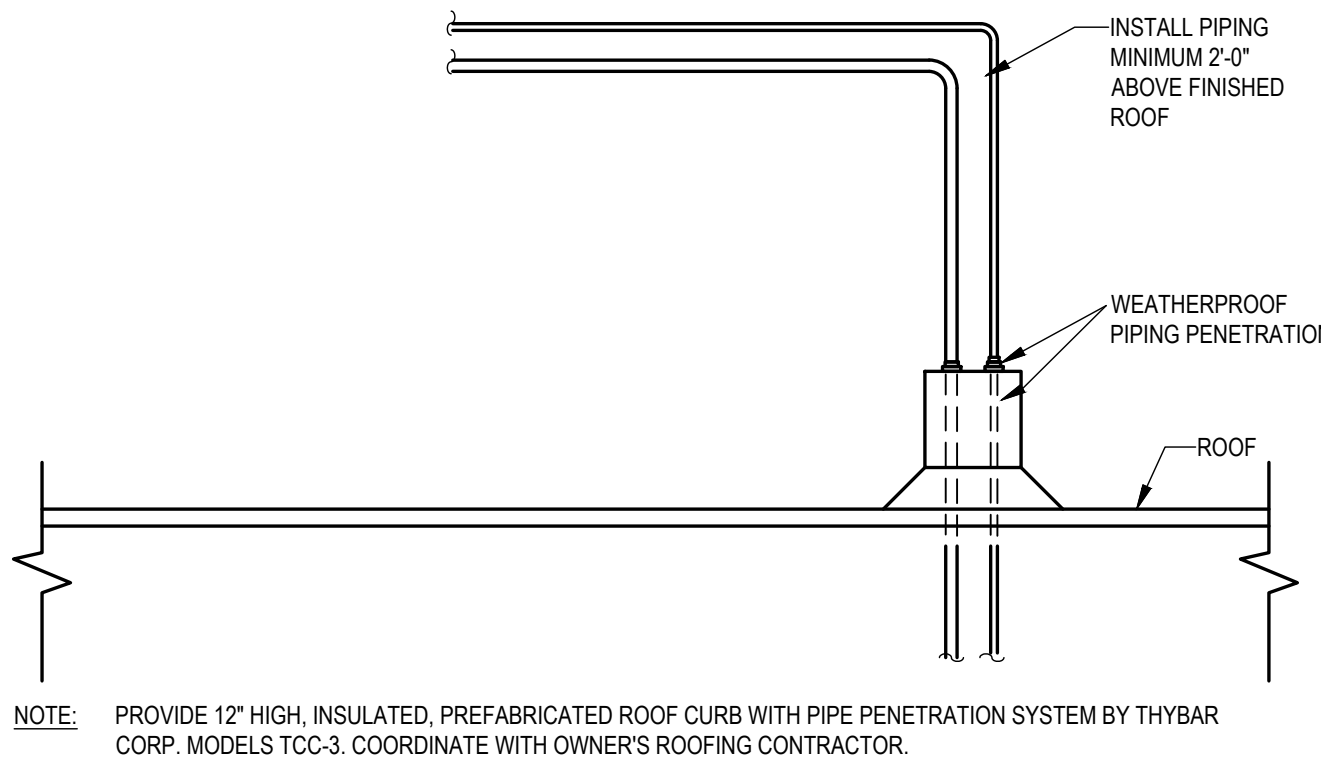
3
M401 COMBINATION FIRE/SMOKE DAMPER INSTALLATION DETAIL
NOT TO SCALE



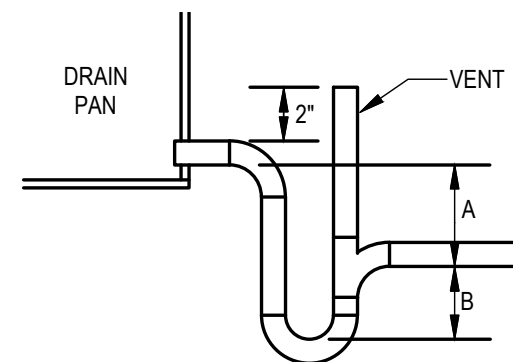
4
M401 DUCT OR PIPE WALL AND FLOOR PENETRATION DETAIL
NOT TO SCALE



5
M401 LOUVER ASSEMBLY DETAIL
NOT TO SCALE

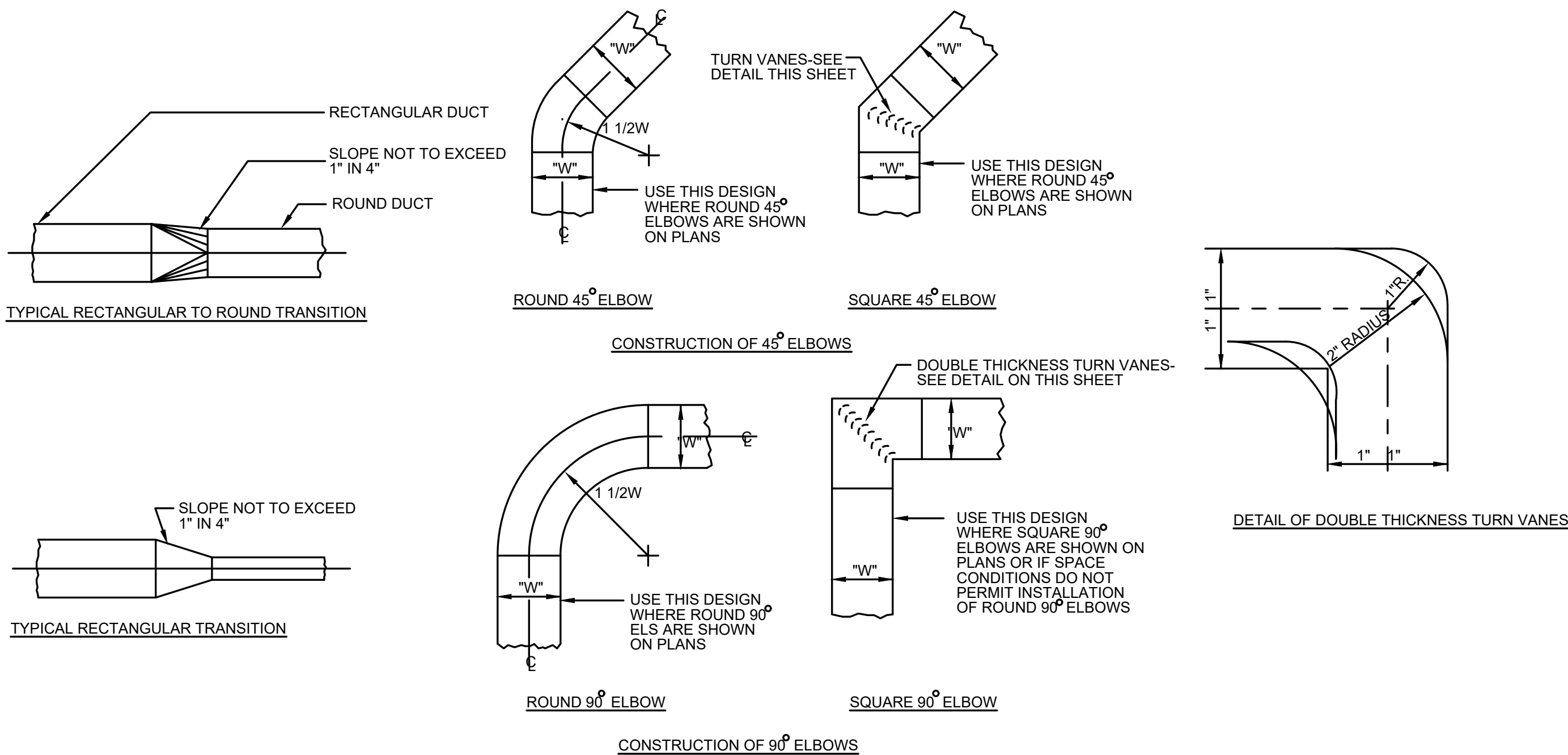


6
M401 ROOF PIPE PENETRATION DETAIL
NOT TO SCALE

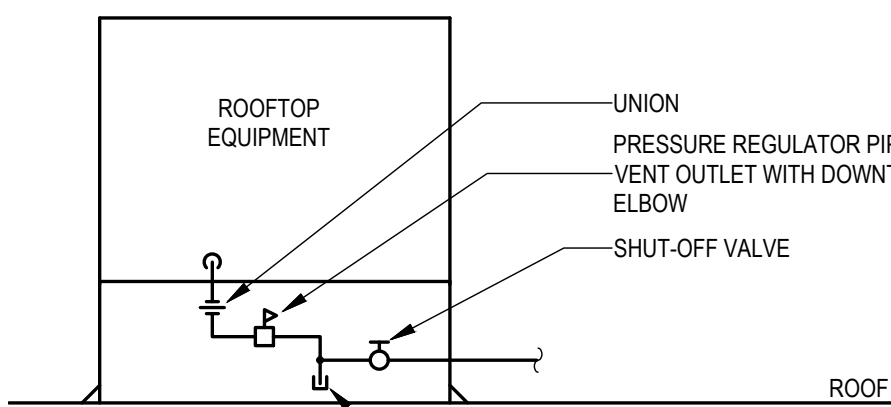


- NOTES:
- A= SCHEDULED FAN STATIC PLUS ONE INCH
 - B= 1/2 OF SCHEDULED FAN STATIC
 - PROVIDE SPLASH BLOCK FOR ROOFTOP UNITS. TERMINATE CONDENSATE PIPING MINIMUM 10'-0" AWAY FROM OA INTAKE.

7
M401 COOLING COIL CONDENSATE DRAIN DETAIL
NOT TO SCALE

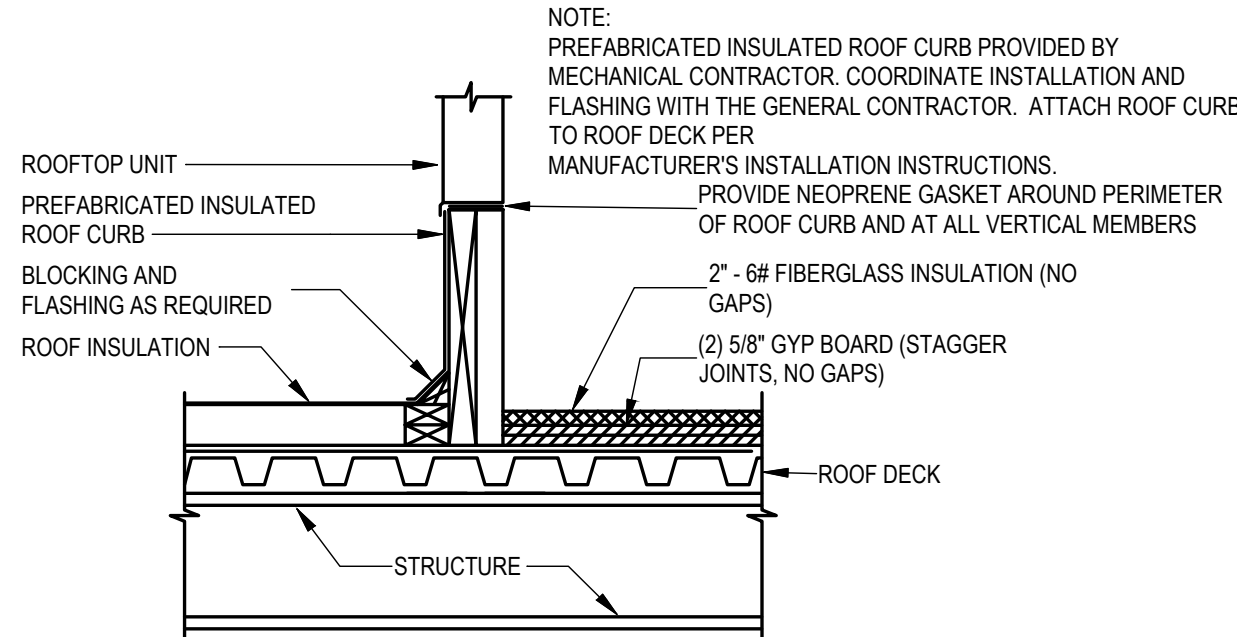


8
M401 DUCTWORK DETAILS
NOT TO SCALE



- NATURAL GAS PIPING:
- ASTM A53/A53M, BLACK STEEL, SCHEDULE 40, TYPE E, GRADE B.
 - STANDARD: ASSE 1079.
 - 2-1/2" AND LARGER NG PIPING: ALL WELDED JOINTS/FITTINGS.

9
M401 GAS PIPING CONNECTION FOR ROOFTOP EQUIPMENT DETAIL
NOT TO SCALE



10
M401 ROOFTOP UNIT CURB INSTALLATION DETAIL
NOT TO SCALE

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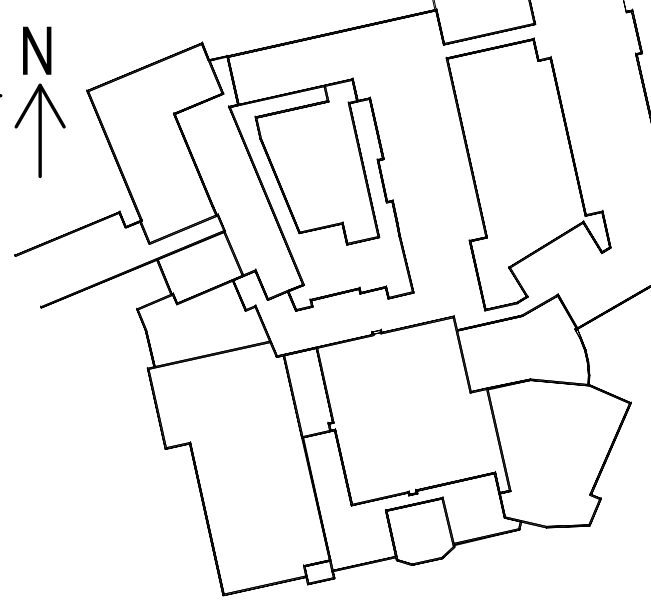
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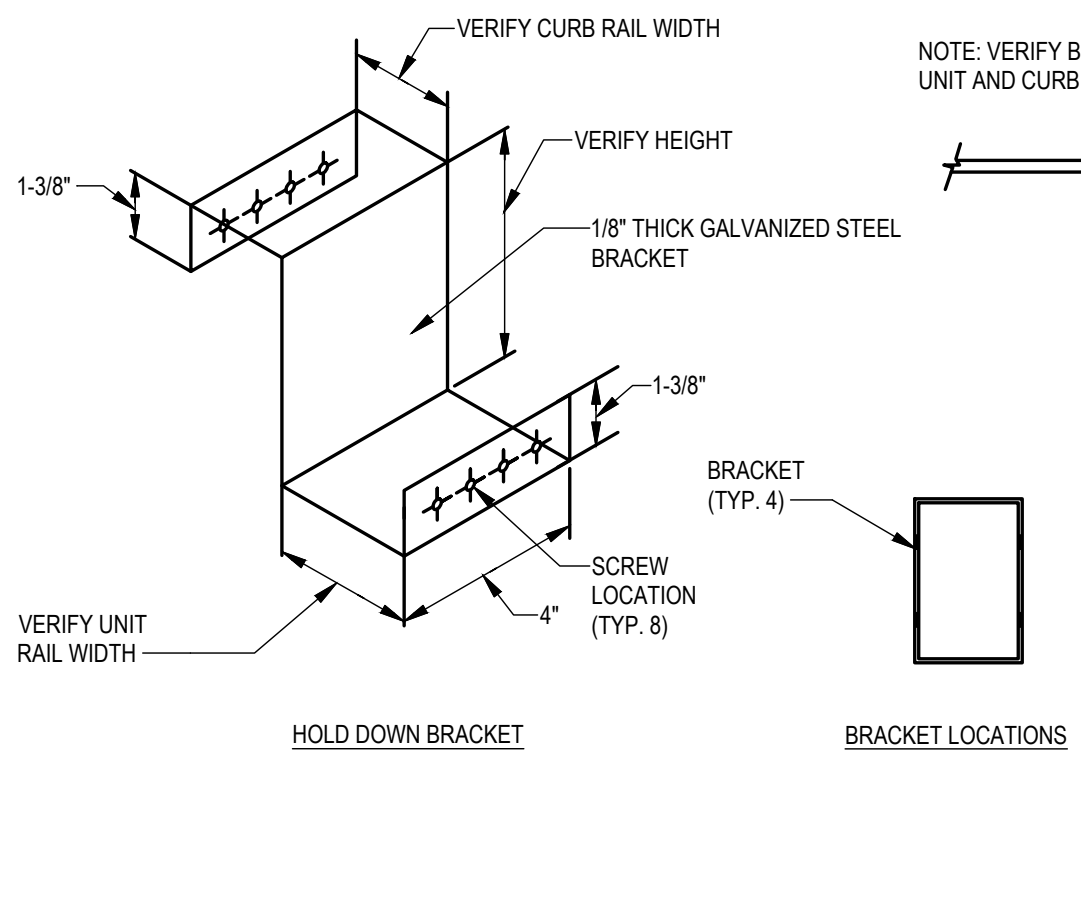
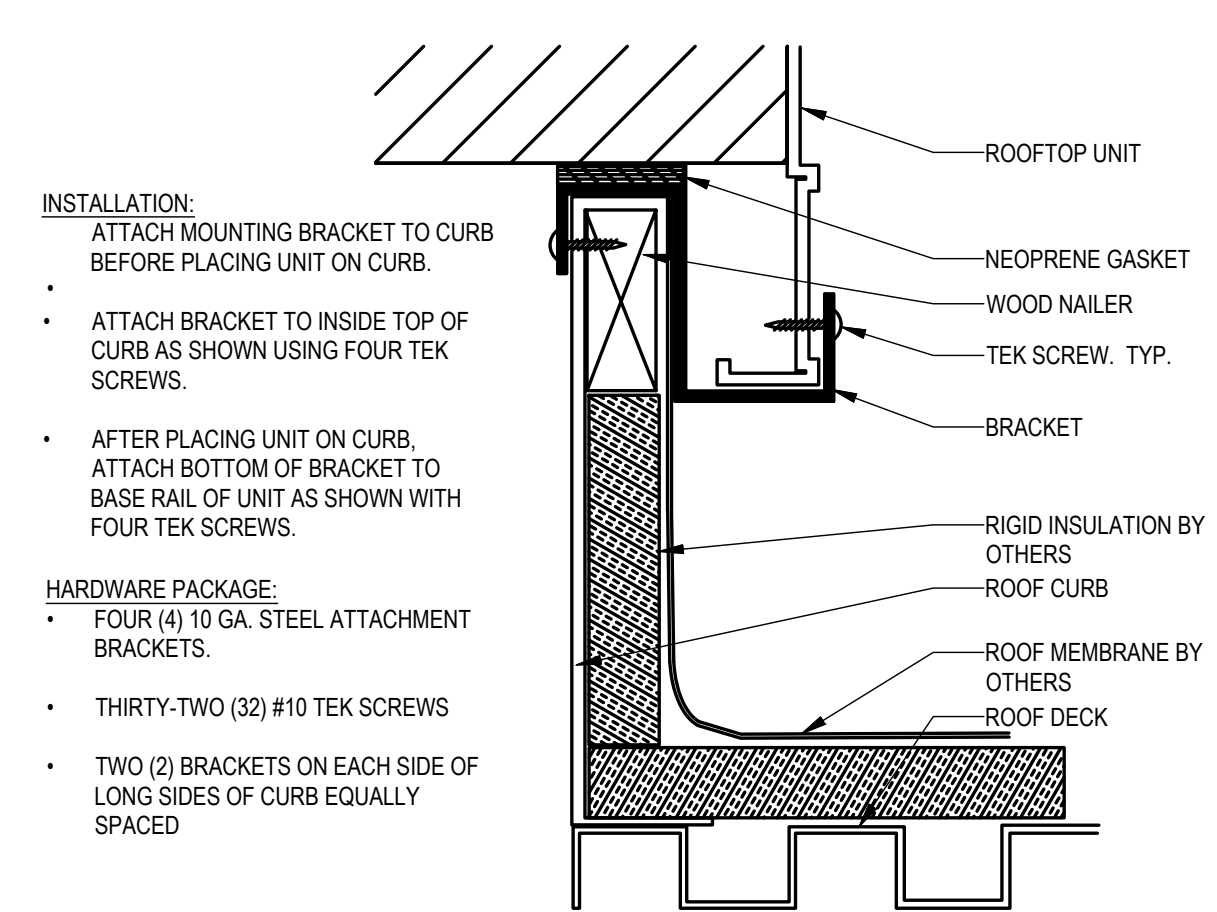
PROJECT NAME:
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AHU REPLACEMENT**

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DRAWING TITLE:
MECHANICAL DETAILS

FILE: 2022/32580C-09
DRAWN BY: HB
CHECKED BY: OHA
DATE: 08/08/2023
DRAWING NO:

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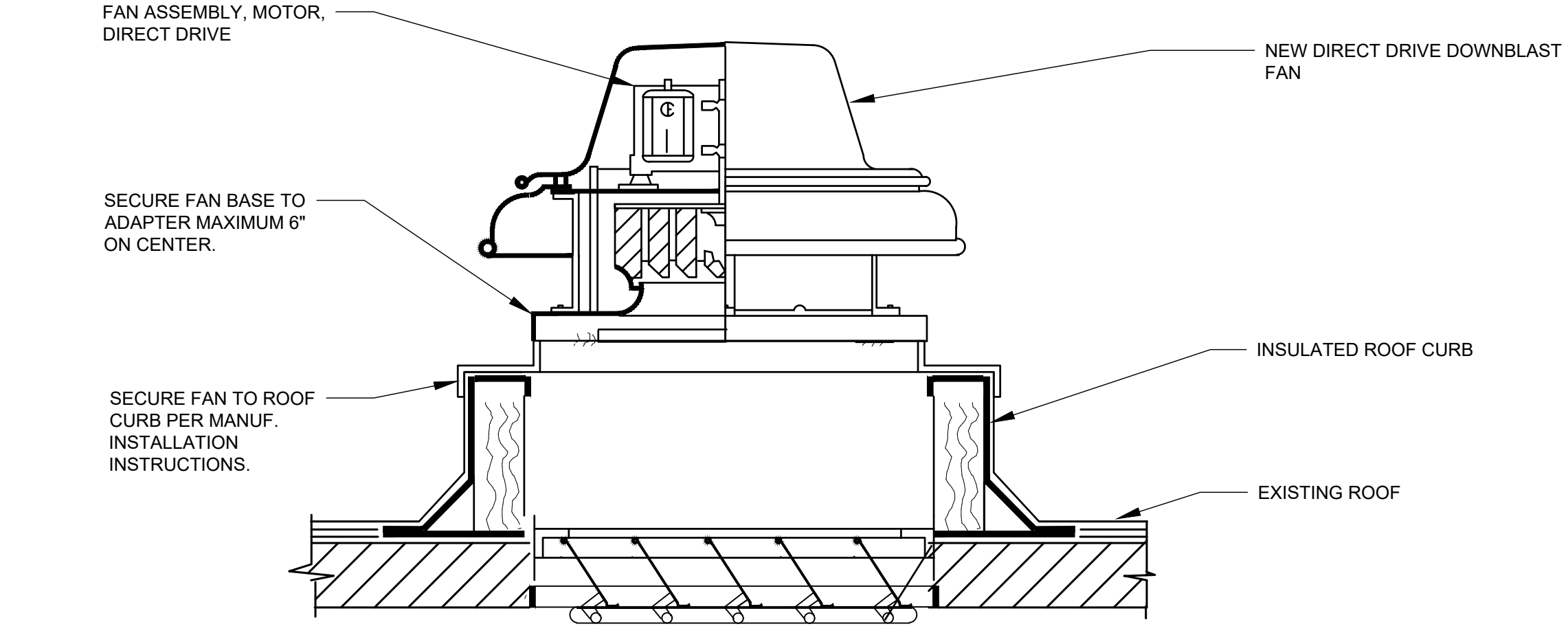
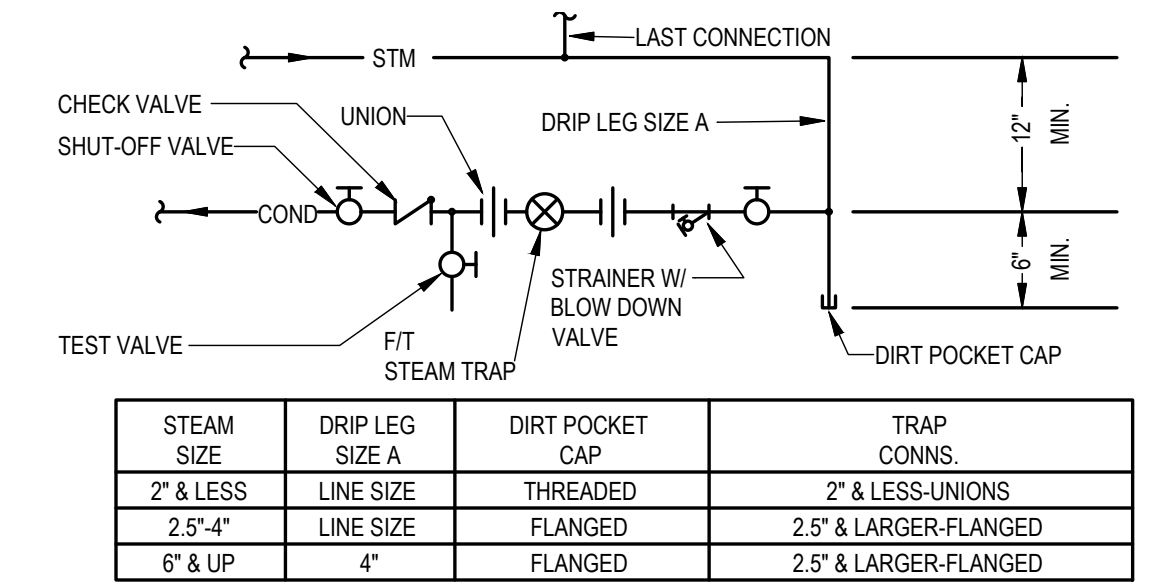
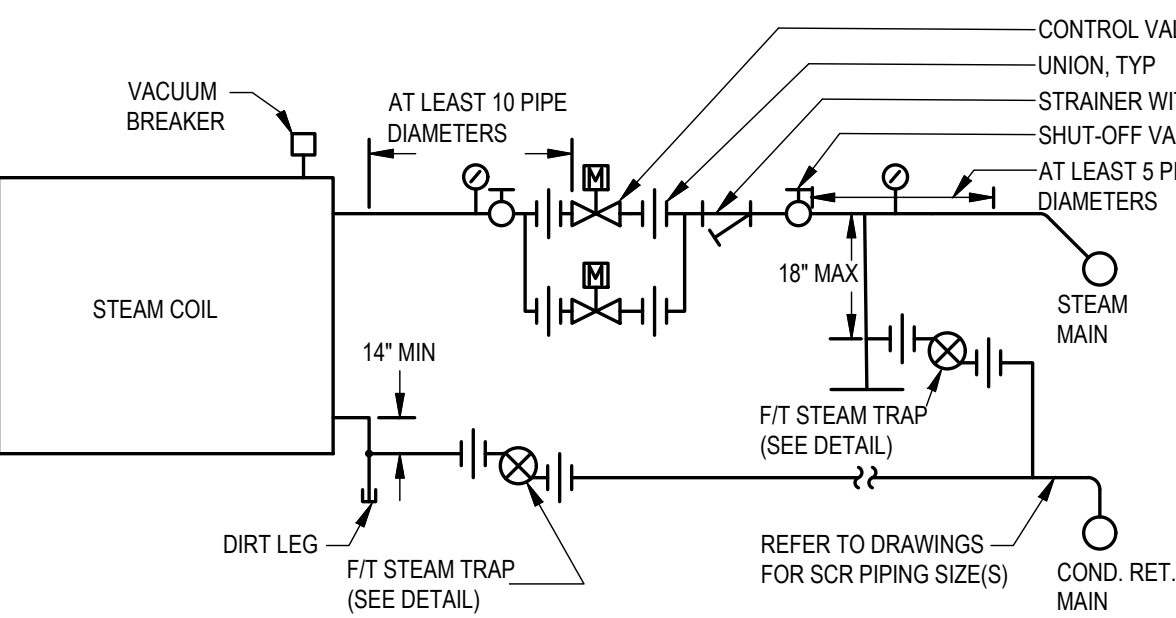
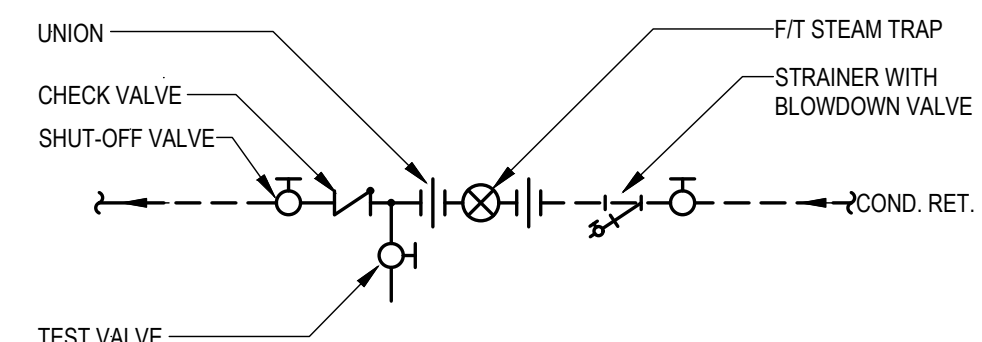
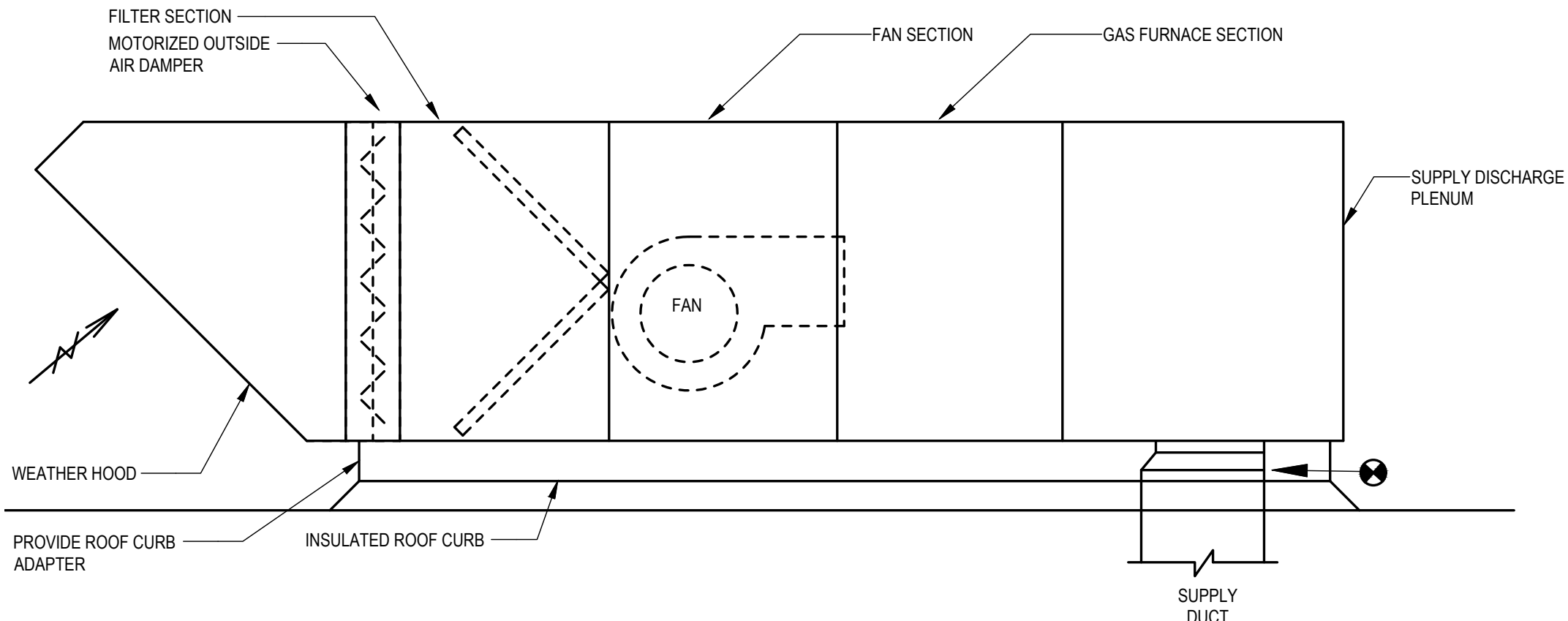
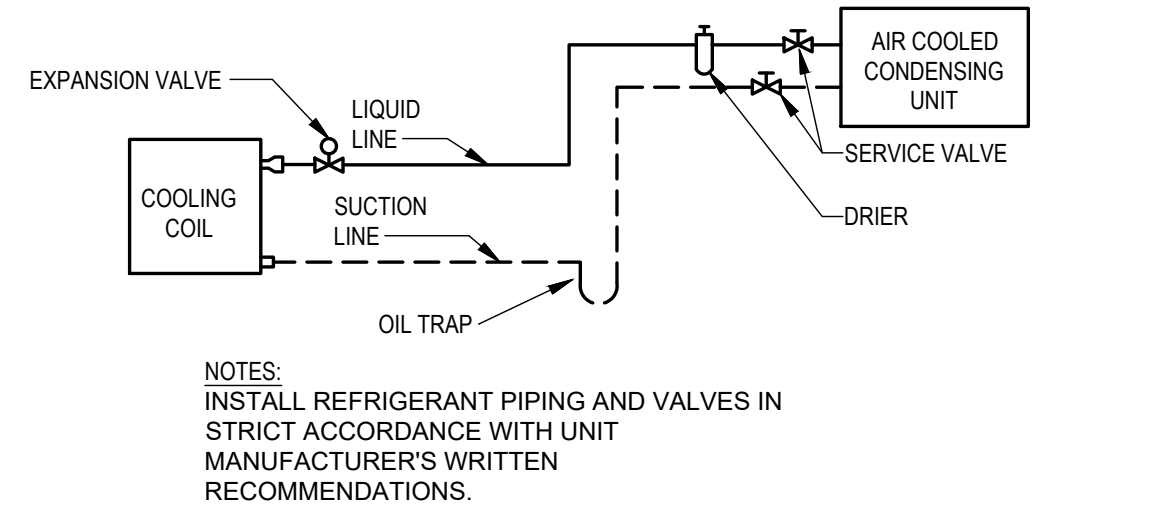
INSTALLATION:

ATTACH MOUNTING BRACKET TO CURB BEFORE MOUNTING UNIT TO CURB.

ATTACH BRACKET TO INSIDE TOP OF CURB USING (4) TEK SCREWS.

AFTER SETTING UNIT ON CURB, ATTACH BOTTOM OF BRACKET TO BASE RAIL OF UNIT, WITH (4) TEK SCREWS

3 THRU 12.5 TON
(4) 14 GA. STEEL ATTACHMENT BRACKETS
(32) #10 TEK SCREWS
TWO BRACKET ON LONG SIDES OF CURB EQUALLY SPACED.

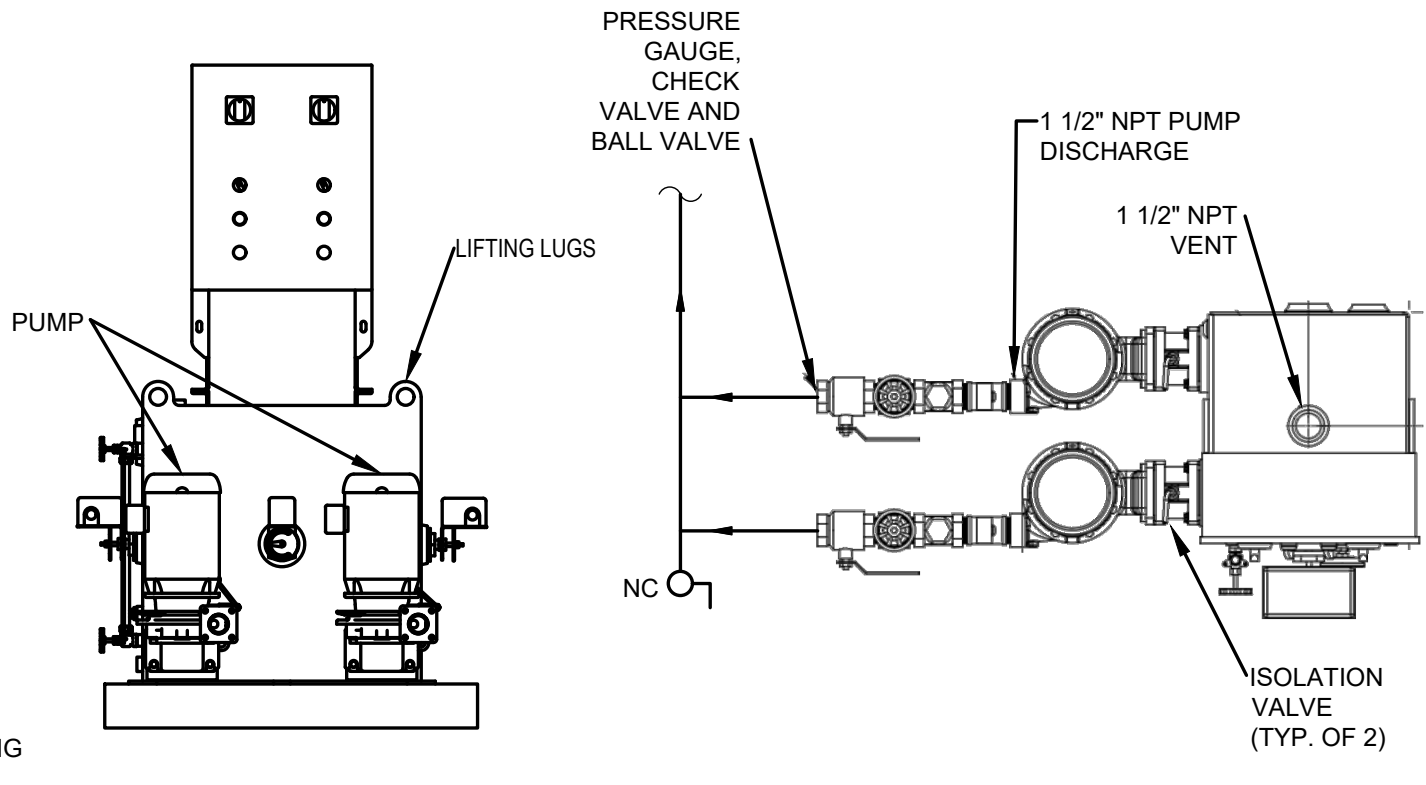
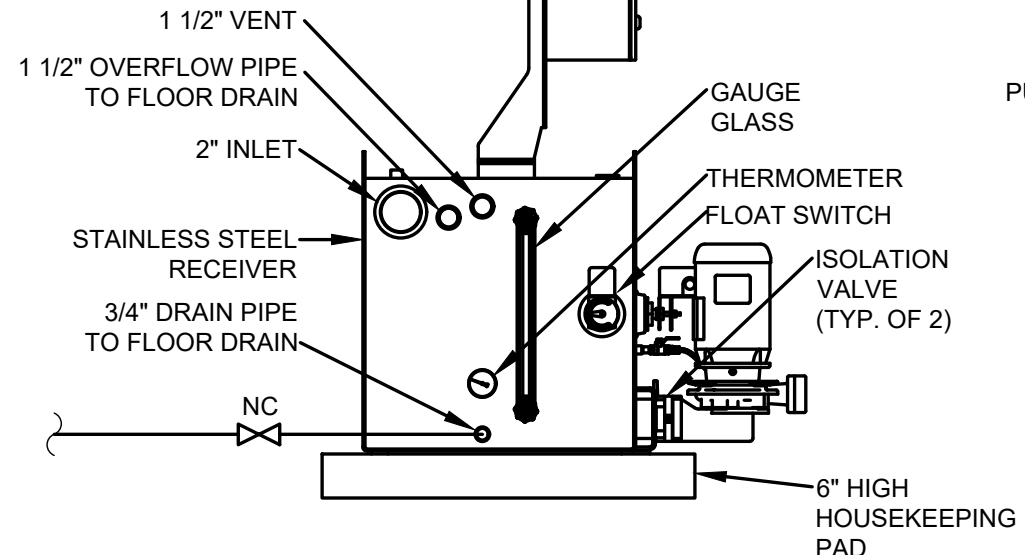


- CONTROL PANEL:
- NEMA 3R CONSTRUCTION
 - MECHANICAL ALTERNATOR
 - POWER ON LIGHT
 - PUMP TEST BUTTON
 - EXTRA DRY CONTACTS
 - UL LABELED PANEL
 - HIGH LEVEL ALARM HORN & LIGHT W/SILENCE SWITCH
 - LEAD-AUTO-LAG SELECTOR SWITCH

-INSTALL ALL DRAIN PIPING FULL SIZE TO AIR GAP OR OPEN DRAIN

-UNIT IS NOT DESIGNED TO SUPPORT PIPING.

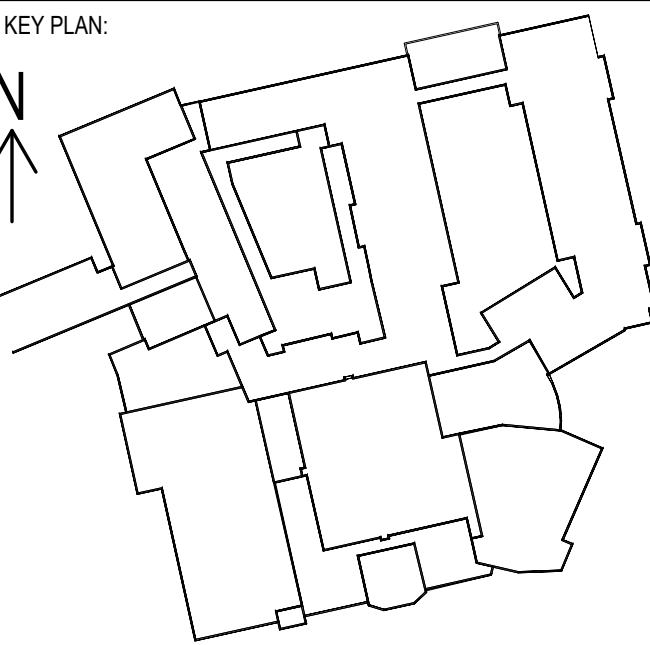
-ALL CONNECTING PIPING MUST BE FIELD SUPPORTED & ANCHORED.



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CLIENT:
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**235 GRAND STREET
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PROJECT NAME:
**KENNEDY HIGH SCHOOL
AHU REPLACEMENT**

**422 HIGHLAND AVE,
WATERBURY, CT 06708**

DRAWING TITLE:
MECHANICAL DETAILS

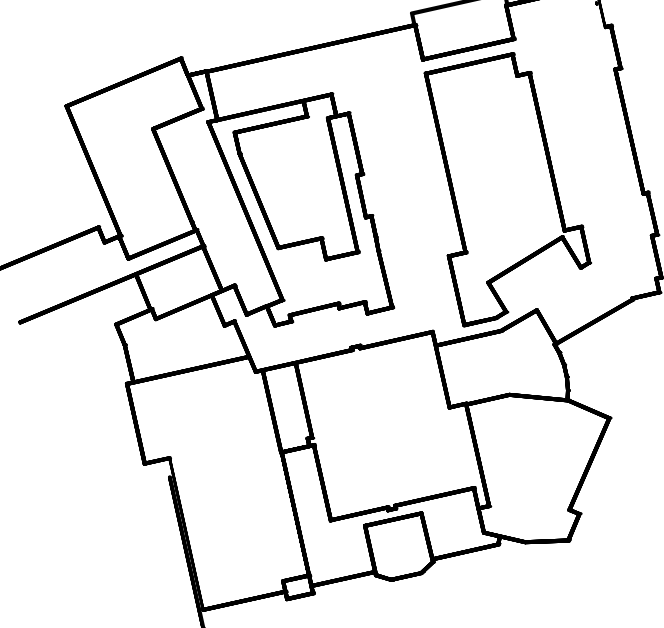
FILE: 2022/32580C-09
DRAWN BY: HB
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M402

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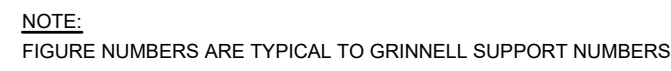
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PROJECT NAME:
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

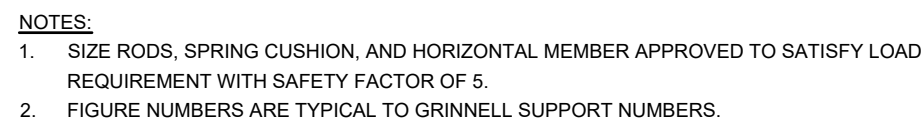
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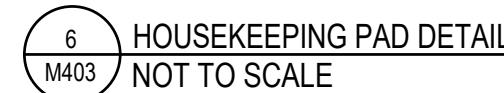
M403

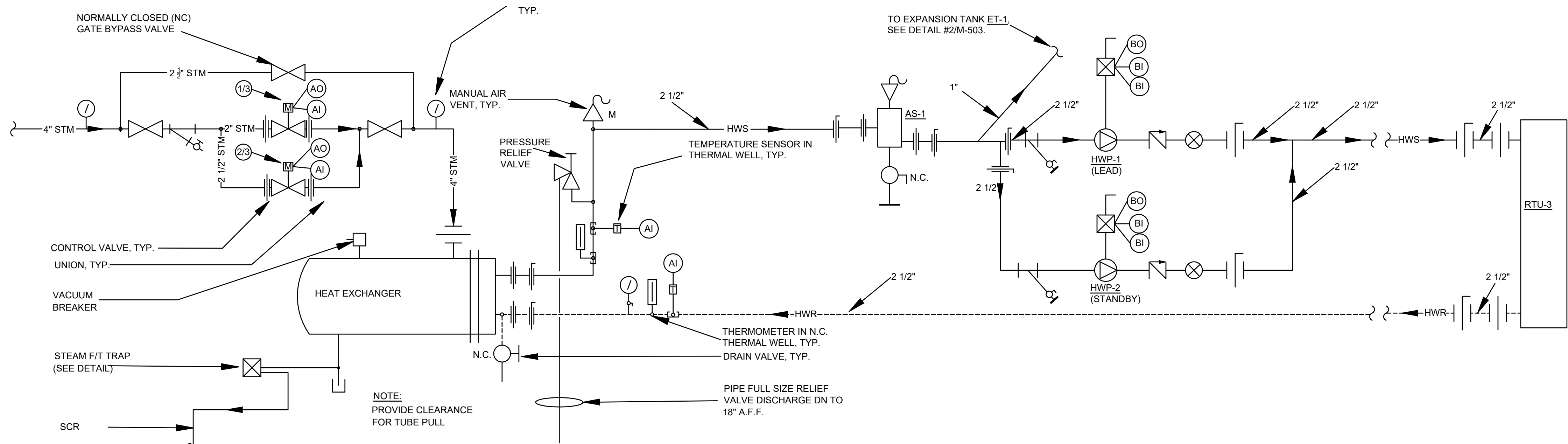


3 SINGLE PIPE CLEVIS HANGER
M403 NOT TO SCALE

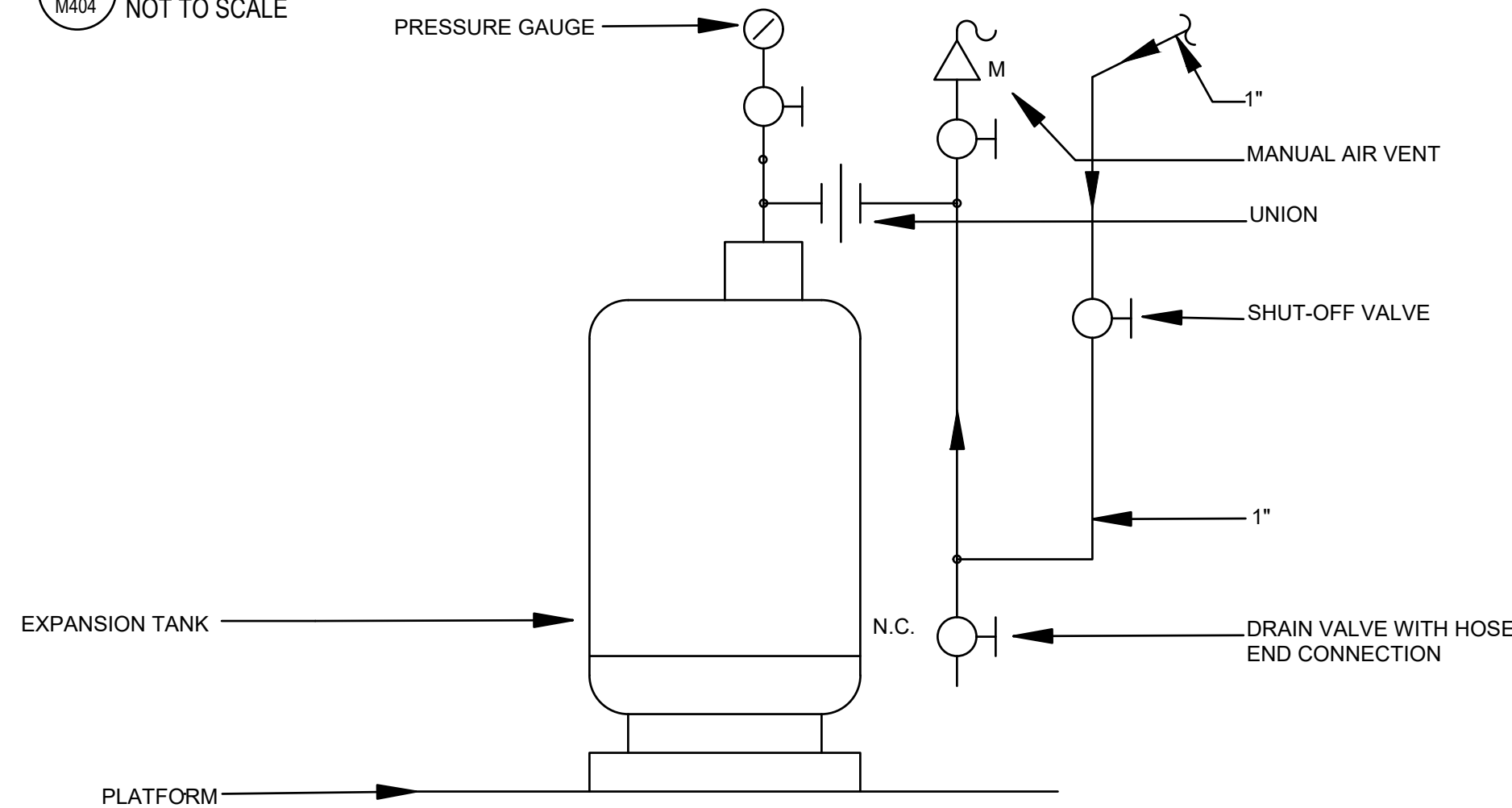


4 TRAPEZE TYPE PIPE SUPPORT
M403 NOT TO SCALE

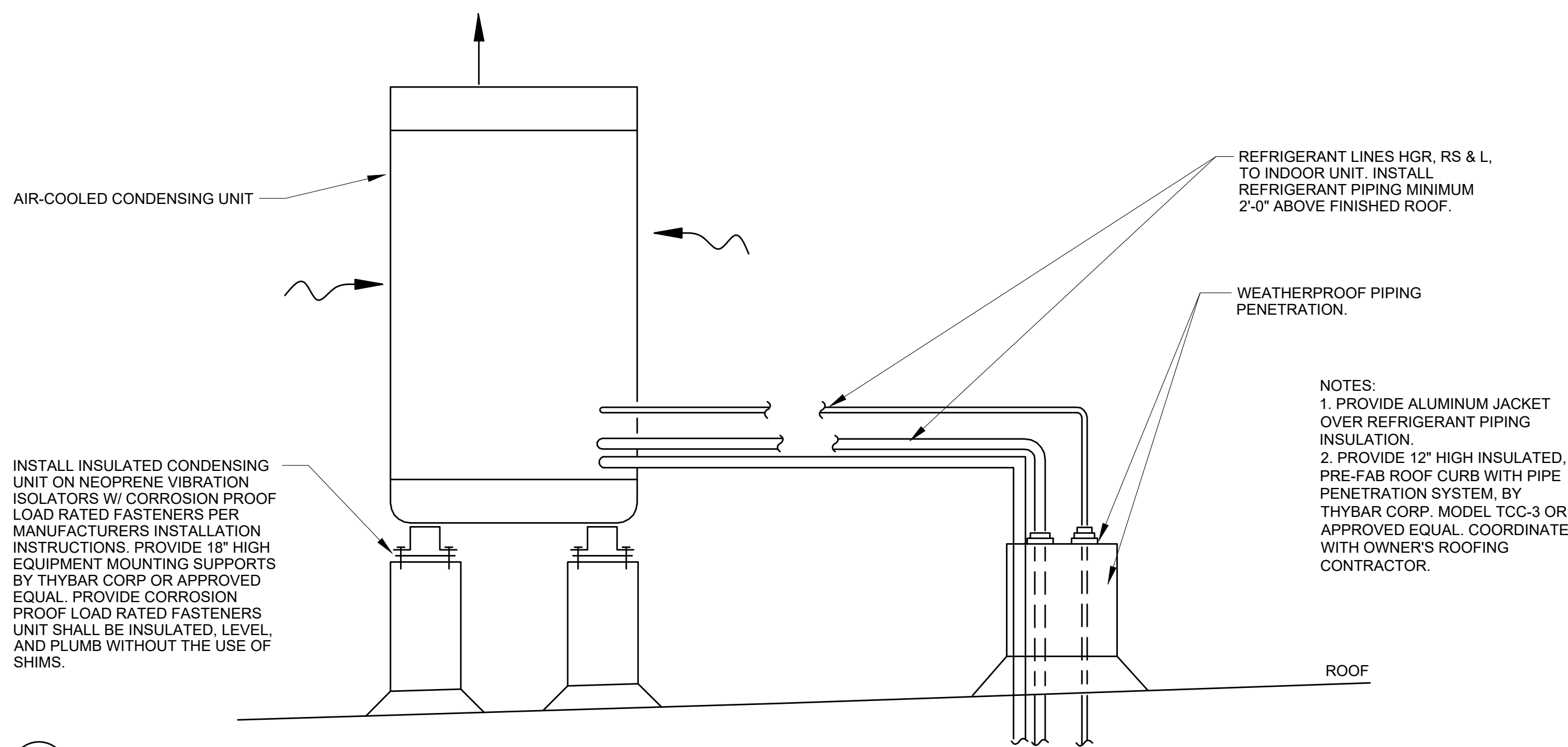




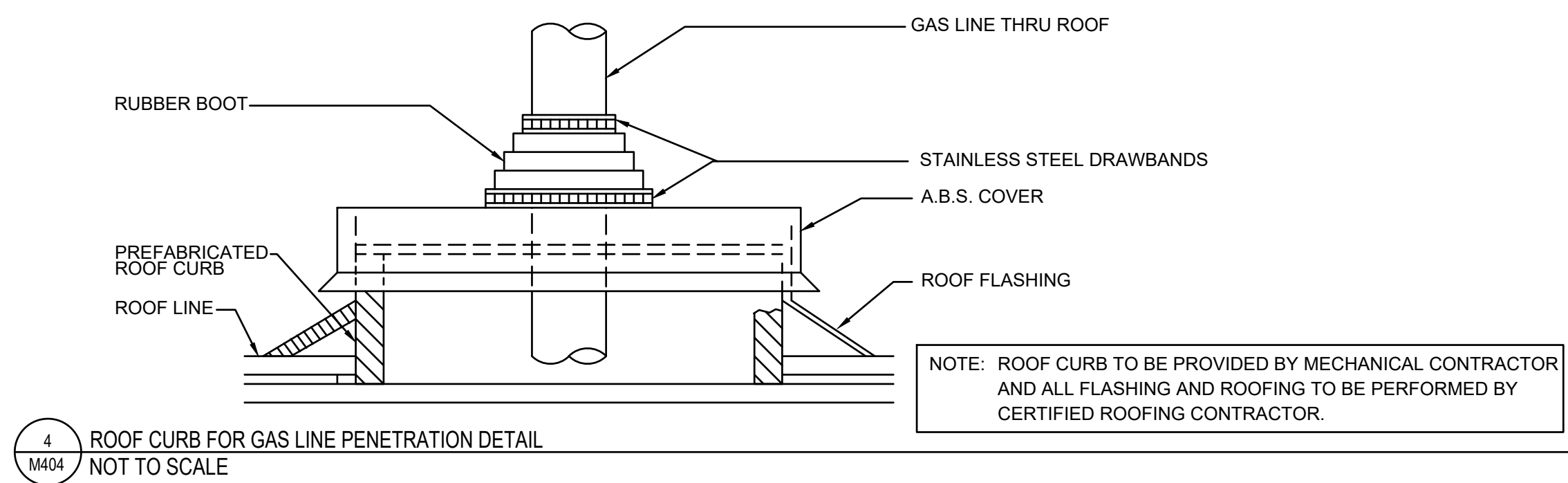
1
M404 STEAM TO HOT WATER HEAT EXCHANGER PIPING SCHEMATIC AND CONTROLS
NOT TO SCALE



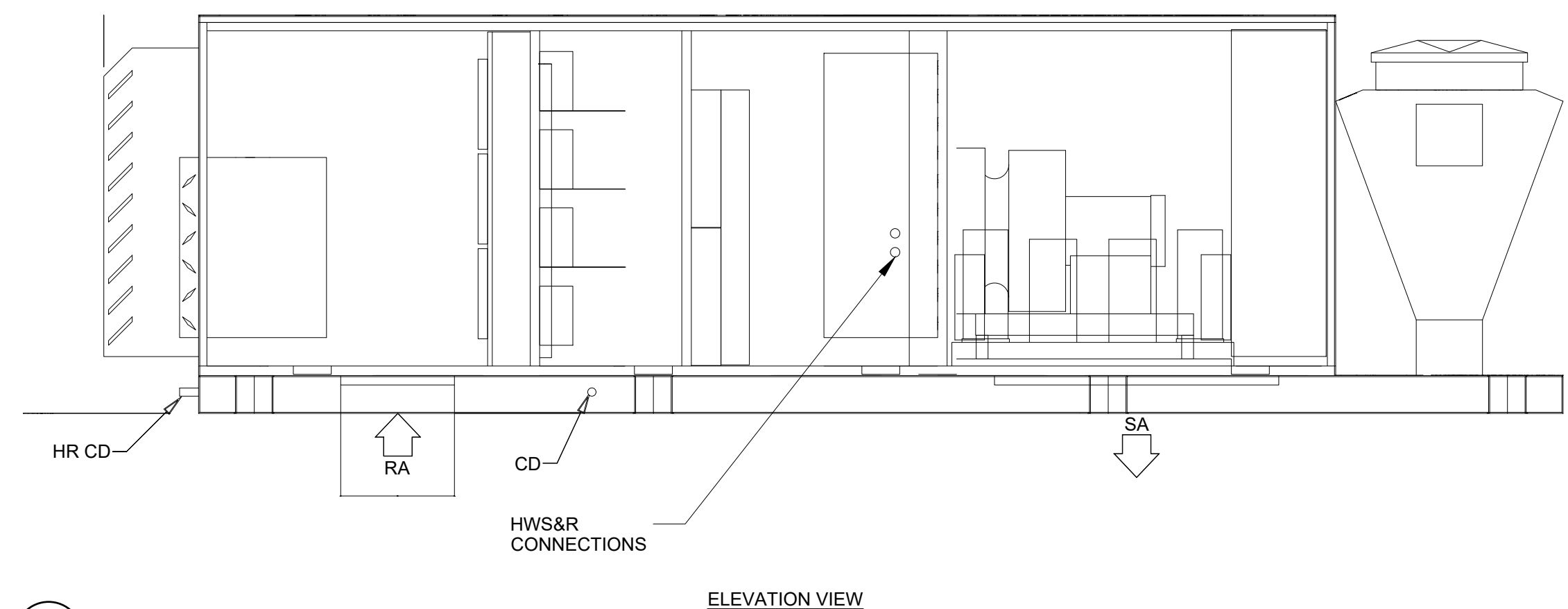
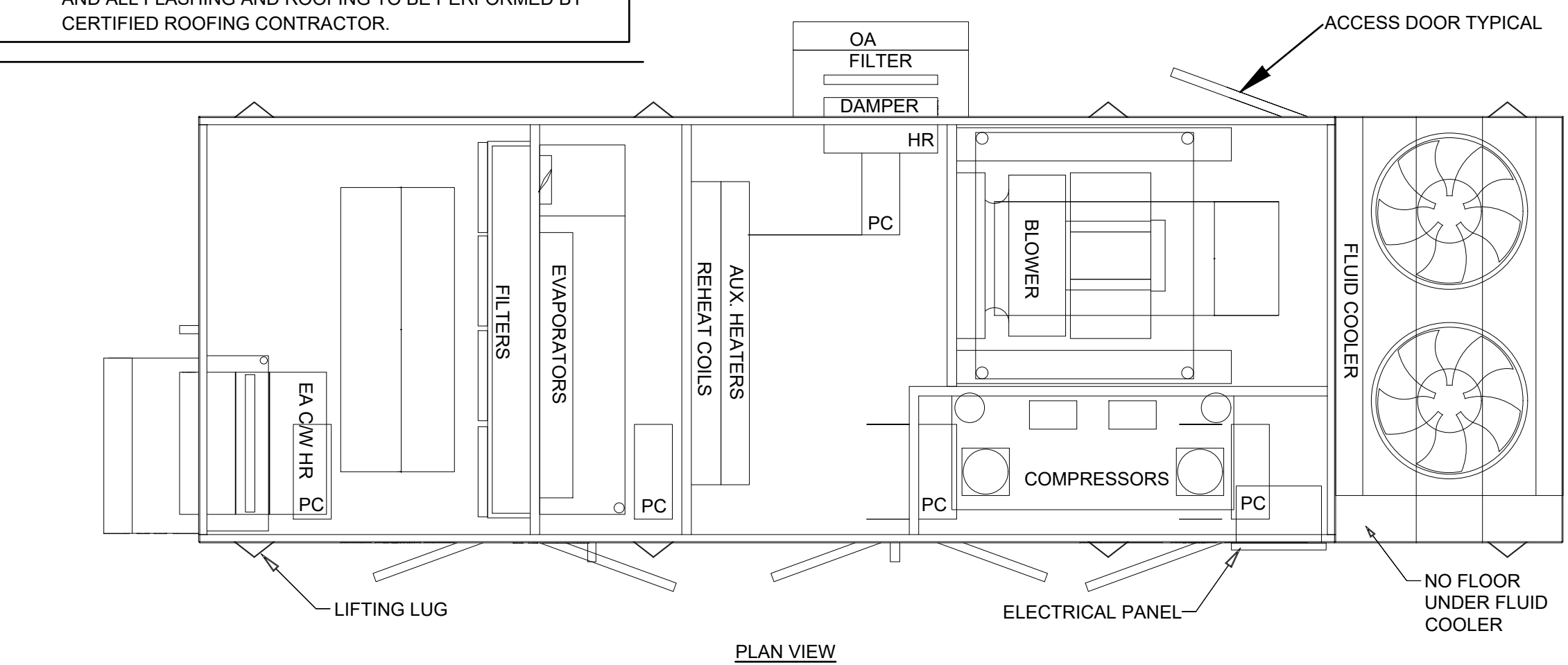
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M404 EXPANSION TANK PIPING DETAILS
NOT TO SCALE



3
M404 CONDENSING UNIT DETAILS
NOT TO SCALE

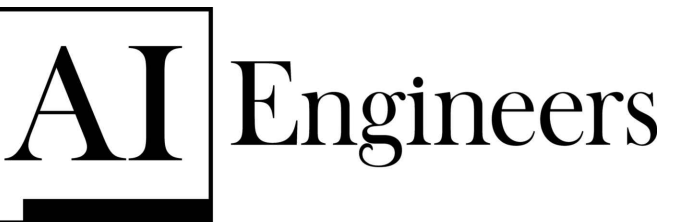


4
M404 ROOF CURB FOR GAS LINE PENETRATION DETAIL
NOT TO SCALE



5
M404 RTU-3 POOL DEHUMIDIFICATION UNIT DETAILS
NOT TO SCALE

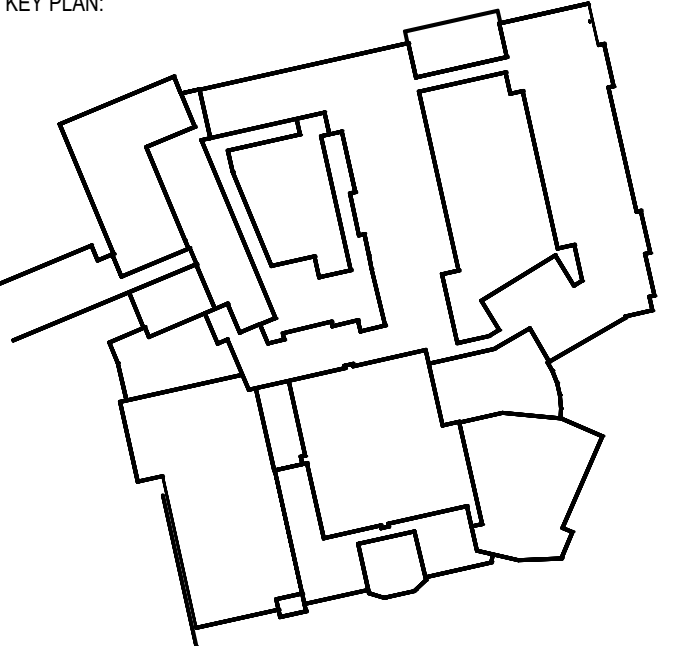
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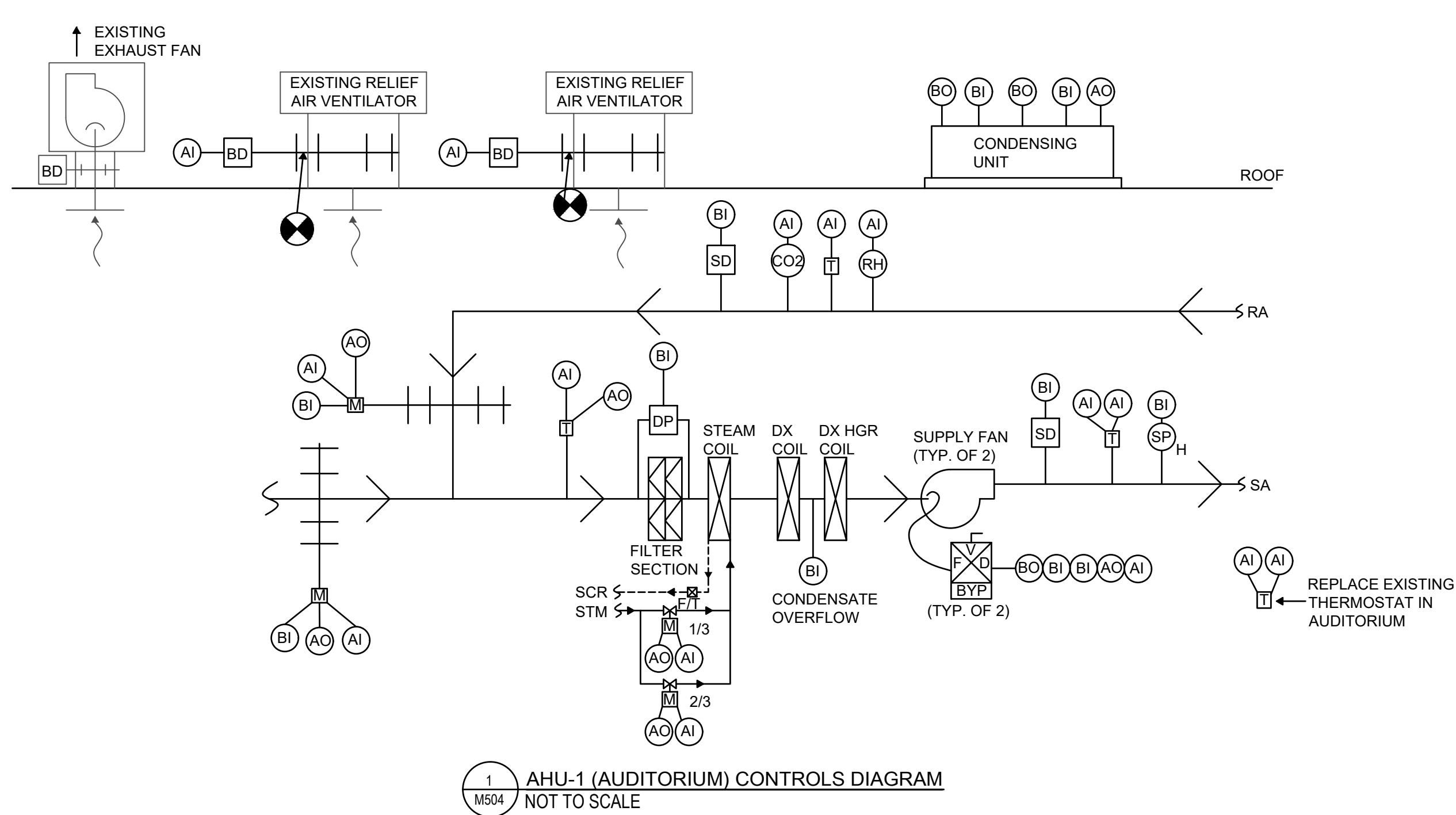
PROJECT NAME:
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

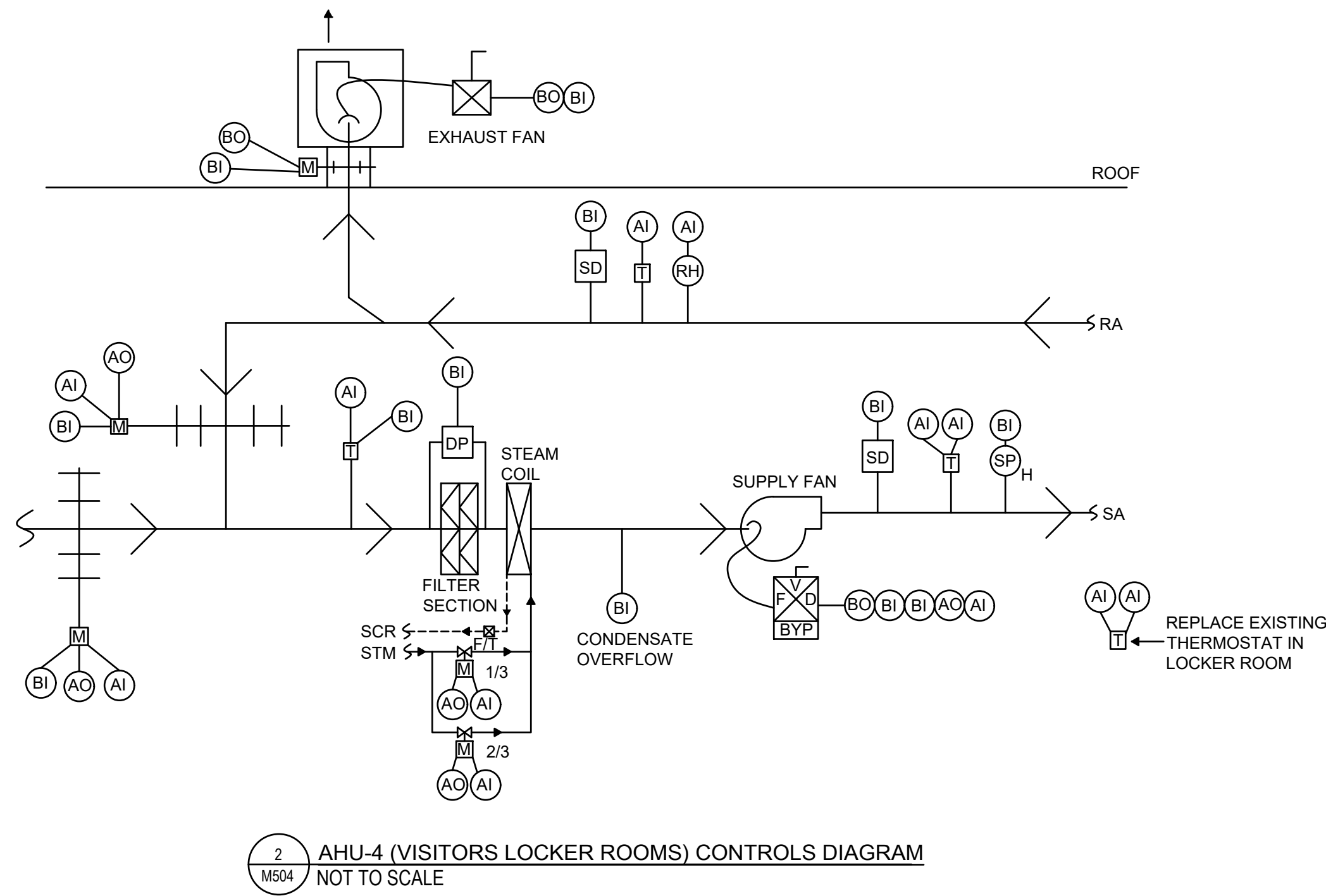
DRAWING TITLE:
MECHANICAL DETAILS

FILE: 2022/32580C-9
DRAWN BY: HB
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DATE: 08/08/2023
DRAWING NO:

M404



1 AHU-1 (AUDITORIUM) CONTROLS DIAGRAM
M504 NOT TO SCALE

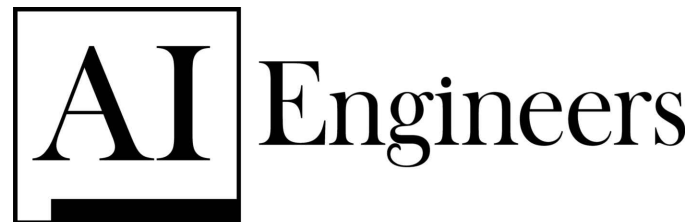


2 AHU-4 (VISITORS LOCKER ROOMS) CONTROLS DIAGRAM
M504 NOT TO SCALE

AHU-1 POINTS LIST												
SYSTEM POINT DESCRIPTION	POINTS								ALARMS			
	GRAPHIC	ANALOG HARDWARE INPUT (AI)	BINARY HARDWARE INPUT (BI)	ANALOG HARDWARE OUTPUT (AO)	BINARY HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HWDI)	WIRELESS (WLS)	NETWORK (NET)	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY LATCH DIAGNOSTIC
OA DAMPER COMMAND		X										
OA DAMPER POSITION		X	X									
OA DAMPER FAILURE		X	X									X
RA DAMPER COMMAND		X		X								
RA DAMPER POSITION		X	X									
RA DAMPER FAILURE		X	X									X
MIXING AIR TEMPERATURE		X	X									X
MIXING AIR TEMPERATURE LOW LIMIT		X	X								X	
FILTER STATUS		X	X									X
1/3 STEAM CONTROL VALVE COMMAND		X		X								
1/3 STEAM CONTROL VALVE POSITION		X	X									
2/3 STEAM CONTROL VALVE COMMAND		X		X								
2/3 STEAM CONTROL VALVE POSITION		X	X									
CONDENSATE OVERFLOW		X	X								X	X
SUPPLY FAN START/STOP COMMAND X 2		X		X								
SUPPLY FAN SPEED X 2		X		X								
SUPPLY FAN FAILURE X 2		X									X	X
VFD SUPPLY FAN FAILURE X 2		X									X	X
VFD SUPPLY FAN FEEDBACK X 2		X	X									
SUPPLY FAN STATUS X 2		X	X						X	X		X
VFD SUPPLY FAN STATUS X 2		X	X									
SUPPLY AIR SMOKE DETECTOR		X	X								X	X
SUPPLY AIR TEMPERATURE		X	X									X
SUPPLY AIR COOLING RESET TEMPERATURE						X						
SUPPLY AIR HEATING RESET TEMPERATURE						X						
DUCT HIGH STATIC PRESSURE		X	X							X	X	X
COMPRESSOR 1 START/STOP COMMAND		X		X								
COMPRESSOR 1 SPEED		X		X								
COMPRESSOR 1 STATUS		X	X									
COMPRESSOR 1 FAILURE						X						X
COMPRESSOR 2 START/STOP COMMAND		X		X								
COMPRESSOR 2 STATUS		X	X									
COMPRESSOR 2 FAILURE						X						X
RETURN AIR RELATIVE HUMIDITY		X	X									
RETURN AIR TEMPERATURE		X	X									
RETURN AIR CO2		X	X									
RETURN AIR SMOKE DETECTOR		X	X								X	X
EXISTING RELIEF AIR DAMPER POSITION		X	X									
BAS COMMUNICATION STATE						X						X
MAINTENANCE REQUIRED						X					X	
OCCUPIED COOLING SETPOINT		X				X						
OCCUPIED HEATING SETPOINT		X				X						
UNOCCUPIED COOLING SETPOINT		X				X						
UNOCCUPIED HEATING SETPOINT		X				X						

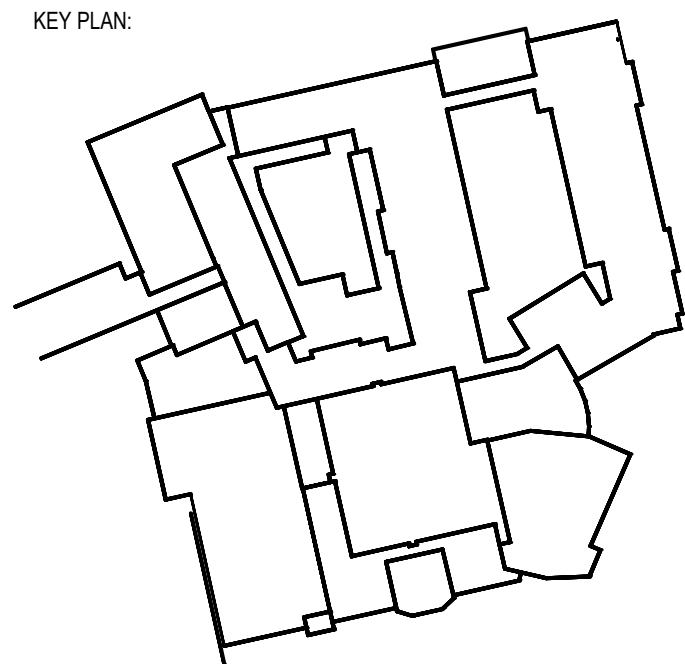
AHU-4 POINTS LIST												
SYSTEM POINT DESCRIPTION	POINTS								ALARMS			
	GRAPHIC	ANALOG HARDWARE INPUT (AI)	BINARY HARDWARE INPUT (BI)	ANALOG HARDWARE OUTPUT (AO)	BINARY HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HWDI)	WIRELESS (WLS)	NETWORK (NET)	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY LATCH DIAGNOSTIC
OA DAMPER COMMAND		X										
OA DAMPER POSITION		X	X									
OA DAMPER FAILURE		X	X									X
RA DAMPER COMMAND		X		X								
RA DAMPER POSITION		X	X									
RA DAMPER FAILURE		X	X									X
MIXING AIR TEMPERATURE		X	X									X
MIXING AIR TEMPERATURE LOW LIMIT		X	X								X	X
FILTER STATUS		X	X									X
STEAM CONTROL VALVE COMMAND		X		X								
STEAM CONTROL VALVE POSITION		X	X									
SUPPLY FAN START/STOP COMMAND		X		X								
SUPPLY FAN SPEED		X		X								
SUPPLY FAN FAILURE		X				X					X	
VFD SUPPLY FAN FAILURE		X				X					X	
VFD SUPPLY FAN FEEDBACK		X	X									
SUPPLY FAN STATUS		X	X							X	X	X
VFD SUPPLY FAN STATUS		X	X									
SUPPLY AIR SMOKE DETECTOR		X	X								X	X
SUPPLY AIR TEMPERATURE		X	X									
SUPPLY AIR HEATING RESET TEMPERATURE						X						
DUCT HIGH STATIC PRESSURE		X	X								X	X
RETURN AIR RELATIVE HUMIDITY		X	X									
RETURN AIR TEMPERATURE		X	X									
RETURN AIR SMOKE DETECTOR		X	X								X	X
EXHAUST AIR DAMPER COMMAND		X		X								
EXHAUST AIR DAMPER FAILURE		X									X	
EXHAUST FAN FAILURE		X				X					X	
EXHAUST FAN STATUS		X	X								X	
BAS COMMUNICATION STATE						X						X
MAINTENANCE REQUIRED						X					X	
OCCUPIED HEATING SETPOINT		X				X						
UNOCCUPIED HEATING SETPOINT		X				X						

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PROJECT NAME:
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL CONTROLS

FILE: 2022/32580C-9
DRAWN BY: HB
CHECKED BY: OA
DATE: 08/08/2023
DRAWING NO:

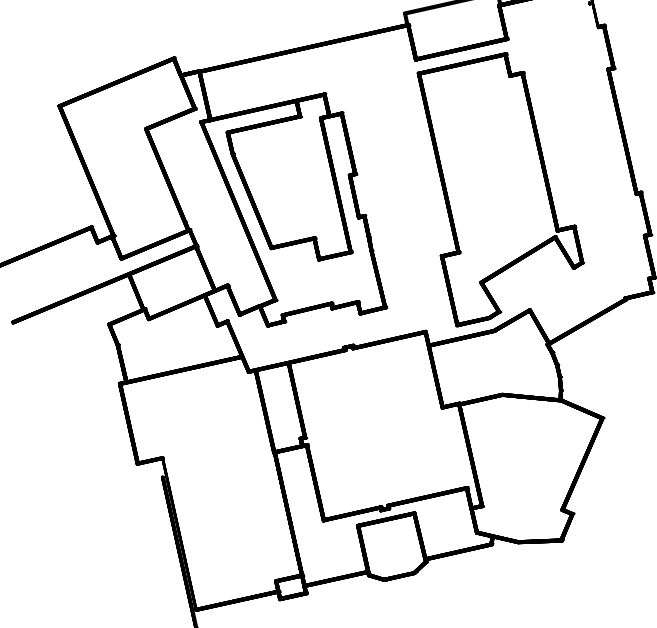
M501

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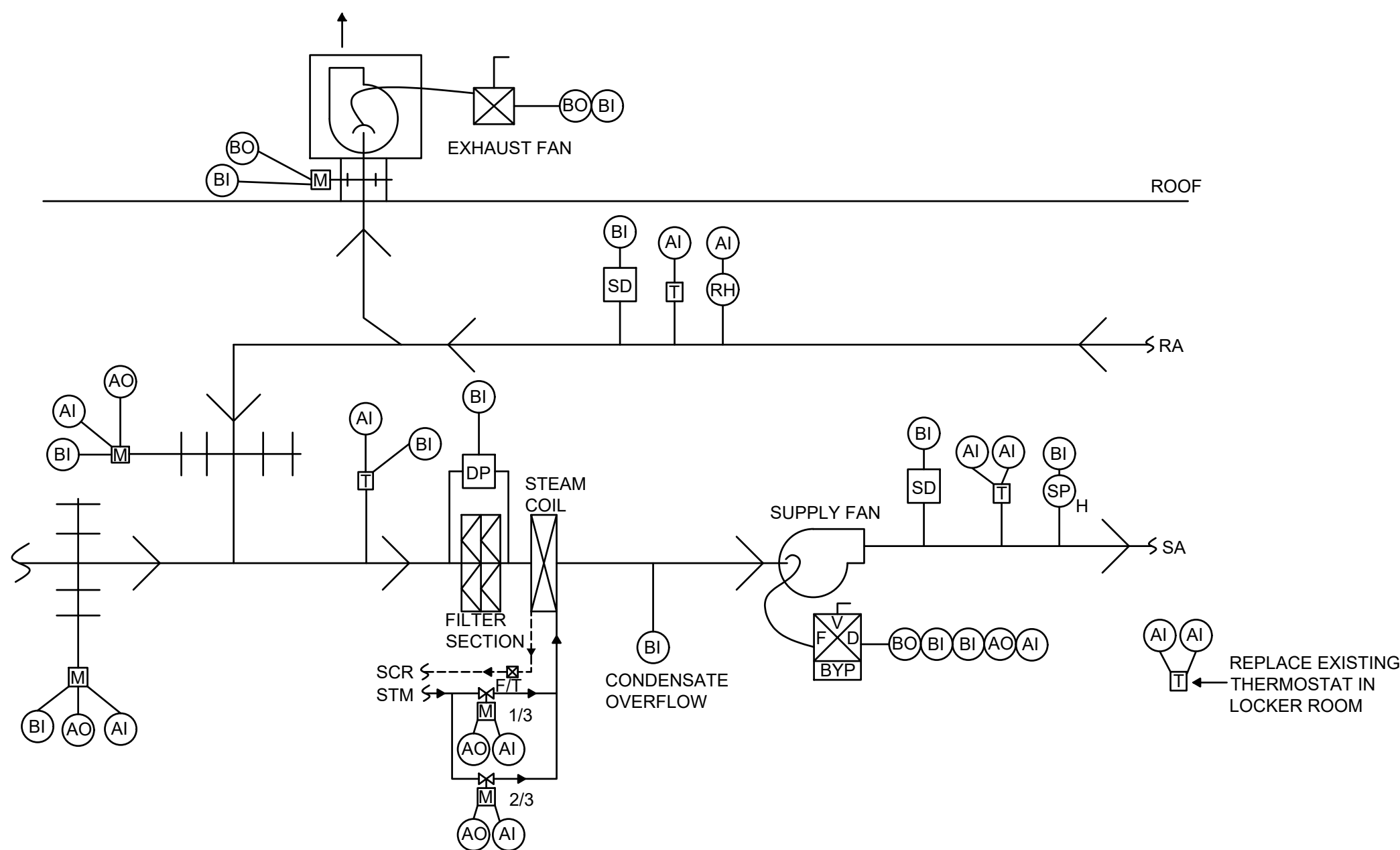
PROJECT NAME:
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SCHOOL AHU
REPLACEMENT

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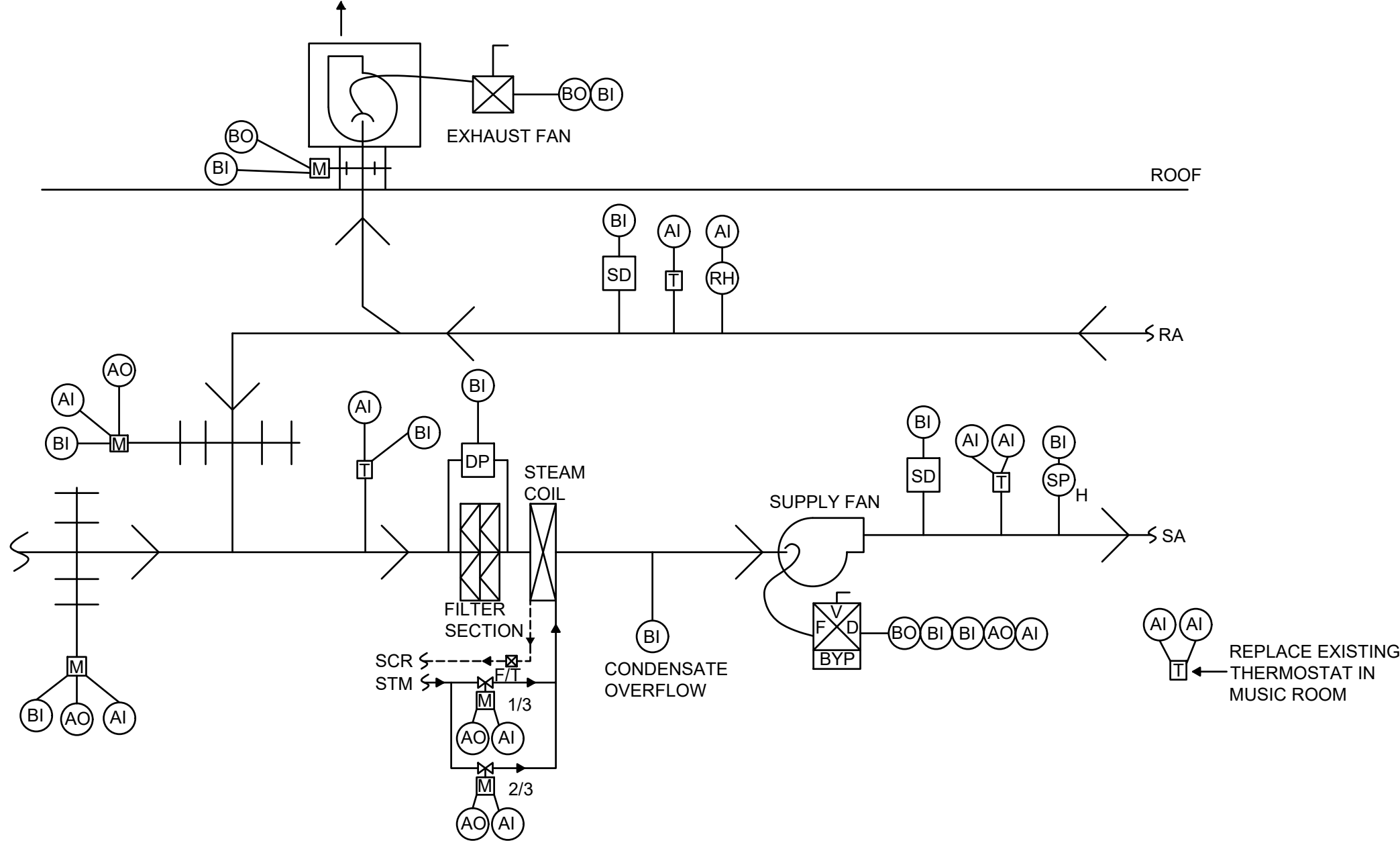
DRAWING TITLE:
MECHANICAL CONTROLS

FILE: 2022/3258OC-9
DRAWN BY: HB
CHECKED BY: OA
DATE: 08/08/2023
DRAWING NO:

M502



1 AHU-5 (BOYS LOCKER ROOMS) CONTROLS DIAGRAM
NOT TO SCALE



2 AHU-6 (MUSIC ROOMS) CONTROLS DIAGRAM
NOT TO SCALE

AHU-5 POINTS LIST												
SYSTEM POINT DESCRIPTION	POINTS										ALARMS	
	GRAPHIC	ANALOG HARDWARE INPUT (AI)	BINARY HARDWARE INPUT (BI)	ANALOG HARDWARE OUTPUT (AO)	BINARY HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HDW)	WIRELESS (WLS)	NETWORK (NET)	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY LATCH DIAGNOSTIC
OA DAMPER COMMAND	X		X									
OA DAMPER POSITION	X	X										
OA DAMPER FAILURE	X	X										X
RA DAMPER COMMAND	X		X									
RA DAMPER POSITION	X	X										
RA DAMPER FAILURE	X	X										X
MIXING AIR TEMPERATURE	X	X										X
MIXING AIR TEMPERATURE LOW LIMIT	X	X										X
FILTER STATUS	X	X										X
STEAM CONTROL VALVE COMMAND	X		X									
STEAM CONTROL VALVE POSITION	X	X										
SUPPLY FAN START/STOP COMMAND	X			X								
SUPPLY FAN SPEED	X		X									
SUPPLY FAN FAILURE	X					X						X
VFD SUPPLY FAN FAILURE	X					X						X
VFD SUPPLY FAN FEEDBACK	X	X										
SUPPLY FAN STATUS	X	X							X	X		X
VFD SUPPLY FAN STATUS	X	X										
SUPPLY AIR SMOKE DETECTOR	X	X									X	X
SUPPLY AIR TEMPERATURE	X	X										
SUPPLY AIR HEATING RESET TEMPERATURE				X								
DUCT HIGH STATIC PRESSURE	X	X								X	X	X
RETURN AIR RELATIVE HUMIDITY	X	X										
RETURN AIR TEMPERATURE	X	X										
RETURN AIR SMOKE DETECTOR	X	X									X	X
EXHAUST AIR DAMPER COMMAND	X			X								
EXHAUST AIR DAMPER FAILURE	X										X	
EXHAUST FAN FAILURE	X			X							X	
EXHAUST FAN STATUS	X	X									X	
BAS COMMUNICATION STATE				X								X
MAINTENANCE REQUIRED				X							X	
OCCUPIED HEATING SETPOINT	X			X								
UNOCCUPIED HEATING SETPOINT	X			X								

AHU-6 POINTS LIST												
SYSTEM POINT DESCRIPTION	POINTS										ALARMS	
	GRAPHIC	ANALOG HARDWARE INPUT (AI)	BINARY HARDWARE INPUT (BI)	ANALOG HARDWARE OUTPUT (AO)	BINARY HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HDW)	WIRELESS (WLS)	NETWORK (NET)	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY LATCH DIAGNOSTIC
OA DAMPER COMMAND	X		X									
OA DAMPER POSITION	X	X										
OA DAMPER FAILURE	X	X										X
RA DAMPER COMMAND	X		X									
RA DAMPER POSITION	X	X										
RA DAMPER FAILURE	X	X										X
MIXING AIR TEMPERATURE	X	X										X
MIXING AIR TEMPERATURE LOW LIMIT	X	X									X	
FILTER STATUS	X	X										X
STEAM CONTROL VALVE COMMAND	X		X									
STEAM CONTROL VALVE POSITION	X	X										
SUPPLY FAN START/STOP COMMAND	X			X								
SUPPLY FAN SPEED	X		X									
SUPPLY FAN FAILURE	X				X						X	X
VFD SUPPLY FAN FAILURE	X				X						X	X
VFD SUPPLY FAN FEEDBACK	X	X										
SUPPLY FAN STATUS	X	X							X	X		X
VFD SUPPLY FAN STATUS	X	X										
SUPPLY AIR SMOKE DETECTOR	X	X									X	X
SUPPLY AIR TEMPERATURE	X	X										
SUPPLY AIR HEATING RESET TEMPERATURE				X								
DUCT HIGH STATIC PRESSURE	X	X									X	X
RETURN AIR RELATIVE HUMIDITY	X	X										
RETURN AIR TEMPERATURE	X	X										X
RETURN AIR SMOKE DETECTOR	X	X									X	X
EXHAUST AIR DAMPER COMMAND	X			X								
EXHAUST AIR DAMPER FAILURE	X										X	
EXHAUST FAN FAILURE	X			X							X	
EXHAUST FAN STATUS	X	X									X	
BAS COMMUNICATION STATE				X								X
MAINTENANCE REQUIRED				X							X	
OCCUPIED HEATING SETPOINT	X			X								
UNOCCUPIED HEATING SETPOINT	X			X								

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A key plan of the site showing the layout of buildings and parking areas. The plan includes a large rectangular building at the top, a smaller rectangular building to its left, and a large, irregularly shaped building at the bottom. A parking area is located between the top and bottom buildings. A road or driveway is shown on the left side of the plan.

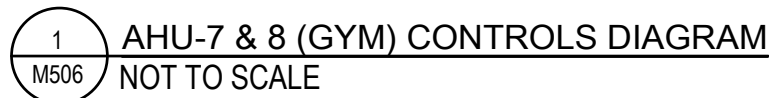
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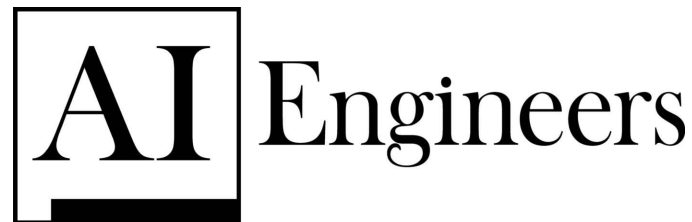
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

MECHANICAL CONTROLS

M503



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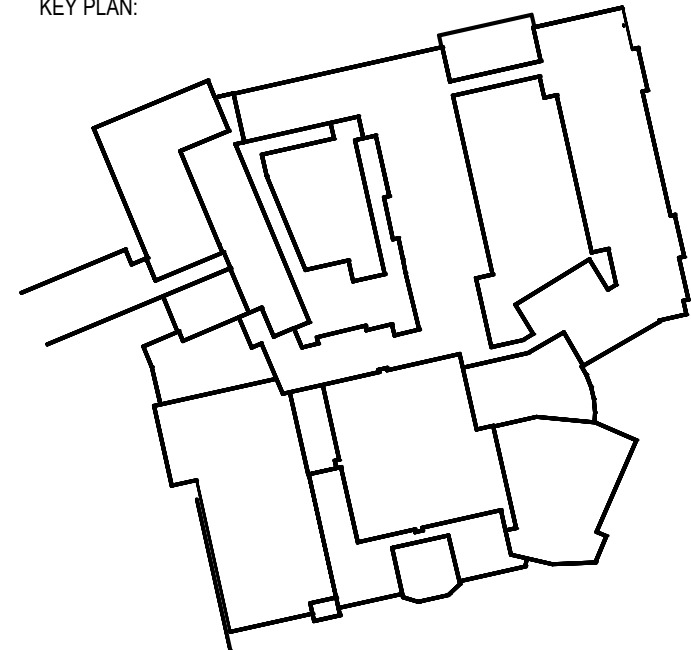


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WATERBURY, CT 06708

DRAWING TITLE:

MECHANICAL CONTROLS

FILE: 2022/3258OC-9

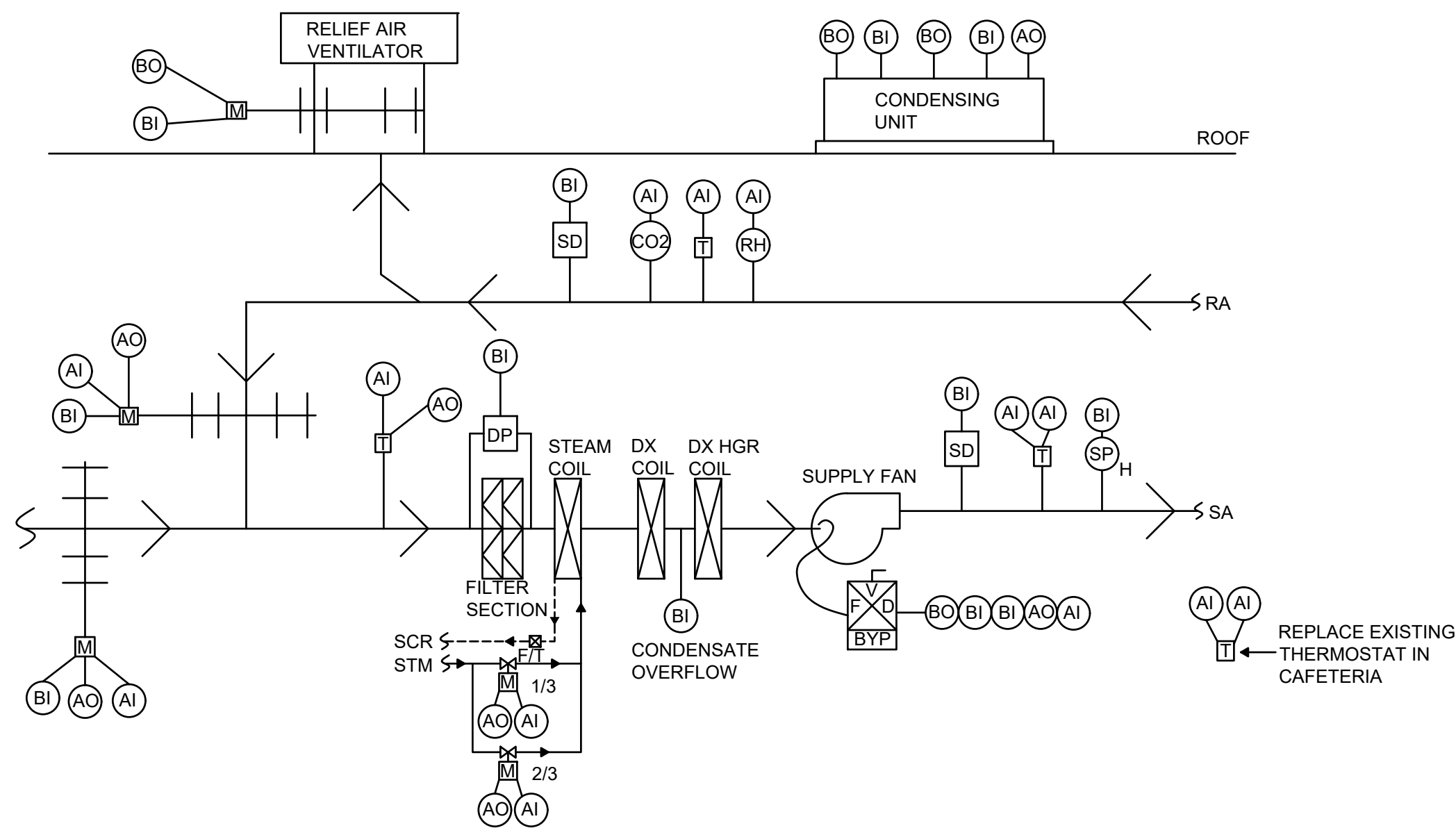
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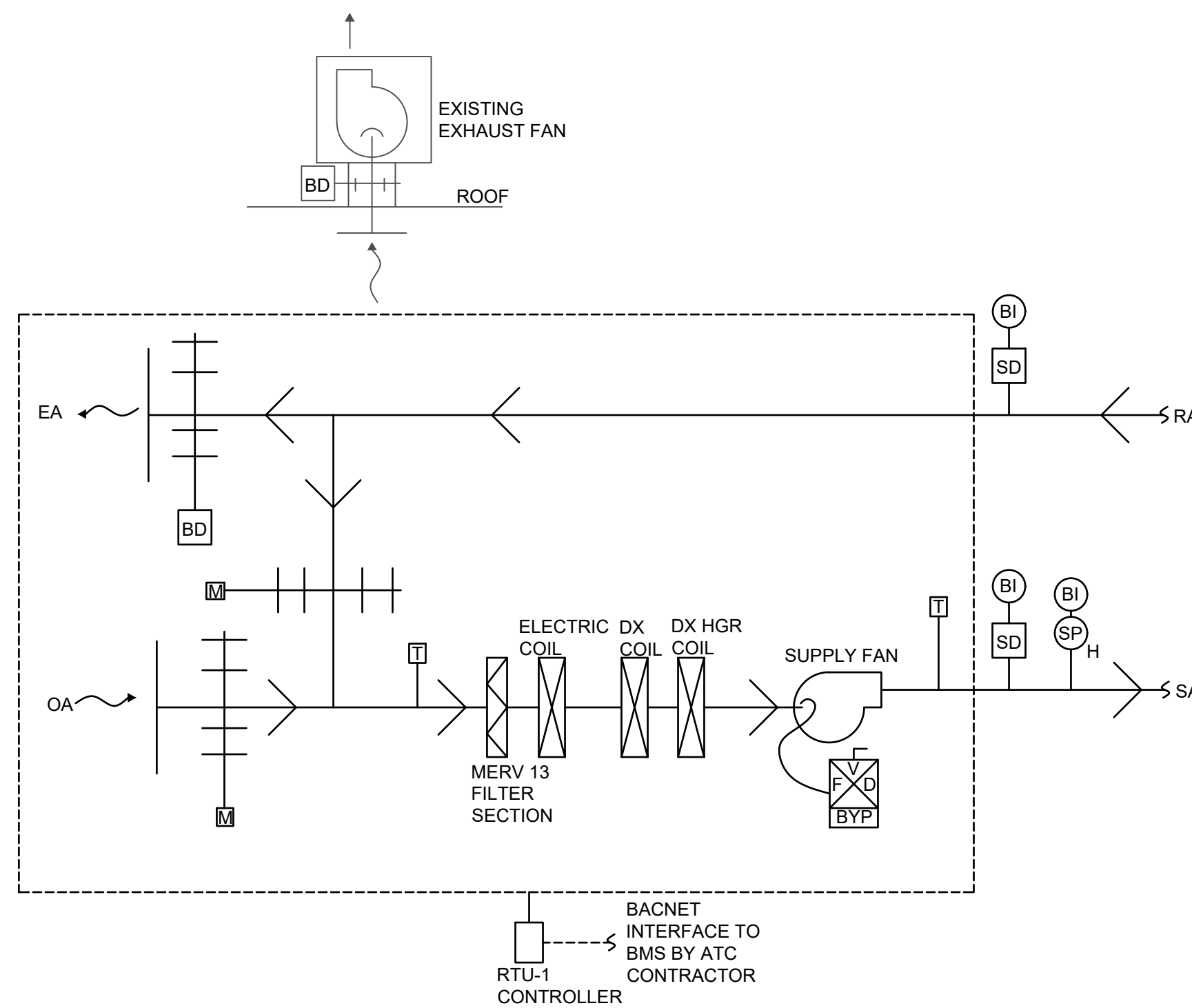
DATE: 08/08/2023

DRAWING NO:

M504



1 AHU-10 (CAFETERIA) CONTROLS DIAGRAM
NOT TO SCALE

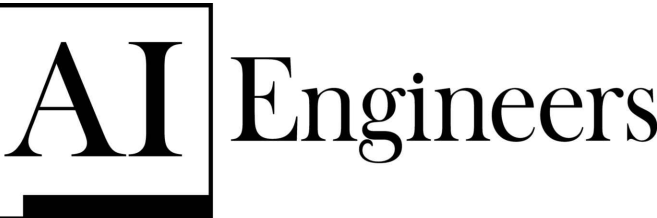


2 RTU-1 (DAYCARE) CONTROLS DIAGRAM
NOT TO SCALE

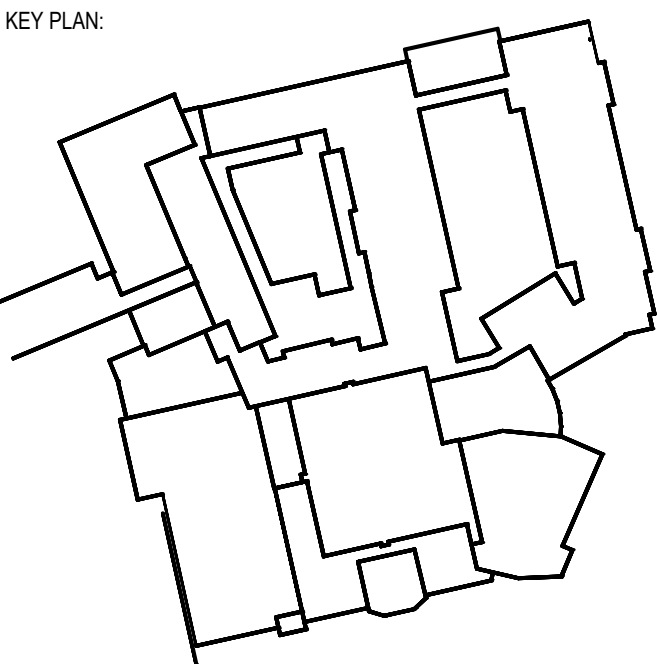
AHU-10 POINTS LIST										
SYSTEM POINT DESCRIPTION	POINTS							ALARMS		
	GRAPHIC	ANALOG HARDWARE INPUT (AI)	BINARY HARDWARE INPUT (BI)	ANALOG HARDWARE OUTPUT (AO)	BINARY HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HDW)	WIRELESS (WLS)	NETWORK (NET)	COMMUNICATION FAIL
OA DAMPER COMMAND	X									
OA DAMPER POSITION	X	X								
OA DAMPER FAILURE	X	X								
RA DAMPER COMMAND	X		X							
RA DAMPER POSITION	X	X								
RA DAMPER FAILURE	X	X								
MIXING AIR TEMPERATURE	X	X								
MIXING AIR TEMPERATURE LOW LIMIT	X	X								
FILTER STATUS	X	X								
ELECTRIC COIL COMMAND	X		X							
ELECTRIC COIL FAILURE	X			X						
CONDENSATE OVERFLOW	X	X								
SUPPLY FAN START/STOP COMMAND	X		X							
SUPPLY FAN SPEED	X		X							
SUPPLY FAN FAILURE	X			X						
VFD SUPPLY FAN FAILURE	X			X						
VFD SUPPLY FAN FEEDBACK	X	X								
SUPPLY FAN STATUS	X	X								
VFD SUPPLY FAN STATUS	X	X								
SUPPLY AIR SMOKE DETECTOR	X	X								
SUPPLY AIR TEMPERATURE	X	X								
SUPPLY AIR COOLING RESET TEMPERATURE				X						
SUPPLY AIR HEATING RESET TEMPERATURE				X						
DUCT HIGH STATIC PRESSURE	X	X								
COMPRESSOR 1 START/STOP COMMAND	X		X							
COMPRESSOR 1 SPEED	X		X							
COMPRESSOR 1 STATUS	X	X								
COMPRESSOR 1 FAILURE	X			X						
COMPRESSOR 2 START STOP COMMAND	X		X							
COMPRESSOR 2 STATUS	X	X								
COMPRESSOR 2 FAILURE	X			X						
RETURN AIR RELATIVE HUMIDITY	X	X								
RETURN AIR TEMPERATURE	X	X								
RETURN AIR CO2	X	X								
RETURN AIR SMOKE DETECTOR	X	X								
DUCT STATIC PRESSURE SENSOR	X	X								
BAS COMMUNICATION STATE				X						
MAINTENANCE REQUIRED				X						
OCCUPIED COOLING SETPOINT	X		X							
OCCUPIED HEATING SETPOINT	X		X							
UNOCCUPIED COOLING SETPOINT	X		X							
UNOCCUPIED HEATING SETPOINT	X		X							

RTU-1 POINTS LIST										
SYSTEM POINT DESCRIPTION	POINTS							ALARMS		
	GRAPHIC	ANALOG HARDWARE INPUT (AI)	BINARY HARDWARE INPUT (BI)	ANALOG HARDWARE OUTPUT (AO)	BINARY HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HDW)	WIRELESS (WLS)	NETWORK (NET)	COMMUNICATION FAIL
OA DAMPER COMMAND	X									
OA DAMPER POSITION	X	X								
OA DAMPER FAILURE	X	X								
RA DAMPER COMMAND	X		X							
RA DAMPER POSITION	X	X								
RA DAMPER FAILURE	X	X								
MIXING AIR TEMPERATURE	X	X								
MIXING AIR TEMPERATURE LOW LIMIT	X	X								
ELECTRIC COIL COMMAND	X		X							
ELECTRIC COIL FAILURE	X			X						
CONDENSATE OVERFLOW	X	X								
SUPPLY FAN START/STOP COMMAND	X		X							
SUPPLY FAN SPEED	X		X							
SUPPLY FAN FAILURE	X			X						
VFD SUPPLY FAN FAILURE	X			X						
VFD SUPPLY FAN FEEDBACK	X	X								
SUPPLY FAN STATUS	X	X								
VFD SUPPLY FAN STATUS	X	X								
SUPPLY AIR SMOKE DETECTOR	X	X								
SUPPLY AIR TEMPERATURE	X	X								
SUPPLY AIR COOLING RESET TEMPERATURE				X						
SUPPLY AIR HEATING RESET TEMPERATURE				X						
DUCT HIGH STATIC PRESSURE	X	X								
COMPRESSOR 1 START/STOP COMMAND	X		X							
COMPRESSOR 1 SPEED	X		X							
COMPRESSOR 1 STATUS	X	X								
COMPRESSOR 1 FAILURE	X			X						
COMPRESSOR 2 START STOP COMMAND	X		X							
COMPRESSOR 2 STATUS	X	X								
COMPRESSOR 2 FAILURE	X			X						
RETURN AIR RELATIVE HUMIDITY	X	X								
RETURN AIR TEMPERATURE	X	X								
RETURN AIR CO2	X	X								
RETURN AIR SMOKE DETECTOR	X	X								
EXISTING RELIEF AIR DAMPER POSITION	X	X								
BAS COMMUNICATION STATE				X						
MAINTENANCE REQUIRED				X						
OCCUPIED COOLING SETPOINT	X		X							
OCCUPIED HEATING SETPOINT	X		X							
UNOCCUPIED COOLING SETPOINT	X		X							
UNOCCUPIED HEATING SETPOINT	X		X							

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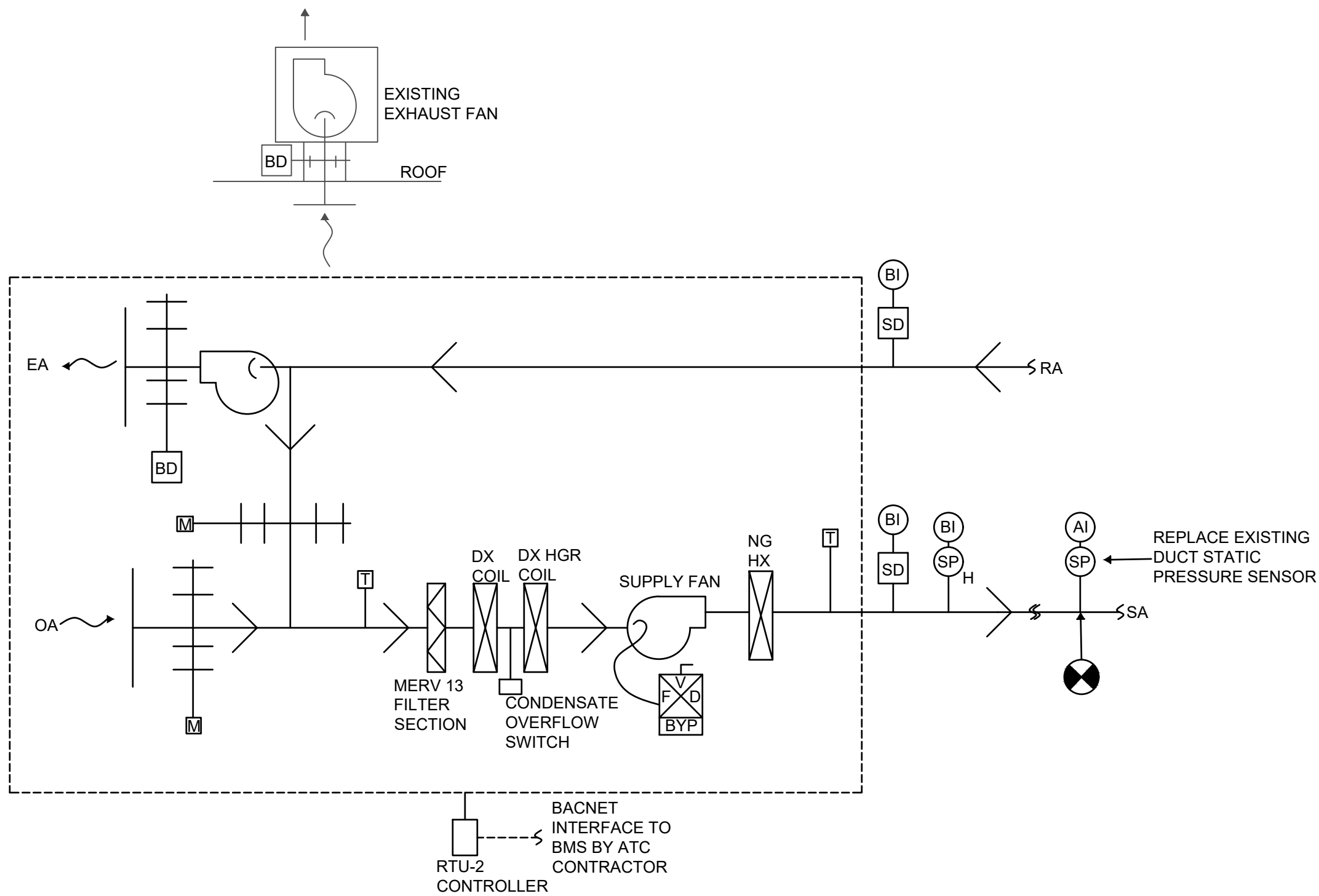
NO	DATE	RELEASE
	08/08/2023	100% CD

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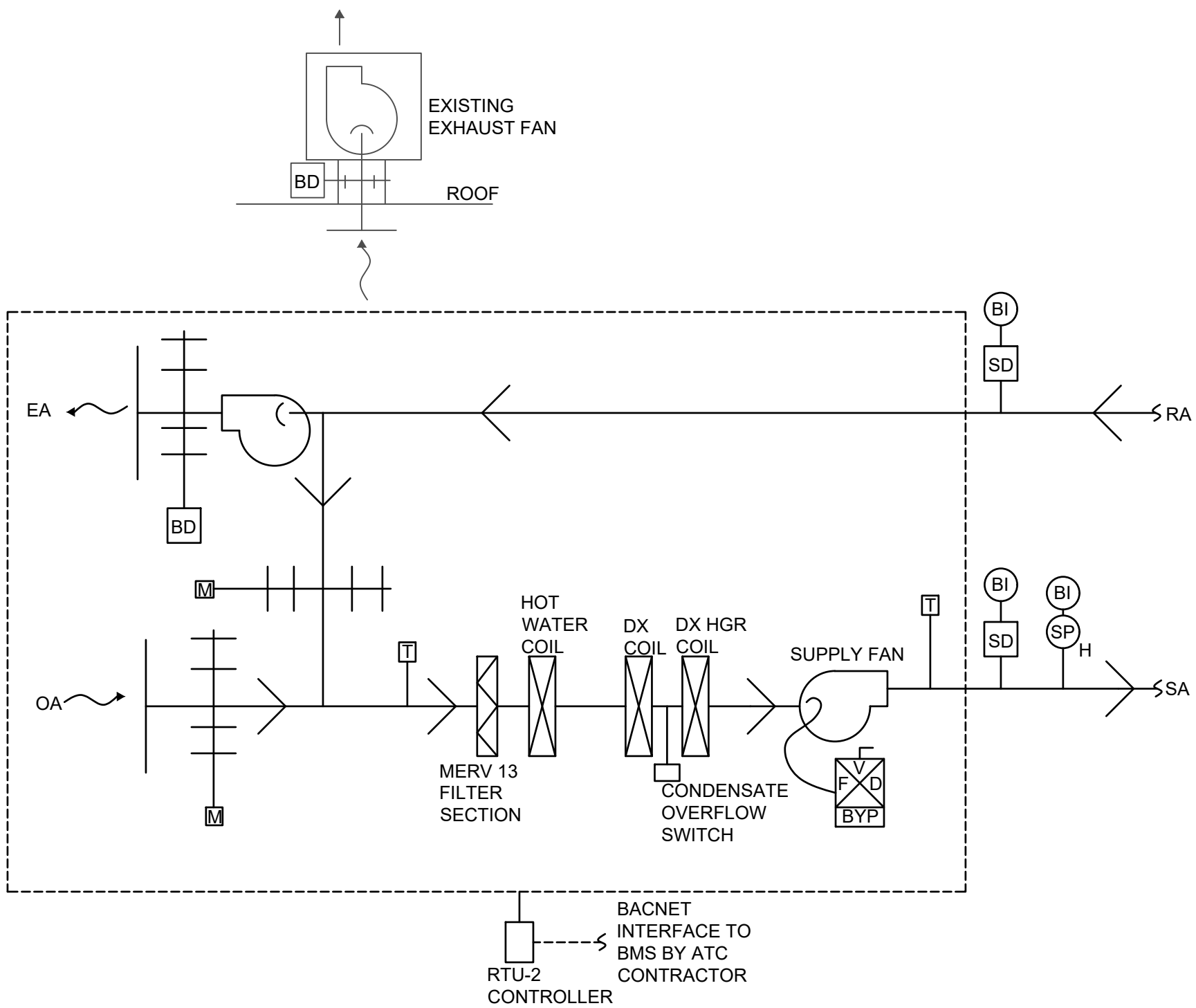
PROJECT NAME:
**KENNEDY HIGH
SCHOOL AHU
REPLACEMENT**
422 HIGHLAND AVENUE
WATERBURY, CT 06708
DRAWING TITLE:
MECHANICAL CONTROLS

FILE: 2022/32580C-9
DRAWN BY: HB
CHECKED BY: OA
DATE: 08/08/2023
DRAWING NO:

M505

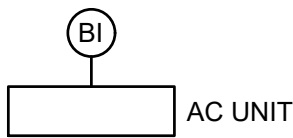
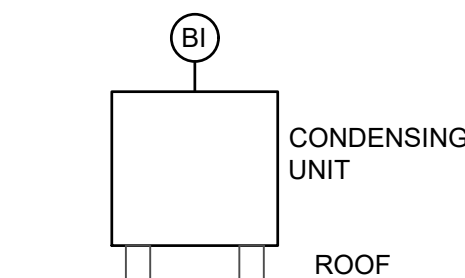


1 RTU-2 (MEDIA CENTER) CONTROLS DIAGRAM
NOT TO SCALE



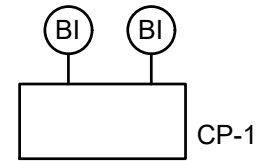
2 RTU-3 (SWIMMING POOL) CONTROLS DIAGRAM
NOT TO SCALE

RTU-2 POINTS LIST												
SYSTEM POINT DESCRIPTION	POINTS										ALARMS	
	GRAPHIC	ANALOG-HARDWARE INPUT (AI)	BINARY-HARDWARE INPUT (BI)	ANALOG-HARDWARE OUTPUT (AO)	BINARY-HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HDW)	WIRELESS (WLS)	NETWORK (NET)	HIGH ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC
OA DAMPER COMMAND	X		X									
OA DAMPER POSITION	X	X										
OA DAMPER FAILURE	X	X									X	
RA DAMPER COMMAND	X		X									
RA DAMPER POSITION	X	X										
RA DAMPER FAILURE	X	X									X	
MIXING AIR TEMPERATURE	X	X										X
MIXING AIR TEMPERATURE LOW LIMIT	X	X									X	
FILTER STATUS	X	X									X	
NG HX COMMAND	X		X									
NG HX FAILURE	X			X							X	X
CONDENSATE OVERFLOW	X	X									X	X
SUPPLY FAN START/STOP COMMAND	X			X								
SUPPLY FAN SPEED	X		X									
SUPPLY FAN FAILURE	X			X							X	X
VFD SUPPLY FAN FAILURE	X			X							X	X
VFD SUPPLY FAN FEEDBACK	X	X										
SUPPLY FAN STATUS	X	X								X	X	X
VFD SUPPLY FAN STATUS	X	X										
SUPPLY AIR SMOKE DETECTOR	X	X									X	X
SUPPLY AIR TEMPERATURE	X	X										X
SUPPLY AIR COOLING RESET TEMPERATURE				X								
SUPPLY AIR HEATING RESET TEMPERATURE				X								
DUCT HIGH STATIC PRESSURE	X	X									X	X
COMPRESSOR 1 START/STOP COMMAND	X			X								
COMPRESSOR 1 SPEED	X		X									
COMPRESSOR 1 STATUS	X	X										
COMPRESSOR 1 FAILURE				X							X	
COMPRESSOR 2 START STOP COMMAND	X			X								
COMPRESSOR 2 STATUS	X	X										
COMPRESSOR 2 FAILURE				X							X	
RETURN AIR RELATIVE HUMIDITY	X	X										
RETURN AIR TEMPERATURE	X	X										
RETURN AIR CO2	X	X										
RETURN AIR SMOKE DETECTOR	X	X									X	X
EXHAUST FAN START/STOP	X			X								
EXHAUST FAN FAILURE	X			X							X	
EXHAUST FAN STATUS	X	X									X	
BAS COMMUNICATION STATE				X								X
MAINTENANCE REQUIRED				X							X	
DUCT STATIC PRESSURE SENSOR	X	X										X
OCCUPIED COOLING SETPOINT	X			X								
OCCUPIED HEATING SETPOINT	X			X								
UNOCCUPIED COOLING SETPOINT	X			X								
UNOCCUPIED HEATING SETPOINT	X			X								



3 AC SPLIT SYSTEM CONTROLS DIAGRAM
NOT TO SCALE

AC UNIT POINTS LIST												
SYSTEM POINT DESCRIPTION	POINTS										ALARMS	
	GRAPHIC	ANALOG-HARDWARE INPUT (AI)	BINARY-HARDWARE INPUT (BI)	ANALOG-HARDWARE OUTPUT (AO)	BINARY-HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HDW)	WIRELESS (WLS)	NETWORK (NET)	HIGH ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC
AC UNIT STATUS	X		X									
AC UNIT FAILURE	X										X	
CU STATUS	X	X										
CU FAILURE	X			X							X	



4 STEAM CONDENSATE PUMP SYSTEM CONTROLS DIAGRAM
NOT TO SCALE

CONDENSATE PUMP POINTS LIST												
SYSTEM POINT DESCRIPTION	POINTS										ALARMS	
	GRAPHIC	ANALOG-HARDWARE INPUT (AI)	BINARY-HARDWARE INPUT (BI)	ANALOG-HARDWARE OUTPUT (AO)	BINARY-HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HDW)	WIRELESS (WLS)	NETWORK (NET)	HIGH ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC
CP PUMP #1 STATUS	X		X									
CP PUMP #1 FAILURE	X					X					X	
CP PUMP #2 STATUS	X		X									
CP PUMP #2 FAILURE	X			X							X	

AIR HANDLING UNIT SCHEDULE																								
TAG	LOCATION SERVED	LOCATED	MANUFACTURER	MODEL	SUPPLY FAN					HEATING COIL			COOLING COIL			STEAM PRESSURE (PSIG)	ELECTRICAL			FILTER	DIMENSIONS	WEIGHT	NOTES	
					AIRFLOW	FOR DCV		ESP	TSP	MOTOR SIZE	HEATING TYPE	TOTAL MBH	EAT/LAT (F)	TYPE	TOTAL TONS		EAT/LAT (F)	V/HZ/PH	MCA AMPS					MOP AMPS
						CFM	MIN. CFM																	
AHU-1	AUDITORIUM	FAN ROOM 2	TRANE	PSCA-33	16,000	1,600	4,600	1.30	4.587	2 @ 10	STEAM COIL	610.79	(47.80/64.1)/(83.00/52.9)	DX - R410a	44.076	(76.51/64.1)/(53.86/52.9)	5	460/60/3	31.5	45	2" MERV 8, 4" MERV 13	205.5 X 66.5 X 95.5	4,742.0	ALL
AHU-4	VISITOR'S LOCKERS	FAN ROOM 1	TRANE	UCCAD03C0G0EG012000000AD300FD0000000B0B1	1,000	400	400	1.00	2.565	1	STEAM COIL	56.99	39.61/92.16	-	-	-	5	460/60/3	2.85	15	2" MERV 8, 4" MERV 13	73.068 X 34 X 57.435	614.6	ALL
AHU-5	BOYS' LOCKERS	FAN ROOM 1	TRANE	UCCAD12C0G0EG012000000EDH00FD0000000B0B1	4,200	1,000	1,500	1.40	2.766	5	STEAM COIL	263.98	42.7/100.66	-	-	-	5	460/60/3	10.47	15	2" MERV 8, 4" MERV 13	75.068 X 71 X 86.06	1,280.6	ALL
AHU-6	MUSIC ROOMS	FAN ROOM 2	TRANE	UCCAM10C0G0EG012000000JF800FD0000000B0B1	4,600	1,550	3,100	1.00	2.815	3	STEAM COIL	291.56	20.72/79.16	-	-	-	5	460/60/3	7.89	15	2" MERV 8, 4" MERV 13	66.58 x 63 x 73.319	1,156.8	1,2,4,5
AHU-7	BOYS' GYM	FAN ROOM 2	TRANE	UCCAD17C0G0EG012000000DF00FD0000000B0B1	8,000	2,000	4,000	1.20	2.75	7.5	STEAM COIL	483.93	32.54/88.32	-	-	-	5	460/60/3	13.97	20	2" MERV 8, 4" MERV 13	86.068 X 79 X 98.935	1,621.1	ALL
AHU-8	GIRLS' GYM	FAN ROOM 2	TRANE	UCCAD17C0G0EG012000000DF00FD0000000B0B1	8,000	2,000	4,000	1.20	2.75	7.5	STEAM COIL	483.93	32.54/88.32	-	-	-	5	460/60/3	13.97	20	2" MERV 8, 4" MERV 13	86.068 X 79 X 98.935	1,621.1	ALL
AHU-9	GIRLS' LOCKERS	FAN ROOM 1	TRANE	UCCAD10C0G0EG012000000EDN00FD0000000B0B1	3,800	1,000	1,250	1.30	2.777	5	STEAM COIL	233.09	44.75/101.31	-	-	-	5	460/60/3	10.47	15	2" MERV 8, 4" MERV 13	73.068 X 63 X 75.935	1,137.6	ALL
AHU-10	CAFETERIA	FAN ROOM 1	TRANE	UCCAB30C0G0EWG1200000FHDG00FD0000020B0B1	10,200	4,200	5,800	1.85	3.633	15	STEAM COIL	716.16	(27.81/67.8)/(92.55/55.6)	DX - R410a	32.56	(80.99/67.8)/(56.79/55.6)	5	460/60/3	26.47	45	2" MERV 8, 4" MERV 13	151.56 X 94 X 66.568	3,210.7	ALL
NOTES: 1. PROVIDE SINGLE POINT POWER CONNECTION FOR EQUIPMENT. 2. APPROVED EQUAL MANUFACTURERS: CARRIER AND YORK. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS. 3. MECHANICAL CONTRACTOR SHALL PROVIDE VFD BY MANUAL BYPASS BY ABB, ALLEN BRADLEY OR SCHNEIDER. 4. ALL BACnet CONTROLS SHALL BE PROVIDED BY ATC CONTRACTOR. 5. REFER TO SPECIFICATIONS AND SOO FOR ADDITIONAL REQUIREMENTS. 6. AHU-1 AND AHU-10: PROVIDE MODULATING GAS REHEAT.																								

ROOFTOP MAKEUP UNIT SCHEDULE																		
TAG	MANUFACTURER	EQUIPMENT NO.	BLOWER NO.	HOUSING	SERVICE	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	E.S.P. (IN. W.G.)	HEATING		FAN			ELECTRICAL			WEIGHT (LBS)	NOTES
									MBH INPUT	MBH OUTPUT	RPM	HP	BHP	V/PH	MCA	MOP		
MAU-1	CAPTIVEAIRE	A2-IBT-400-20D	20MF-2-MOD	A2-IBT-400	KITCHEN	4,500	4,500	1	395	320	1787	5,000	3.712	460/3	9.6	15	1,272	ALL
NOTES:																		
1. PROVIDE SINGLE POINT POWER CONNECTION FOR EQUIPMENT.																		
2. APPROVED EQUAL MANUFACTURER: GREENHECK. APPROVED EQUAL MANUFACTURER SHALL PROVIDE ALL SPECIFIED ITEMS.																		
3. ADDITIONAL CONTROLS IN ADDITION TO THE EXISTING CONTROLS REQUIRED BY UNIT MANUFACTURER. CONTROLS, SOO AND BACnet CONTROLLER SHALL BE PROVIDED BY UNIT MANUFACTURER. BACnet INTERFACE TO BMS AND ADDITIONAL CONTROLS BY ATC CONTRACTOR.																		
1. THE UNIT HOULD HAVE STANDING POWER SO THEY SHOULD TAKE THE LINE AND LOAD OFF THE EXISTING MUA CONTACTORS AND WIRE THEM TO BYPASS THE CONTACTOR.																		
2. A LOW VOLTAGE INTERLOCK WIRE SHOULD BE RUN FROM 13/14 ON THE EXISTING MOTOR CONTACTOR TO THE SCF01/SCFC1 ON THE NEW MAKEUP AIR UNIT CONTROL BOARD (THIS IS THE NEW START/STOP SIGNAL).																		

ROOFTOP UNIT SCHEDULE																														
TAG	LOCATION SERVED	LOCATED	MANUFACTURER	MODEL	SUPPLY FAN							EXHAUST FAN				HEATING COIL				COOLING COIL				ELECTRICAL			FILTER	DIMENSIONS	WEIGHT	NOTES
					AIRFLOW	FOR DCV		ESP	TSP	MOTOR		AIRFLOW	ESP	MOTOR	HEATING TYPE		INPUT (MBH)	OUTPUT (MBH)	KW	EAT/LAT (F)	COOLING TYPE	NET TOTAL (MBH)	EAT/LAT (F)	V/Hz/PH	MCA	MOP				
					CFM	MIN. CFM	MAX. CFM	IN. H2O	IN. H2O	HP	BHP	CFM	IN. H2O	HP	BHP	HEATING TYPE	INPUT (MBH)	OUTPUT (MBH)	KW	EAT/LAT (F)	COOLING TYPE	NET TOTAL (MBH)	EAT/LAT (F)	V/Hz/PH	AMPS	AMPS				
RTU-1	DAYCARE	ROOF	TRANE	TZJ150A450N	5,000	700	1,100	1.3	1.55	3.0	2.1	-	-	-	-	ELECTRIC HEAT	-	122.94	36	54.6/76.9	DX (R410-a)	145.1/120.9	(78.5/65)/(55.2/54.9)	460/60/3	67	70	13	10.25 X 7.25 X 5.5	2,107	REFER TO NOTES
RTU-2	MEDIA CENTER	ROOF	TRANE	HORIZON (OADG020C3)	6,400	1,000	1,800	1.5	3.09	7.5	5.3	5,400	0.75	3	2.18	GAS FURNACE	350	283.5	-	50/90.5	DX (R410-a)	145.1/120.9	(80/67)/(54.5/54.1)	460/60/3	52.2	60	8,13	12.17 X 7.92 X 5.67	3,578	REFER TO NOTES
NOTES: 1. PROVIDE SINGLE POINT POWER CONNECTION FOR EQUIPMENT. 2. APPROVED EQUAL MANUFACTURERS: CARRIER AND YORK. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS. 3. ADDITIONAL CONTROLS IN ADDITION TO THE EXISTING CONTROLS REQUIRED BY UNIT MANUFACTURER. CONTROLS, SOO AND BACnet CONTROLLER SHALL BE PROVIDED BY UNIT MANUFACTURER. BACnet INTERFACE TO BMS AND ADDITIONAL CONTROLS BY ATC CONTRACTOR. 3. REFER TO SPECIFICATIONS AND SOO FOR ADDITIONAL REQUIREMENTS. 4. VFD WITH MANUAL BYPASS, CONTROLS, SOO AND BACnet CONTROLLER SHALL BE PROVIDED BY UNIT MANUFACTURER. BACnet INTERFACE TO BMS BY ATC CONTRACTOR. 5. RTU-1: SINGLE ZONE VAV SYSTEM. 6. RTU-2: MULTIZONE SYSTEM. 7. MODULATING HOT GAS REHEAT.																														

DEHUMIDIFICATION UNIT SCHEDULE																										
TAG	MANUFACTURER & MODEL	EQUIPMENT NO.	SERVICE	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	EXHAUST AIR (CFM)	E.S.P. (IN. W.G.)	DX COIL DATA			HEATING DATA				FILTERS		REFRIGERANT		GLYCOL (HOT WATER)		ELECTRICAL			WEIGHT (LBS)	NOTES	
								MOISTURE REMOVAL CAPACITY (LBS/H)	SENSIBLE CAPACITY (MBH)	TOTAL CAPACITY (MBH)	TYPE	MBH	EWT (F)	LWT (F)	GPM	RETURN/OUTSIDE AIR	EXHAUST AIR	TYPE	CHARGE (LBS)	TYPE	CONCENTRATION (%)	V/HZ/PH	MCA			MOP
RTU-3	POOLPAK	PPK-120-GB-X-P5EB5143W2E5AF3H	POOL	14,300	4,590	5,049	1.5	160.3	249.2	422.3	HOT WATER COIL	780	180	155	66.3	MERV-13	MERV-8	R410A	80	PROPYLENE	30	460/60/3	106	125	10,700	ALL
NOTES: 1. PROVIDE SINGLE POINT POWER CONNECTION FOR EQUIPMENT. 2. REHEAT COIL 527.9 MBH, GLYCOL PUMP .75 HP, PUMP .025 HP, ROOM DESIGN 82F/56%RH, TWO SCROLL COMPRESSORS, DRY COOLER: 95f OA, 527.9 MBH, 2X4.5 HP, 10,700 LBS OPERATING WEIGHT, 24" HIGH INSULATED ROOF CURB. 3. REFER TO SPECIFICATIONS AND SOO FOR ADDITIONAL REQUIREMENTS. 4. CONTROLS, SOO AND BACnet CONTROLLER SHALL BE PROVIDED BY UNIT MANUFACTURER. BACnet INTERFACE TO BMS BY ATC CONTRACTOR.																										

CONDENSING UNIT SCHEDULE										
TAG	MANUFACTURER	TYPE	LOCATION	SERVICE	NOMINAL TONS	COMPRESSOR DATA		ELECTRICAL		
						QTY	TYPE	V/HZ/PH	MCA AMPS	MOP AMPS
CU-1	TRANE	AIR COOLED	ROOF	AHU-1	40	4	SCROLL	460/60/3	87	100
CU-10	TRANE	AIR COOLED	ROOF	AHU-10	30	2	SCROLL	460/60/3	63	80
NOTES: 1. PROVIDE SINGLE POINT POWER CONNECTION. 2. PROVIDE R410A REFRIGERANT. 3. APPROVED EQUAL MANUFACTURERS: CARRIER AND YORK. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS. 4. REFER TO SPECIFICATIONS AND SOO FOR ADDITIONAL REQUIREMENTS. 5. CONTROLS BY ATC CONTRACTOR.										

MINI SPLIT HEAT PUMP SYSTEM														
TAG	MODEL	MANUFACTURER	LOCATION	BTU/HR COOLING	SEER	BTU/HR HEATING	HSPF	PEAK AIRFLOW (CFM)	UNIT		ELECTRICAL			NOTES
									WXDXH	WEIGHT	V/HZ/PH	MCA	MOP	
									INCHES	LBS				
AC-1	NTXWPH09B112AA	TRANE	KITCHEN OFFICE	9,000	30	9,600	10.9	328	36-7/16 x 9-3/16 x 12-11/16	29	208/60/1	1	-	ALL
HP-1	NTXSPH09B112AA	TRANE	OUTDOOR UNIT	9,000	30	9,600	10.9	1,141	31-1/2 x 11-1/4 x 21-5/8	82	208/60/1	10	15	ALL
NOTES: 1. PROVIDE WIRED REMOTE CONTROLLER, 7 DAY PROGRAMMABLE. 2. PROVIDE CONDENSATE OVERFLOW SWITCH.														

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KEY PLAN:

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THIS SQUARE APPEARS 1/2"x1/2"
ON FULL SIZE SHEETS

NO	DATE	RELEASE
	08/08/2023	100% CD

STAMP:

PROJECT NAME:
KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL SCHEDULES

FILE: 2022/32580C-9
DRAWN BY: HB
CHECKED BY: OA
DATE: 08/08/2023
DRAWING NO:

M-601

LOUVER SCHEDULE										
TAG	MODEL	MANUFACTURER	TYPE	FREE AREA (SQ.FT.)	(W X H) (IN)	BLADES	FRAME	FINISH	NOTES	
L-1	ESD-635	GREENHECK	STATIONARY	44.70	144 X 72	EXTRUDED ALUMINUM	EXTRUDED ALUMINUM	MILL	ALL	
L-2	ESD-635	GREENHECK	STATIONARY	20.46	96 X 96	EXTRUDED ALUMINUM	EXTRUDED ALUMINUM	MILL	ALL	
NOTES: 1. PROVIDE ALUMINUM BIRD SCREEN. 2. PROVIDE TYPE 1A MOTORIZED OUTSIDE AIR DAMPER WITH SPRING RETURN ACTUATOR (FAIL CLOSED). 3. PROVIDE DRAINABLE BLADES. 4. SPEED = 120 MPH. 5. LOUVER COLOR TO MATCH BUILDING EXTERIOR COLOR. 6. APPROVED EQUAL MANUFACTURERS: RUSKIN AND AMERICAN WARMING AND VENTILATION. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS.										

EXHAUST FAN SCHEDULE																
TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	FAN DATA			PHYSICAL DATA			MOTOR			ELECTRICAL	NOTES	
					CFM	TESP (IN. H2O)	DRIVE	RPM	WXL (IN)	ROOF OPENING (IN)	WEIGHT (LBS)	BHP	HP	RPM		V/HZ/PH
EF-44	GREENHECK	G-095-VG	ROOF	AHU-4	600	0.60	DIRECT	1,629	17 X 17	13.5 X 13.5	28	0.14	1/6	1,725	115/60/1	ALL
EF-45	GREENHECK	G-140-VG	ROOF	AHU-5	2,500	0.85	DIRECT	1,630	22 X 22	18.5 X 18.5	57	0.90	1	1,725	115/60/1	ALL
EF-46	GREENHECK	G-130-VG	ROOF	AHU-9	1,900	0.80	DIRECT	1,634	19 X 19	15.5 X 15.5	48	0.50	3/4	1,725	115/60/1	ALL
EF-47	GREENHECK	G-120-VG	ROOF	AHU-6	1,500	0.60	DIRECT	1,504	19 X 19	15.5 X 15.5	44	0.32	1/2	1,725	115/60/1	ALL
NOTES: 1. PROVIDE 24" HIGH INSULATED ALUMINUM ROOF CURB. PROVIDE CURB SEAL, HINGED CURB CAP WITH CABLES AND HOOD HASPS. 2. PROVIDE WIRED SPEED DIAL. 3. PROVIDE ALUMINUM BIRD SCREEN. 4. PROVIDE TYPE 1A MOTORIZED OUTSIDE AIR DAMPER WITH SPRING RETURN ACTUATOR (FAIL CLOSED). 5. APPROVED EQUAL MANUFACTURER: LOREN COOK. APPROVED EQUAL MANUFACTURER SHALL PROVIDE ALL SPECIFIED ITEMS.																

RELIEF HOOD									
TAG	MODEL	MANUFACTURER	THROAT W X L (IN)	OVERALL W X L (IN)	CFM	STATIC PRESSURE (IN. H2O)	FINISH	WEIGHT (LBS)	NOTES
RH-1	WRH	GREENHECK	36 X 24	44 X 32	4,400	0.083	MILL	100	ALL
NOTES: 1. PROVIDE 24" HIGH INSULATED ALUMINUM ROOF CURB. 2. PROVIDE 120V/1PH TYPE 1A MOTORIZED DAMPER WITH SPRING RETURN ACTUATOR (FAIL CLOSED). 3. PROVIDE ALUMINUM BIRD SCREEN. 4. ALL ALUMINUM CONSTRUCTION. INSULATED REMOVABLE COVER. ACCESS DOOR TO MOTORIZED DAMPER SECTION AND ACTUATOR. 5. APPROVED EQUAL MANUFACTURER LOREN COOK SHALL PROVIDE ALL SPECIFIED ITEMS.									

PUMP SCHEDULE													
TAG	MANUFACTURER	MODEL	OPERATION	SYSTEM SERVED	FLUID TYPE	FLOW RATE (GPM)	HEAD/FT.	FLANGE SIZE (IN)	MOTOR HP	BHP	RPM	ELEC V PH.	REMARKS
HWP-1	TACO	KV-2009D	LEAD	STEAM TO HOT WATER	30%PG/70% WATER	67	60	2 X 2	3	1.7	1760	460 3	ALL
HWP-2	TACO	KV-2009D	STANDBY	STEAM TO HOT WATER	30%PG/70% WATER	67	60	2 X 2	3	1.7	1760	460 3	ALL
NOTES: 1) APPROVED MANUFACTURERS: ARMSTRONG AND B&G. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS.													

HEAT EXCHANGER SCHEDULE																
TAG	MANUFACTURER	MODEL	SYSTEM AND/OR SERVICE	TUBESIDE							SHELLSIDE				WEIGHT (LBS)	NOTES
				FLUID	PASS	CAPACITY	FLOW	EWT	LWT	WPD	FLUID	FLOW	SAT. STEAM TEMP	STEAM PRESSURE		
						MBH	GPM	°F	°F	FT		LBS/HR	°F	PSI		
HX-1	TACO	E06210-S	STEAM TO HOT WATER	30% PROPYLENE GLYCOL	2	794.9	67	155	180	1.32	STEAM	827.5	227.16	5	300	ALL
NOTES: 1) SADDLE. PROVIDE 4'-0" HIGH HX-1 SUPPORT BOLTED TO CONCRETE PAD. 2) APPROVED MANUFACTURERS: ARMSTRONG AND B&G. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS.																

EXPANSION TANK SCHEDULE								
TAG	MANUFACTURER	MODEL	SYSTEM SERVED	TANK VOLUME (GAL)	DIA. X H (IN)	CONNECTION SIZE	WEIGHT (LBS)	NOTES
ET-1	TACO	CA90-125	STEAM TO HOT WATER SYSTEM	23	20 X 29.125	1" NPT	120	ALL
NOTES: 1) ASME RATED. 2) APPROVED MANUFACTURERS: ARMSTRONG AND B&G. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS.								

AIR SEPARATOR SCHEDULE									
TAG	MANUFACTURER	MODEL	SYSTEM SERVED	DIA. X H (IN)	RATED FLOW (GPM)	PIPE SIZE (IN)	CONNECTION SIZE	WEIGHT (LB)	NOTES
AS-1	TACO	AC02-125AR	STEAM TO HOT WATER SYSTEM	12 X 22.125	149	2.5	2.5	40	ALL
NOTES: 1) APPROVED MANUFACTURERS: ARMSTRONG AND B&G. APPROVED EQUAL MANUFACTURERS SHALL PROVIDE ALL SPECIFIED ITEMS. 2) ASME RATED.									

STEAM CONDENSATE PUMP SCHEDULE											
TAG	MANUFACTURER	MODEL	FLUID TYPE	FLOW RATE (GAL/MIN)	DISCHARGE PRESSURE (PSI)	MOTOR HP	RECEIVER SIZE (GAL)	ELEC DATA			NOTES
								V	PH	HZ	
CP-1	ARMSTRONG	4300 SERIES 43310-JD	CONDENSATE	15	30	(2) 3/4	15	120	1	60	ALL
NOTES:											
1. STAINLESS STEEL RECEIVER.											
2. THE PUMP MANUFACTURER SHALL FURNISH, MOUNT ON THE PUMP UNIT, AND WIRE A U.L. LABELED NEMA-3 CONTROL CABINET WITH HINGED DOOR, CONTAINING:											
2 COMBINATION MAGNETIC STARTERS (EACH HAVING 3 OVERHEAD RELAYS) WITH CIRCUIT BREAKERS AND COVER INTERLOCK FOR LOCK-OUT TAG-OUT CAPABILITY											
2 "AUTOMATIC-OFF" SELECTOR SWITCHES											
2 MOMENTARY CONTACT "TEST" PUSH BUTTONS											
2 PILOT RUN LIGHTS											
1 NUMBERED TERMINAL STRIP											
1 REMOVABLE CONTROL MOUNTING PLATE											
EACH PUMP CONTROL CIRCUIT SHALL BE COMPLETELY INDEPENDENT OF THE OTHER. THE NEMA-3 MECHANICAL ALTERNATOR SHALL (1) CHANGE THE OPERATING SEQUENCE AUTOMATICALLY AFTER EACH CYCLE, (2) PROVIDE SIMULTANEOUS OPERATION UNDER PEAK LOAD CONDITIONS, AND (3) OPERATE THE SECOND PUMP AUTOMATICALLY, SHOULD THE ACTIVE PUMP FAIL.											
THE UNIT SHALL HAVE A FLOAT SWITCH ASSEMBLY NEMA-3 TO TURN ON A HIGH WATER ALARM MOUNTED IN A CONTROL PANEL WITH BELL, LIGHT, AND SILENCING RELAY WITH DRY CONTACTS TO ACCESS THE BUILDING MANAGEMENT SYSTEM ALARM.											
A CONTROL CIRCUIT TRANSFORMER FOR EACH CIRCUIT SHALL BE PROVIDED WHEN THE MOTOR VOLTAGE IS THREE PHASE OR CODE REQUIRES 115 VOLT CONTROLS.											
ALL FACTORY INSTALLED WIRING SHALL BE NUMBERED FOR EASY IDENTIFICATION AND THE NUMBERS SHALL COINCIDE WITH THOSE SHOWN ON THE WIRING DIAGRAMS.											
3. SINGLE POINT POWER CONNECTION.											
4. APPROVED EQUAL MANUFACTURER: BELL & GOSSETT.											

REGISTERS, GRILLES AND DIFFUSERS SCHEDULE								
TAG	MODEL	MANUFACTURER	TYPE	MOUNTING	SIZE	MATERIAL	FINISH	NOTES
A	300RL-SS	TITUS	DOUBLE DEFLECTION SUPPLY GRILLE	SURFACE	SEE PLANS	316 STAINLESS STEEL	WHITE	1,2
A1	300FL	TITUS	DOUBLE DEFLECTION SUPPLY GRILLE	SURFACE	30x12	ALUMINUM	TO MATCH EXISTING	1,3
B	50R-SS	TITUS	1"x1" CORE, EGGRATE GRILLE	SURFACE	60x60	316 STAINLESS STEEL	WHITE	2
B1	355ZFL	TITUS	RETURN GRILLE WITH ZERO DEGREE DEFLECTION	SURFACE	60x24	ALUMINUM	TO MATCH EXISTING	2
NOTES: 1. PROVIDE WITH DAMPER. 2. APPROVED EQUAL MANUFACTURERS : PRICE, NAILOR OR HART & COOLEY								

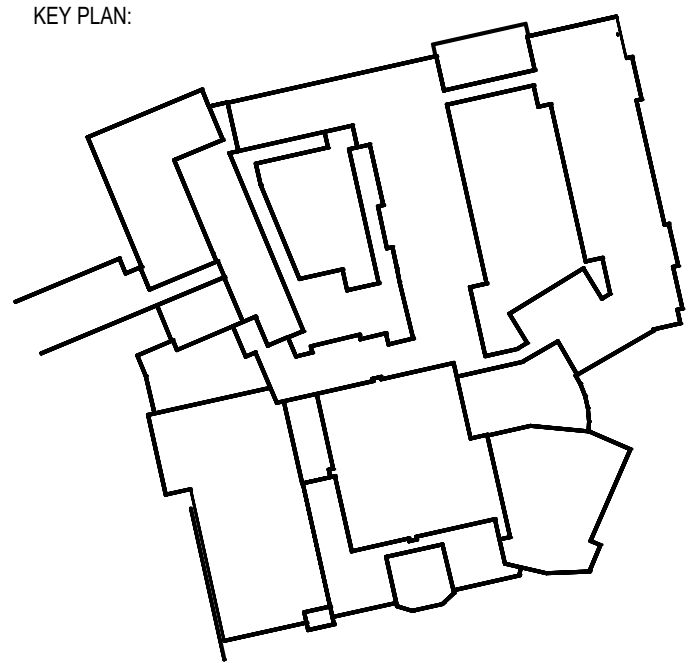
STEAM TRAP SCHEDULE				
AHU #	MANUFACTURER	SIZE (IN)	CAPACITY (LB/H)	NOTES
AHU-1	BELL & GOSSETT	2	2,500	ALL
AHU-4	BELL & GOSSETT	1	390	ALL
AHU-5	BELL & GOSSETT	1.5	1,280	ALL
AHU-6	BELL & GOSSETT	1.5	1,280	ALL
AHU-7	BELL & GOSSETT	1.5	1,280	ALL
AHU-8	BELL & GOSSETT	1.5	1,280	ALL
AHU-9	BELL & GOSSETT	1.5	1,280	ALL
AHU-10	BELL & GOSSETT	2	2,500	ALL
END OF MAIN STEAM	BELL & GOSSETT	0.75	390	ALL
NOTES: 1. PROVIDE REMOVABLE STEAM TRAP INSULATION. 2. APPROVED EQUAL MANUFACTURERS: SPIRAX SARCO AND WATSON Mc				

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CITY OF WATERBURY

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THIS SQUARE APPEARS 1/2"x1/2" ON FULL SIZE SHEETS

NO	DATE	RELEASE
	08/08/2023	100% CD

STAMP:

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SCHOOL AHU
REPLACEMENT

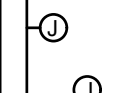
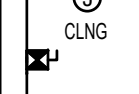
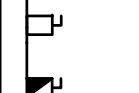
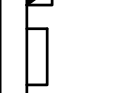

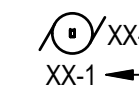

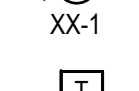
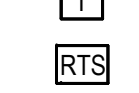
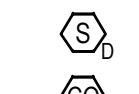
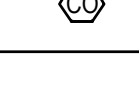





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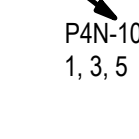
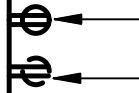
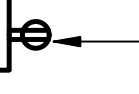

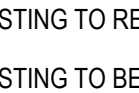

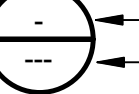
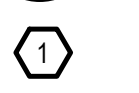
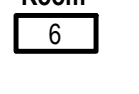
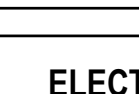
DRAWING TITLE:
MECHANICAL SCHEDULES

FILE: 2022/32580C-9
DRAWN BY: HB
CHECKED BY: OA
DATE: 08/08/2023
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M-602

ELECTRICAL ABBREVIATIONS LIST					
1P	1 POLE (2P, 3P, 4P, ETC.)	MCB	MAIN CIRCUIT BREAKER		
A	AMPERE	MDP	MAIN DISTRIBUTION PANEL		
AF	AMP FRAME	MIN	MINIMUM		
AFF	ABOVE FINISHED FLOOR	MISC	MISCELLANEOUS		
AHU	AIR HANDLING UNIT	MLO	MAIN LUGS ONLY		
AL	ALUMINUM	MOCP	MAXIMUM OVER-CURRENT PROTECTION		
AMP	AMPERE	MSBD	MAIN SWITCHBOARD		
AMPL	AMPLIFIER	N.C.	NORMALLY CLOSED		
AT	AMP TRIP	NEC	NATIONAL ELECTRICAL CODE		
ATS	AUTOMATIC TRANSFER SWITCH	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S		
AWG	AMERICAN WIRE GAUGE		ASSOCIATION		
BLDG	BUILDING	NIC	NOT IN CONTRACT		
BMS	BUILDING MANAGEMENT SYSTEM	N.O.	NORMALLY OPEN		
C	CONDUIT	NTS	NOT TO SCALE		
CB	CIRCUIT BREAKER	OCF	OVER-CURRENT PROTECTION		
CKT	CIRCUIT	OL	OVERLOADS		
CLG	CEILING	PB	PULL BOX OR PUSHBUTTON		
CU	COPPER	PF	POWER FACTOR		
DEPT	DEPARTMENT	PH	PHASE		
DISC	DISCONNECT	PNL	PANEL		
DN	DOWN	PVC	POLYVINYL CHLORIDE (CONDUIT)		
DS	SAFETY DISCONNECT SWITCH	PWR	POWER		
DT	DOUBLE THROW	QUAN	QUANTITY		
DWG	DRAWING	RCPT	RECEPTACLE		
EC	ELECTRICAL CONTRACTOR	RM	ROOM		
ECM	ELECTRONICALLY COMMUTATED MOTORS	RSC	RIGID STEEL CONDUIT		
ELEC	ELECTRIC.	RTU	ROOF TOP UNIT		
ELEV	ELECTRICAL ELEVATOR	RVNR	REDUCED VOLTAGE, NON-REVERSING		
EMT	ELECTRICAL METALLIC TUBING	SEC	SECONDARY		
EQUIP	EQUIPMENT	SHT	SHEET		
EXIST	EXISTING	SIM	SIMILAR		
EXH	EXHAUST	SIN	SOLID NEUTRAL		
FA	FIRE ALARM	SPEC	SPECIFICATION		
FABP	FIRE ALARM BOOSTER POWER SUPPLY	SP	SPARE		
	PANEL	SR	SURFACE RACEWAY		
FACP	FIRE ALARM CONTROL PANEL	SS	STAINLESS STEEL		
FCU	FAN COIL UNIT	SSBJ	SUPPLY-SIDE BONDING JUMPER		
FLA	FULL LOAD AMPS	STD	STANDARD		
FU	FUSE	SURF	SURFACE MOUNTED		
FVNR	FULL VOLTAGE, NON-REVERSING	SW	SWITCH		
GA	GAUGE	SWBD	SWITCHBOARD		
GAL	GALLON	SYM	SYMMETRICAL		
GALV	GALVANIZED	SYS	SYSTEM		
GC	GENERAL CONTRACTOR	TYP	TYPICAL		
GEN	GENERATOR	UE	UNDERGROUND ELECTRICAL		
GFCI	GROUND FAULT CIRCUIT	UG	UNDERGROUND		
	INTERRUPTER	UH	UNIT HEATER		
GFP	GROUND FAULT PROTECTOR	UTIL	UTILITY		
GND	GROUND	V	VOLT		
GRS	GALVANIZED RIGID STEEL (CONDUIT)	VFD	VARIABLE FREQUENCY DRIVE		
HOA	HANDS-OFF-AUTOMATIC SWITCH	W	WATT		
HP	HORSEPOWER	WI	WITH		
HVAC	HEATING, VENTILATING AND AIR	WG	WIRE GUARD		
	CONDITIONING	W/O	WITHOUT		
IC	INTERRUPTING CAPACITY	WP	WEATHERPROOF		
IMC	INTERMEDIATE METAL CONDUIT	XFMR	TRANSFORMER		
INCAND	INCANDESCENT				
IR	INFRARED				
I/W	INTERLOCK WITH	∠	ANGLE		
J-BOX	JUNCTION BOX	@	AT		
KV	KILOVOLT	▲	DELTA		
KVA	KILOVOLT-AMPERE	'	FEET		
KVAR	KILOVOLT-AMPERE REACTIVE	"	INCHES		
KW	KILOWATT	#	NUMBER		
KWH	KILOWATT HOUR	Ø	PHASE		
LTO	LIGHTING	C	CENTER LINE		
LV	LOW VOLTAGE	P	PLATE		
MAN	MANUAL STARTER (TOGGLE SWITCH				
	WITH THERMAL OVERLOAD)				
MAX	MAXIMUM				
MCA	MINIMUM CIRCUIT AMPS				

SYMBOL	DESCRIPTION
	JUNCTION BOX
	CEILING JUNCTION BOX
	COMB. MOTOR STARTER (FUSED)
	SAFETY DISC. SW. (NON-FUSED)
	SAFETY DISC. SW. (FUSED)
	ELECTRICAL PANEL
	RECEPTACLE (WEATHERPROOF)
	MOTOR
	IDENTITY (SEE SCHEDULE)
	EXISTING TO REMAIN
	RELOCATED
	DEMOLISHED
	TRANSFORMER
	REMOTE TEST SWITCH
	DUCT SMOKE DETECTOR
	CARBON MONOXIDE DETECTOR

ELECTRICAL SYMBOL NOTES	
	CONDUIT IN CEILING, FLOOR OR WALL AS REQUIRED BY FIELD CONDITIONS
	HOME RUN TO BRANCH CIRCUIT PANELBOARD. THE PANELBOARD DESIGNATION IS SHOWN ADJACENT TO THE HOME RUN ARROW AS A NUMERATOR AND THE CIRCUIT DESIGNATION IS SHOWN AS THE DENOMINATOR. CIRCUIT BREAKER SIZES (AMPS/NUMBER OF POLES) ARE SHOWN IN THE PANELBOARD SCHEDULE WITH THE CORRESPONDING PANELBOARD AND CIRCUIT DESIGNATION. EXAMPLE: HOME RUN TO PANELBOARD P4N-102; CIRCUITS 1, 3, 5.
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW
	ITEM TO BE REMOVED
	AREA NOT IN CONTRACT
	NUMBER OF DETAIL ON SHEET
	NUMBER OF SHEET WHERE DETAIL APPEARS
	KEYED NOTE (SEE SCHEDULE)
	ROOM NAME AND NUMBER

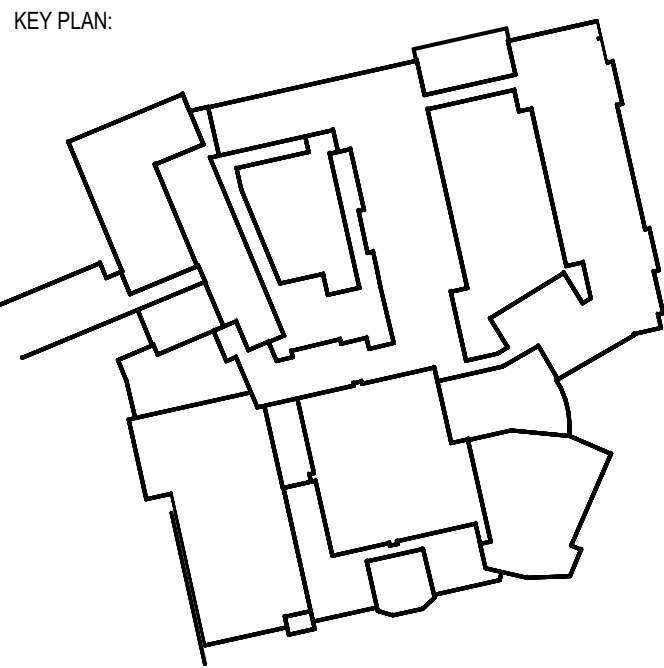
ELECTRICAL NOTES	
1.	PROJECT DESIGN CODES AS APPLICABLE: 2022 CONNECTICUT STATE BUILDING CODE 2021 INTERNATIONAL BUILDING CODE 2021 INTERNATIONAL ENERGY CONSERVATION CODE 2022 CONNECTICUT STATE FIRE SAFETY CODE 2021 INTERNATIONAL FIRE CODE 2021 CONNECTICUT FIRE PREVENTION CODE 2021 NFPA 1 FIRE CODE 2021 NFPA 101 LIFE SAFETY CODE 2020 NFPA 70 NATIONAL ELECTRICAL CODE
2.	ACCESS TO AND CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL CONFORM TO N.E.C. ARTICLES 110 AND 408. 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.
3.	THIS DRAWING SHOWS EQUIPMENT LOCATIONS ONLY. WIRING SHOWN IS SCHEMATIC IN NATURE. REFER TO RISERS AND DETAILS FOR ALL REQUIRED POWER AND CONTROL WIRING. COORDINATE CONDUIT ROUTE IN FIELD WITH OTHER TRADES, EQUIPMENT AND OWNER. VERIFY ALL MOUNTING HEIGHTS WITH OWNER AND ENGINEER PRIOR TO INSTALLATION.
4.	UNLESS NOTED OTHERWISE, ALL WIRING OF CIRCUIT SHALL MATCH HOMERUN WIRING OF CIRCUIT. PROVIDE ADDITIONAL CONDUCTORS AS REQUIRED TO ACCOMPLISH INDICATED WIRING ARRANGEMENT. THIS INCLUDES WIRING AND CONNECTION TO EQUIPMENT PROVIDED BY OTHERS.
5.	RECONNECT ALL EXISTING MAINTAINED EQUIPMENT TO NEW PANELBOARDS AND EQUIPMENT. PROVIDE NEW WIRING, RACEWAY AND DEVICES AS REQUIRED TO RECONNECT EXISTING EQUIPMENT TO NEW POWER SOURCES. PATCH FILL AND WEATHERSTOP ALL OPENINGS WITH LIKE MATERIALS, I.E. MASONRY WITH MASONRY. LABEL CIRCUITS AT BOTH LOCATIONS, THE EQUIPMENT DISCONNECT AND ON THE REVISED PANEL BOARD SCHEDULE.
6.	WIRE AND RACEWAY SIZES INDICATED ON HOMERUNS/CIRCUITS SHALL BE CONTINUOUS FOR ENTIRE LENGTH, UNLESS NOTED OTHERWISE.
7.	ALL WIRING (CONDUITS, ETC.) TO BE CONCEALED. NO SURFACE WIRING SHALL BE INSTALLED IN FINISHED AREAS.
8.	ELECTRICAL CONDUITS, WIRING, BOXES, ETC. SHALL NOT PENETRATE STAIR ENCLOSURE, UNLESS THEY ARE FEEDING DEVICES LOCATED WITHIN THE STAIR ENCLOSURE.
9.	RACEWAY AND WIRING INDICATED ON DRAWINGS ARE RECOMMENDATIONS FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL ROUTING.

ELECTRICAL DEMOLITION NOTES	
1.	ALL EXISTING ELECTRICAL INFORMATION WAS OBTAINED FROM LIMITED ORIGINAL PROJECT PLANS DESIGNED BY HILL AND HARRIGAN AND LIMITED FIELD WORK.
2.	DEMOLITION PLANS ARE DIAGRAMMATIC AND DO NOT DEPICT ENTIRE SCOPE OF WORK. ADDITIONAL WORK RELATED TO DEMOLITION MODIFICATIONS SHOULD BE EXPECTED.
3.	BEFORE COMMENCING WITH WORK, CONTRACTOR SHALL INSPECT THE PROJECT SITE. DETERMINE THE CONDITIONS UNDER WHICH DEMOLITION IS TO BE ACCOMPLISHED ALONG WITH KIND AND AMOUNT OF MATERIALS BEING REMOVED. IF ANY LATENT HAZARDOUS MATERIALS ARE NOTICED OR SUSPECTED, CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY AND WAIT FOR FURTHER INSTRUCTIONS BEFORE STARTING/RESTARTING ANY WORK IN PROJECT AREA. THE OWNER IS RESPONSIBLE FOR FOR REMOVAL OR ABATEMENT OF ANY/ALL ASBESTOS-LADEN MATERIAL PRIOR TO THE CONTRACTOR COMMENCING WITH HIS WORK. CONTRACTOR SHALL COORDINATE DEMOLITION WORK WITH OWNER'S HAZMAT REPORTS, AS APPLICABLE.
4.	CONTRACTOR SHALL SURVEY EXISTING FIELD CONDITIONS AND SHALL REMOVE/REPAIR/REPLACE CEILINGS TO ACCESS ABOVE THE CEILING FOR NEW WIRING AND CONDUIT.
5.	ELECTRICAL DEMOLITION IS SELECTIVE IN BUILDING. REFER TO DEVICES SHOWN AND NOTES ON SHEETS.
6.	THE CONTRACTOR SHALL PROVIDE LABOR AND EQUIPMENT TO COMPLETELY REMOVE ALL EQUIPMENT AS REQUIRED. REMOVE ALL JUNCTION BOXES, WIRING, AND CONDUIT IN ITS ENTIRETY BACK TO SOURCE. REMOVE ALL ELECTRICAL CONTROLS, DISCONNECT SWITCHES, JUNCTION BOXES, WIRING, AND CONDUIT ASSOCIATED WITH MECHANICAL EQUIPMENT BEING REMOVED IN THIS PROJECT. CONTRACTOR TO TRACE EXISTING CIRCUIT, AND VERIFY LOCATION AND ROUTING IN FIELD FOR REMOVAL. WHEN REMOVAL OF CIRCUITING IMPACTS EXISTING EQUIPMENT TO REMAIN, CONTRACTOR SHALL RE-FEED SO AS TO MAINTAIN EQUIPMENT NOT BEING DEMOLISHED FROM PROJECT.
7.	THE OWNER IS RESPONSIBLE FOR THE REMOVAL OR ABATEMENT OF ANY AND ALL ASBESTOS-LADEN MATERIALS PRIOR TO THE CONTRACTOR COMMENCING WITH HIS WORK. HOWEVER, IF THE CONTRACTOR SHOULD ENCOUNTER ANY MATERIALS, WHICH HE SUSPECTS TO BE LADEN WITH ASBESTOS, HE SHALL CEASE WORK AT ONCE AND REPORT HIS FINDINGS TO THE OWNER'S REPRESENTATIVE.
8.	ALL PANELBOARDS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED. CONTRACTOR TO VERIFY ALL CIRCUITS FEEDING THE MECHANICAL EQUIPMENT PRIOR TO REMOVAL.
9.	VERIFY EXISTING CONDITIONS ON THE JOB SITE BEFORE BEGINNING ANY WORK. COORDINATE DEMOLITION AND NEW CONSTRUCTION WITH THE OWNER PRIOR TO COMMENCEMENT OF WORK.
10.	EXECUTE DEMOLITION IN A SAFE MANNER. EGRESS, EXITS AND FIRE PROTECTION OR ALARM EQUIPMENT REQUIREMENTS SHALL BE MAINTAINED. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION NECESSARY TO COMPLETE WORK.
11.	CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVAL AND PROPER DISPOSAL OF DEMOLISHED ITEMS. THIS INCLUDES COSTS FOR RECYCLING OR RECLAMATION OF MATERIALS SUCH AS REFRIGERANT, AS WELL AS HAULING AND DUMPING OF ALL DEMOLISHED MATERIAL. ALL MATERIAL REMOVED SHALL BE REMOVED FROM THE SITE IN ITS ENTIRETY AND DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LAWS.

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 THIS SQUARE APPEARS 1/2"x1/2"
ON FULL SIZE SHEETS

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STAMP:

PROJECT NAME:
**KENNEDY HIGH
SCHOOL AHU
REPLACEMENT**

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DRAWING TITLE:
**ELECTRICAL NOTES,
SYMBOLS AND
ABBREVIATIONS**

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ELECTRICAL SPECIFICATIONS

26050 – ELECTRICAL GENERAL PROVISIONS

- A. REGULATORY REQUIREMENTS: ALL WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES, THE CONNECTICUT STATE BUILDING CODE, AND IN PARTICULAR, NFPA 70 AND 72. WHERE APPROVAL STANDARDS HAVE BEEN ESTABLISHED BY OSHA, UL, ASME, AGA, NFPA, ANSI, ARI, NFPA, STATE FIRE INSURANCE REGULATORY BODY, AND FM, FOLLOW THESE STANDARDS WHETHER OR NOT 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. ARRANGE WITH LOCAL AND STATE AUTHORITIES AND UTILITY COMPANIES FOR PERMITS, FEES, AND SERVICE CONNECTIONS, VERIFYING LOCATIONS AND ARRANGEMENT, AND PAY CHARGES INCLUDING INSPECTIONS.
- B. SITE VISITATION: VISIT THE SITE OF THE PROPOSED CONSTRUCTION TO BECOME THOROUGHLY FAMILIAR WITH DETAILS OF WORK AND WORKING CONDITIONS, ADVISE OWNER OF DISCREPANCIES.
- C. MATERIALS AND WORKMANSHIP: 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.
- D. 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.
- E. SEISMIC RESTRAINT SYSTEMS: PROVIDE SEISMIC RESTRAINT SYSTEMS FOR ALL EQUIPMENT AND RELATED SYSTEMS. SYSTEMS SHALL COMPLY WITH THE LATEST ADOPTED VERSIONS OF EACH CONNECTICUT BUILDING CODE: IN PARTICULAR, INTERNATIONAL BUILDING CODE. 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 BE USED FOR 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:
- A. 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.
- B. SEISMIC RESTRAINT CALCULATIONS.
- C. 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 STATE OF CONNECTICUT.
- D. 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.
- E. ALL SEISMIC RESTRAINING DEVICES SHALL HAVE A PRE-APPROVED NUMBER FROM CALIFORNIA OSHPD OR OTHER RECOGNIZED GOVERNMENT AGENCY SHOWING MAXIMUM RESTRAINT RATINGS.
- F. DETAIL DRAWINGS ON SEISMIC RESTRAINT SYSTEMS FOR CONDUIT, BUSWAY, CABLE TRAY AND OTHER WIRING SYSTEMS, INCLUDING METHODS OF SUSPENSION, SUPPORT GUIDES, AND MAXIMUM LOADING AT EACH LOCATION.
- F. SUBMITTALS: SEVEN (7) COPIES OF SHOP DRAWINGS AND MANUFACTURERS CATALOG SHEETS FOR THE FOLLOWING EQUIPMENT/SYSTEMS SHALL BE SUBMITTED FOR APPROVAL;
- CONDUIT AND WIRE.
 - SAFETY SWITCHES, DISCONNECTS AND FUSES.
 - PANELBOARDS, CIRCUIT BREAKERS, AND ENCLOSURES.
 - SWITCHES, RECEPTACLES, AND DEVICE PLATES.
 - FIRE ALARM DEVICES.

26060 – SECONDARY GROUNDING

- A. BUILDING EQUIPMENT GROUND:
- 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.
 - PROVIDE O2 OEDNEY TYPE "B" 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.
 - 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.
- A. INSTALLATION:
- SECURE EQUIPMENT AND CONDUIT WITH HANGER RODS, CONDUIT CLAMPS, EXPANSION ANCHORS, BEAM CLAMPS OR BOLTS AS REQUIRED.
 - 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.

26075 – ELECTRICAL IDENTIFICATION

- A. PROVIDE ENGRAVED THREE-LAYER LAMINATED PLASTIC NAMEPLATES WITH WHITE LETTERS ON A BLACK BACKGROUND FOR ALL NEW EQUIPMENT ENCLOSURES, INCLUDING PANELBOARDS, DISCONNECT SWITCHES AND CIRCUIT BREAKERS.
- B. PERMANENTLY LABEL ALL RECEPTACLES, MOTORS, POWER DISCONNECTS, WALL SWITCHES, AND REMOTE LOADS WITH THE PANEL AND CIRCUIT NUMBER SERVING THE DEVICE.
- C. 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.
- D. WIRE COLOR CODE
- | | |
|--------------------------------------|--------------------------------------|
| (208Y/120V, 3 PH): | (480Y/277V, 3 PH): |
| PHASE A: BLACK | PHASE A: BROWN |
| PHASE B: RED | PHASE B: ORANGE |
| PHASE C: BLUE | PHASE C: YELLOW |
| NEUTRAL: WHITE | NEUTRAL: GRAY |
| GROUND: GREEN | GROUND: GREEN |
| ISOLATED GROUND: GREEN/YELLOW STRIPE | ISOLATED GROUND: GREEN/YELLOW STRIPE |
- E. PROVIDE ENGRAVED THREE-LAYER LAMINATED PLASTIC NAMEPLATES WITH WHITE LETTERS ON A BLACK 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.

26120 – WIRE AND CABLE

- A. BUILDING WIRE:
- FEEDERS AND BRANCH CIRCUITS LARGER THAN NO. 8 AWG: COPPER, STRANDED CONDUCTOR, 600 VOLT INSULATION, THHN-2/THWN-2, IN ACCORDANCE WITH NEMA WCS AND NEMA WC3.
 - FEEDERS AND BRANCH CIRCUITS NO. 6 AWG AND SMALLER: COPPER CONDUCTOR, 600 VOLT INSULATION, THHN-2/THWN-2; SMALLER THAN NO. 8 AWG, SOLID CONDUCTOR IN ACCORDANCE WITH NEMA WCS. CONNECTIONS TO MOTORS, TRANSFORMERS, SUSPENDED LIGHT FIXTURES, AND OTHER VIBRATING EQUIPMENT SHALL BE STRANDED.
 - CONTROL CIRCUITS: COPPER, STRANDED CONDUCTOR 600 VOLT INSULATION, THHN/THWN.
- B. WIRING CONNECTIONS AND SPLICES:
- CONNECT AND SPLICE WIRE NO. 8 AWG AND SMALLER WITH SELF-INSULATING, WIRE NUT CONNECTORS.
 - SPLICE ALL NO. 6 AWG AND LARGER COPPER CONDUCTORS WITH HIGH CONDUCTIVITY, WROUGHT COPPER, COLOR-KEYED COMPRESSION CONNECTOR SIMILAR TO BURNIDY OR T&G.
 - 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 TO WHICH IT IS ASSOCIATED. COMMON NEUTRALS SHALL NOT BE USED FOR BRANCH CIRCUITS, UNLESS SPECIFICALLY NOTED OTHERWISE.
 - USE NO. 10 AWG CONDUCTOR MINIMUM FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS LONGER THAN 75 FEET. NO. 8 AWG LONGER THAN 120' AND USE NO. 10 AWG CONDUCTOR MINIMUM FOR 20 AMPERE, 277 VOLT BRANCH CIRCUITS LONGER THAN 175 FEET, NO. 8 AWG LONGER THAN 280'.
 - PROVIDE HOMERUN AND FEEDER CONDUCTORS OF CONTINUOUS LENGTH WITHOUT JOINT OR SPLICE FROM OVERCURRENT DEVICE TO FIRST OUTLET.
 - INSTALL ALL WIRING IN CONDUIT CONCEALED IN WALL OR ABOVE CEILINGS.
 - NEATLY TRAIN AND LACE WIRING INSIDE BOXES, PANELBOARDS, SWITCHGEAR, MOTOR CONTROL CENTERS, WIRING GUTTERS, AND OTHER EQUIPMENT.
 - 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.
 - 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.
- D. WIRING INSTALLATION IN RACEWAYS:
- 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.

26130 – 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; SECTIONAL BOXES WILL NOT BE ACCEPTABLE.
 - PROVIDE DEEP TYPE CAST METAL OUTLET BOXES LOCATED IN DAMP LOCATIONS EXPOSED TO WEATHER OR EXPOSED AREAS SUBJECT TO DAMAGE, COMPLETE WITH GASKETED COVER AND THREADED HUBS.
 - 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
- 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.
- C. INSTALLATION:
- SET BOXES INSTALLED IN CONCEALED LOCATIONS FLUSH WITH THE FINISH SURFACES, AND PROVIDE WITH THE PROPER TYPE EXTENSION RINGS AND/OR COVERS WHERE REQUIRED.
 - PROVIDE RECESSED OUTLET BOXES IN FINISHED AREAS; SECURE BOXES TO INTERIOR WALL AND PARTITION STUDS, ACCURATELY POSITIONING TO ALLOW FOR SURFACE FINISH THICKNESS.
 - 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 OR IN UNFINISHED AREAS.
 - PROVIDE PULL OR JUNCTION BOXES IN ACCESSIBLE LOCATIONS WHERE SHOWN OR AT LEAST EVERY 150 FEET IN STRAIGHT RUNS, OR AS REQUIRED BY CODE OR AS NEEDED FOR PROPER INSTALLATION OF WIRING AND JUNCTIONS.
 - IDENTIFY ALL JUNCTION BOXES BY CIRCUIT NUMBER ON COVER WITH LEGIBLE PERMANENT INK MARKER.
 - COVER PLATES OF ALL JUNCTION BOXES USED FOR FIRE ALARM WIRING SHALL BE PAINTED "RED".

26132 – CONDUIT

- A. MATERIALS:
- PROVIDE RIGID METAL CONDUIT AND FITTINGS IN ACCORDANCE WITH ANSI C80.1; HOT DIP GALVANIZED.
 - PROVIDE ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS IN ACCORDANCE WITH ANSI C80. 3; HOT-DIPPED GALVANIZED TUBING.
- B. CONDUIT SIZING, ARRANGEMENT AND SUPPORT:
- MINIMUM SIZE OF CONDUIT SHALL BE 3/4-INCH. INDICATED SIZES ARE MINIMUM BASED ON THHN/THWN COPPER WIRE AND LARGER SIZES MAY BE USED FOR CONVENIENCE OF WIRE PULLING.
 - CONCEAL CONDUIT IN CEILING OF ALL FINISHED AREAS AND IN WALLS OF ALL 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, AND HEATING APPLIANCES. 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. ROUTE CONDUIT TO ALLOW FOR EQUIPMENT ACCESS AND MAINTENANCE.
 - CONDUIT USED FOR FIRE ALARM CIRCUITS SHALL HAVE A 2 (TWO) INCH PAINTED "RED" BAND EVERY 10 (TEN) FEET.
 - PROVIDE PULL LINE IN ALL EMPTY CONDUIT.
- C. CONDUIT INSTALLATION SCHEDULE:
- INTERIOR:
 - EXPOSED:
 - RIGID METAL CONDUIT IN AREAS SUBJECT TO MOISTURE, CORROSIVE AGENTS PHYSICAL ABUSE, IN UNCONDITIONED SPACES OR FOR CONDUIT SIZES GREATER THAN 4 INCHES.
 - ELECTRICAL METALLIC TUBING IN AREAS NOT SUBJECT TO MOISTURE, CORROSIVE AGENTS OR PHYSICAL ABUSE.

- B) CONCEALED:
- RIGID METAL CONDUIT IN AREAS SUBJECT TO MOISTURE OR CORROSIVE AGENTS.
 - ELECTRICAL METALLIC TUBING IN AREAS NOT SUBJECT TO MOISTURE OR CORROSIVE AGENTS.
- C) CAST IN CONCRETE:
- RIGID NONMETALLIC CONDUIT.
- D) CONNECTIONS TO EQUIPMENT:
- USE LIGHTWIGHT FLEXIBLE METAL CONDUIT IN AREAS SUBJECT TO MOISTURE, HIGH HUMIDITY, OR CORROSIVE AGENTS.
- E) RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE USED FOR WIRING IN THE FOLLOWING LOCATIONS:
- SERVICE POLE RISERS
 - WITHIN CONCRETE SLABS
 - EXPOSED TO MOISTURE AND MECHANICAL DAMAGE
 - EXTERIOR INSTALLATIONS
- F) RIGID POLYVINYL CHLORIDE (PVC) SHALL BE USED FOR WIRING IN THE FOLLOWING LOCATIONS:
- BURIED UNDER GRADE FOR SERVICE ENTRANCE PRIMARY AND SECONDARY CONDUCTORS
 - LIGHTING AND POWER BRANCH CIRCUIT WIRING BURIED UNDER GRADE
 - BELOW CONCRETE SLABS
 - EXPOSURE TO MOISTURE

26140 – WIRING DEVICES

- A. PROVIDE SPECIFICATION GRADE WIRING DEVICES, INCLUDING WALL SWITCHES, RECEPTACLES, AND DEVICE PLATES AND BOX COVERS. COLORED SWITCHES AND RECEPTACLES SHALL BE WHITE TO MATCH EXISTING BUILDING DEVICES OR AS DIRECTED BY OWNER/ARCHITECT.
- B. DEVICES:
- 20A, 120-277V SINGLE POLE: "1221", HUBBELL.
 - 20A, 125V, 2P3W DUPLEX: NEMA 5-20R; "5362", HUBBELL.
 - 20A, 125V, 2P3W DUPLEX GROUND FAULT INTERRUPTING: NEMA 5-20R; "GF5352", HUBBELL.
 - 20A, 125V, 2P3W DUPLEX ISOLATED GROUND: NEMA IG5-20R; "IG5362", HUBBELL WITH ORANGE OR GRAY FACEPLATE AS SELECTED BY THE OWNER/ARCHITECT.
 - 20A, 125V, 2P3W DUPLEX GROUND FAULT INTERRUPTING: NEMA 5-20R; "GF5352", HUBBELL.
- C. COVER PLATES:
- PROVIDE 302/304 SATIN SMOOTH, STAINLESS STEEL FOR INTERIOR AND GASKETED CAST METAL WITH HINGED GASKETED "IN USE" DEVICE COVERS FOR EXTERIOR.

26411 – DISCONNECT SWITCHES

- A. FURNISH AND INSTALL DISCONNECT SWITCHES OF SAME MANUFACTURER AS SWITCHGEAR.
- B. DISCONNECT SWITCHES
- PROVIDE HEAVY DUTY; QUICK-MAKE, QUICK-BREAK, LOAD INTERRUPTER ENCLOSED SWITCH 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 RK-5.
 - PROVIDE SOLID COPPER NEUTRAL BAR WHERE A NEUTRAL IS PRESENT IN THE CIRCUIT.
- C. MANUAL MOTORS
- FURNISH AND INSTALL FRACTIONAL HORSEPOWER MANUAL MOTOR STARTERS WITH ON-OFF CONTROL, THERMAL OVERLOAD RELAY AND PILOT LIGHTS. MANUFACTURED BY GENERAL ELECTRIC, SIEMENS, SQUARE "D", OR ALLEN BRADLEY.

	GENERAL ELECTRIC	SQUARE "D"	ALLEN BRADLEY	SIEMENS
1 POLE, SURFACE	CR101Y11	2510FG1P	600-TAX4	SMFFG1P
2 POLE, SURFACE	CR101H11	2510FG2P	600-TAX5	SMFFG2P

D. FUSES

- 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.

E. INSTALLATION

- 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.

26416 – PANELBOARDS

- PART 1 – GENERAL
- 1.1 SECTION REQUIREMENTS
- A. SUBMITTALS: PRODUCT DATA.
- B. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
- C. COMPLY WITH NEMA PB 1.

PART 2 – PRODUCTS

- 2.1 GENERAL REQUIREMENTS FOR PANELBOARDS
- A. FABRICATE AND TEST PANELBOARDS ACCORDING TO IEEE 344.
- B. ENCLOSURES: SURFACE-MOUNTED CABINETS; NEMA 250, TYPE 1.
- FRONT: SECURED TO BOX WITH CONCEALED TRIM CLAMPS.
 - HINGED FRONT COVER: ENTIRE FRONT TRIM HINGED TO BOX AND WITH STANDARD DOOR WITHIN HINGED TRIM COVER
- C. INCOMING MAINS LOCATION: TOP.
- D. PHASE, NEUTRAL, AND GROUND BUSES: HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY.
- E. CONDUCTOR CONNECTORS: SUITABLE FOR USE WITH CONDUCTOR MATERIAL AND SIZES.
- MATERIAL: HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY..
 - MAIN AND NEUTRAL LUGS: COMPRESSION TYPE.
 - GROUND LUGS AND BUS CONFIGURED TERMINATORS: COMPRESSION TYPE.
- F. SERVICE EQUIPMENT LABEL: NRTL LABELED FOR USE AS SERVICE EQUIPMENT FOR PANELBOARDS WITH ONE OR MORE MAIN SERVICE DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES.
- G. FUTURE DEVICES: MOUNTING BRACKETS, BUS CONNECTIONS, FILLER PLATES, AND NECESSARY APPURTENANCES REQUIRED FOR FUTURE INSTALLATION OF DEVICES.
- H. PANELBOARD SHORT-CIRCUIT CURRENT RATING: RATED FOR SERIES-CONNECTED SYSTEM WITH INTEGRAL OR REMOTE UPSTREAM OVERCURRENT PROTECTIVE DEVICES AND LABELED BY AN NRTL INCLUDE SIZE AND TYPE OF ALLOWABLE UPSTREAM AND BRANCH DEVICES, AND LISTED AND LABELED FOR SERIES-CONNECTED SHORT-CIRCUIT RATING BY AN NRTL.
- I. PANELBOARD SHORT-CIRCUIT CURRENT RATING: FULLY RATED TO INTERRUPT SYMMETRICAL SHORT-CIRCUIT CURRENT AVAILABLE AT TERMINALS.

2.2 DISTRIBUTION PANELBOARDS

- A. MAINS: CIRCUIT BREAKER.
- B. BRANCH OVERCURRENT PROTECTIVE DEVICES: FOR CIRCUIT-BREAKER FRAME SIZES 125 A AND SMALLER: BOLT-ON CIRCUIT BREAKERS.

PART 3 – EXECUTION

- 3.1 INSTALLATION
- RECEIVE, INSPECT, HANDLE, STORE AND INSTALL PANELBOARDS AND ACCESSORIES ACCORDING TO NECA 407.
 - COMPLY WITH MOUNTING AND ANCHORING REQUIREMENTS SPECIFIED IN DIVISION 26 SECTION "COMMON WORK RESULTS FOR ELECTRICAL."
 - MOUNT TOP OF TRIM 90 INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.
 - ARRANGE CONDUCTORS INTO GROUPS; BUNDLE AND WRAP WITH WIRE TIES.
 - CREATE A DIRECTORY TO INDICATE INSTALLED CIRCUIT LOADS AND INCORPORATING OWNER'S FINAL ROOM DESIGNATIONS. OBTAIN APPROVAL BEFORE INSTALLING. USE A COMPUTER OR TYPEWRITER TO CREATE DIRECTORY.

26421 – DRY TYPE TRANSFORMERS

- 1.1 TRANSFORMERS RATED 15 KVA OR ABOVE
- ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED IN ACCORDANCE WITH NFPA 70, BY QUALIFIED ELECTRICAL TESTING LABORATORY RECOGNIZED BY AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 - MATERIAL:
 - COIL MATERIAL: COPPER
 - TERMINAL CONNECTIONS: BOLTED
 - COMPLY WITH 10 CFR 431 (DOE 2016) EFFICIENCY LEVELS.
 - MARKED AS COMPLIANT WITH DOE 2016 EFFICIENCY LEVELS BY QUALIFIED ELECTRICAL TESTING LABORATORY RECOGNIZED BY AUTHORITIES HAVING JURISDICTION.
 - FIELD TESTING AND INSPECTION
 - VISUAL AND MECHANICAL INSPECTION.
 - INSPECT PHYSICAL AND MECHANICAL CONDITION.
 - INSPECT ANCHORAGE, ALIGNMENT, AND GROUNDING.
 - VERIFY THAT RESILIENT MOUNTS ARE FREE AND THAT SHIPPING BRACKETS HAVE BEEN REMOVED.
 - VERIFY THAT UNIT IS CLEAN.
 - PERFORM SPECIFIC INSPECTIONS AND MECHANICAL TESTS RECOMMENDED BY MANUFACTURER.
 - VERIFY THAT AS-LEFT TAP CONNECTIONS ARE AS SPECIFIED.
 - VERIFY PRESENCE OF SURGE ARRESTERS AND THAT THEIR RATINGS ARE AS SPECIFIED.
 - ELECTRICAL TESTS:
 - MEASURE RESISTANCE AT WINDINGS, TAPS, AND BOLTED CONNECTIONS.
 - PERFORM INSULATION-RESISTANCE TESTS WINDING-TO-WINDING AND WINDINGS-TO-GROUND. APPLY VOLTAGE IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED DATA. IN ABSENCE OF MANUFACTURER'S PUBLISHED DATA, COMPLY WITH NETA ATS, TABLE 100.5. CALCULATE POLARIZATION INDEX: VALUE OF INDEX MAY NOT BE LESS THAN 1.0.
 - PERFORM TURNS-RATIO TESTS AT TAP POSITIONS. TEST RESULTS MAY NOT DEVIATE BY MORE THAN ONE-HALF PERCENT FROM EITHER ADJACENT COILS OR CALCULATED RATIO. IF TEST FAILS, REPLACE TRANSFORMER.
 - VERIFY CORRECT SECONDARY VOLTAGE, PHASE-TO-PHASE AND PHASE-TO-NEUTRAL, AFTER ENERGIZATION AND PRIOR TO LOADING.

26437 – FUSES

PART 1 – GENERAL

- 1.1 SECTION REQUIREMENTS
- A. SUBMITTALS: PRODUCT DATA.
- B. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
- C. COMPLY WITH NEMA FU 1 FOR CARTRIDGE FUSES.
- D. EXTRA MATERIALS:
- FUSES: QUANTITY EQUAL TO 15 PERCENT OF EACH FUSE TYPE AND SIZE.

PART 2 – PRODUCTS

- 2.1 CARTRIDGE FUSES
- A. CHARACTERISTICS: NEMA FU 1, NONRENEWABLE CARTRIDGE FUSES WITH VOLTAGE RATINGS CONSISTENT WITH CIRCUIT VOLTAGES.
- 2.2 SPARE-FUSE CABINET
- A. CABINET: GRAY, BAKED-ENAMEL FINISH; WALL-MOUNTED, STEEL UNIT WITH FULL-LENGTH, RECESSED PIANO-HINGED DOOR AND KEY-CODED CAM LOCK AND PULL.
1. SIZE: ADEQUATE FOR STORAGE OF SPARE FUSES SPECIFIED WITH 15 PERCENT SPARE CAPACITY MINIMUM.

PART 3 – EXECUTION

- 3.1 FUSE APPLICATIONS
- A. FEEDERS: CLASS L, FAST ACTING CLASS RK5, FAST ACTING.
- B. MOTOR BRANCH CIRCUITS: CLASS RK5, TIME DELAY.
- C. OTHER BRANCH CIRCUITS: CLASS RK5, TIME DELAY.
- D. CONTROL CIRCUITS: CLASS CC, FAST ACTING.
- 3.2 INSTALLATION
- INSTALL FUSES SO RATING INFORMATION IS READABLE WITHOUT REMOVING FUSE.
 - INSTALL LABELS INDICATING FUSE REPLACEMENT INFORMATION ON INSIDE DOOR OF EACH FUSED SWITCH AND ADJACENT TO EACH FUSE BLOCK AND HOLDER.
 - INSTALL SPARE-FUSE CABINET(S).

28313 – FIRE ALARM DEVICES

- ALL NEW & EXISTING FIRE ALARM DEVICES SHOULD BE FULLY COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. FIRE ALARM INITIATING DEVICES SHALL CONNECT TO EXISTING INITIATING CIRCUIT (FOR DUCT SMOKE DETECTORS, SMOKE DETECTORS, ETC) AND FIRE ALARM NOTIFICATION DEVICES SHALL CONNECT TO EXISTING NOTIFICATION CIRCUIT (FOR HORN/STROBES, ETC)
- DUCT SMOKE DETECTORS SHALL BE ADDRESSABLE, PHOTOELECTRIC TYPE, WITH TWIST LOCK BASE, HOUSING, SAMPLING TUBES AND RELAY OUTPUT WITH REMOTE LED INDICATOR/TEST SWITCH AND APPROPRIATE SAMPLING TUBES.
- ALL NEW DEVICES SHALL COMPLY WITH NFPA 72.
- ALL NEW DEVICES SHALL BE UL LISTED AND LABELED.
- WIRE AND CABLE:
 - GENERAL: UL LISTED AND LABELED AS COMPLYING WITH NFPA 70, ARTICLE 760.
 - SIGNALING LINE CIRCUITS: TWISTED, SHIELDED PAIR, SIZE AS RECOMMENDED BY SYSTEM MANUFACTURER.
 - NON-POWER-LIMITED CIRCUITS: SOLID-COPPER CONDUCTORS WITH 600-V RATED, 75 DEGREE CELSIUS, COLOR-CODED INSULATION.
 - LOW-VOLTAGE CIRCUITS: NO. 16 AWG, MINIMUM
- AFTER COMPLETING INSTALLATION OF FIRE ALARM DEVICES, CONTRACTOR SHALL REPROGRAM FACP FOR TESTING AND COMMISSIONING.

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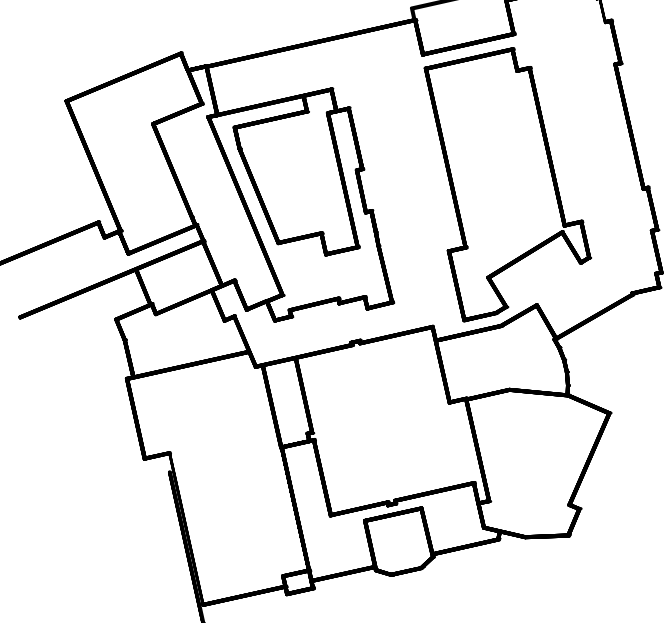


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KEY PLAN:



CLIENT:

CITY OF WATERBURY

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PROJECT NAME:

KENNEDY HIGH
SCHOOL AHU
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:

ELECTRICAL
SPECIFICATIONS

FILE: 2022/32580C-9

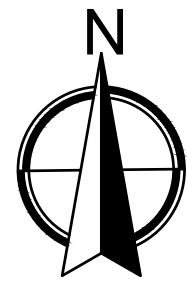
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E002



KEY NOTES

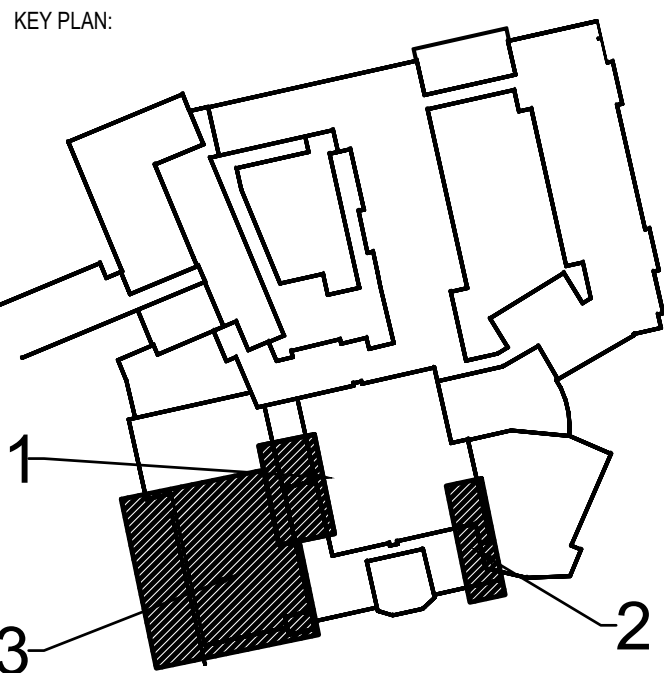
- 1 REMOVE EXISTING DEDICATED MECHANICAL EQUIPMENT DISCONNECT SWITCH, ASSOCIATED CONDUIT & WIRING BACK TO THE FEEDER TAP AND REMOVE EXISTING DISCONNECT AND STARTER AT THE ELECTRICAL SOURCE.
- 2 REMOVE EXISTING DEDICATED MECHANICAL EQUIPMENT DISCONNECT SWITCH, ASSOCIATED CONDUIT & WIRING BACK TO PANEL AND REMOVE EXISTING DISCONNECT AND STARTER AT THE ELECTRICAL SOURCE. APPROXIMATE FEEDER LENGTH 175' (TYP).
- 3 CONTRACTOR TO TRACE OUT CIRCUITS IN THE DEMOLITION PHASE TO CONFIRM PANEL BOARD CIRCUIT FOR HVAC EQUIPMENT. LABEL CIRCUIT AT BOTH THE EQUIPMENT AND DISCONNECT AND ON THE REVISED PANEL BOARD SCHEDULE.

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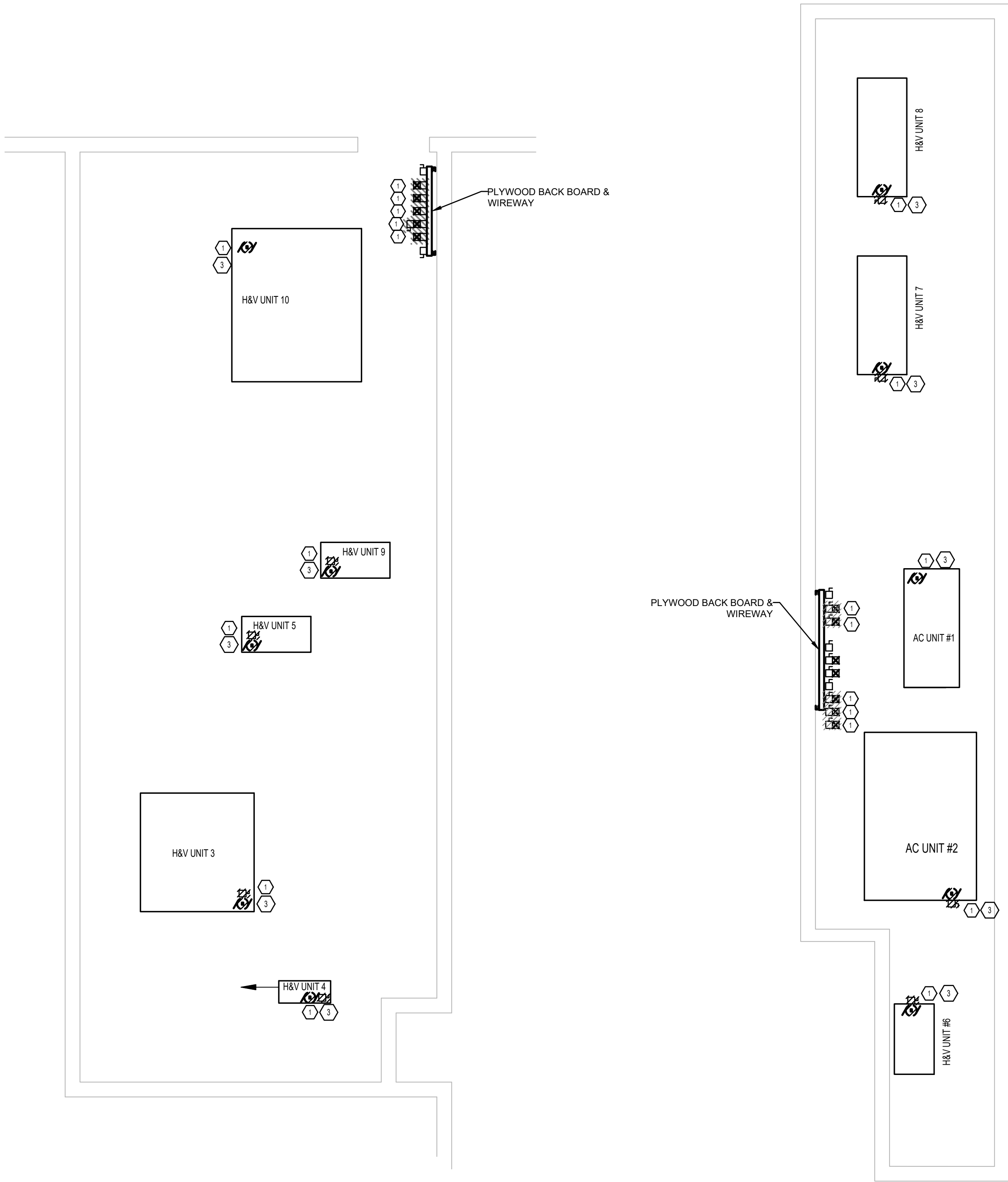
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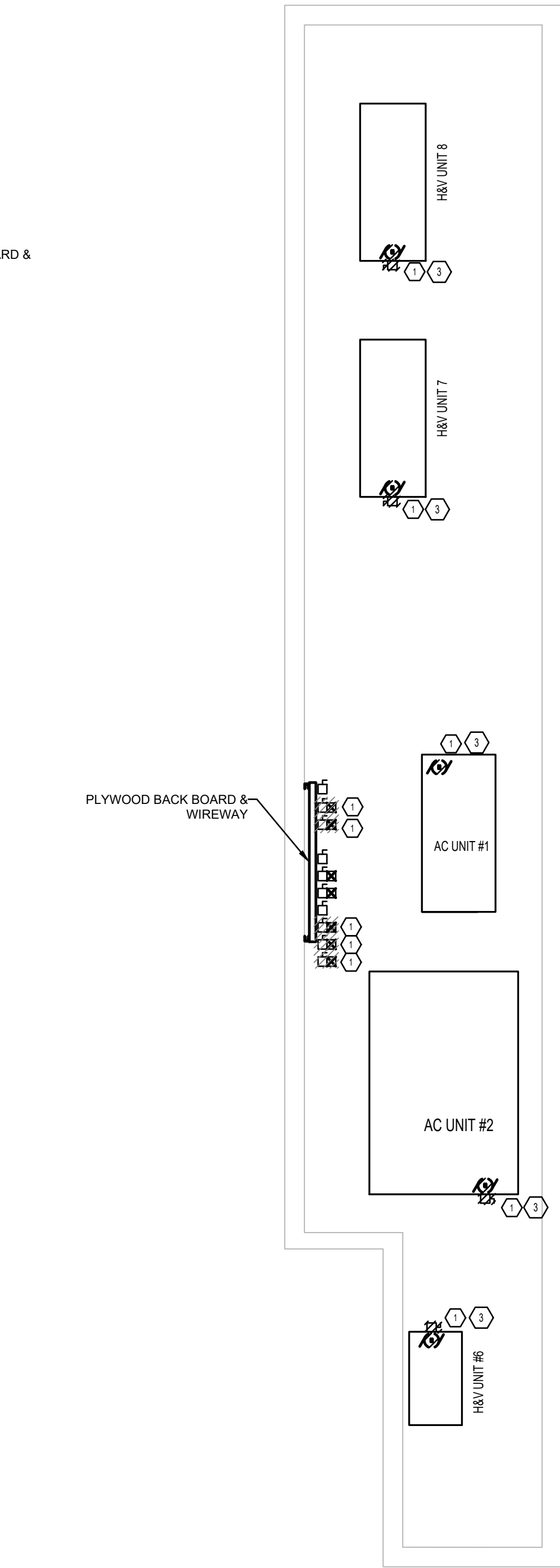
DRAWING TITLE:
ELECTRICAL DEMOLITION
FAN ROOMS & BASEMENT
PLAN

FILE: 2022/32580C-9
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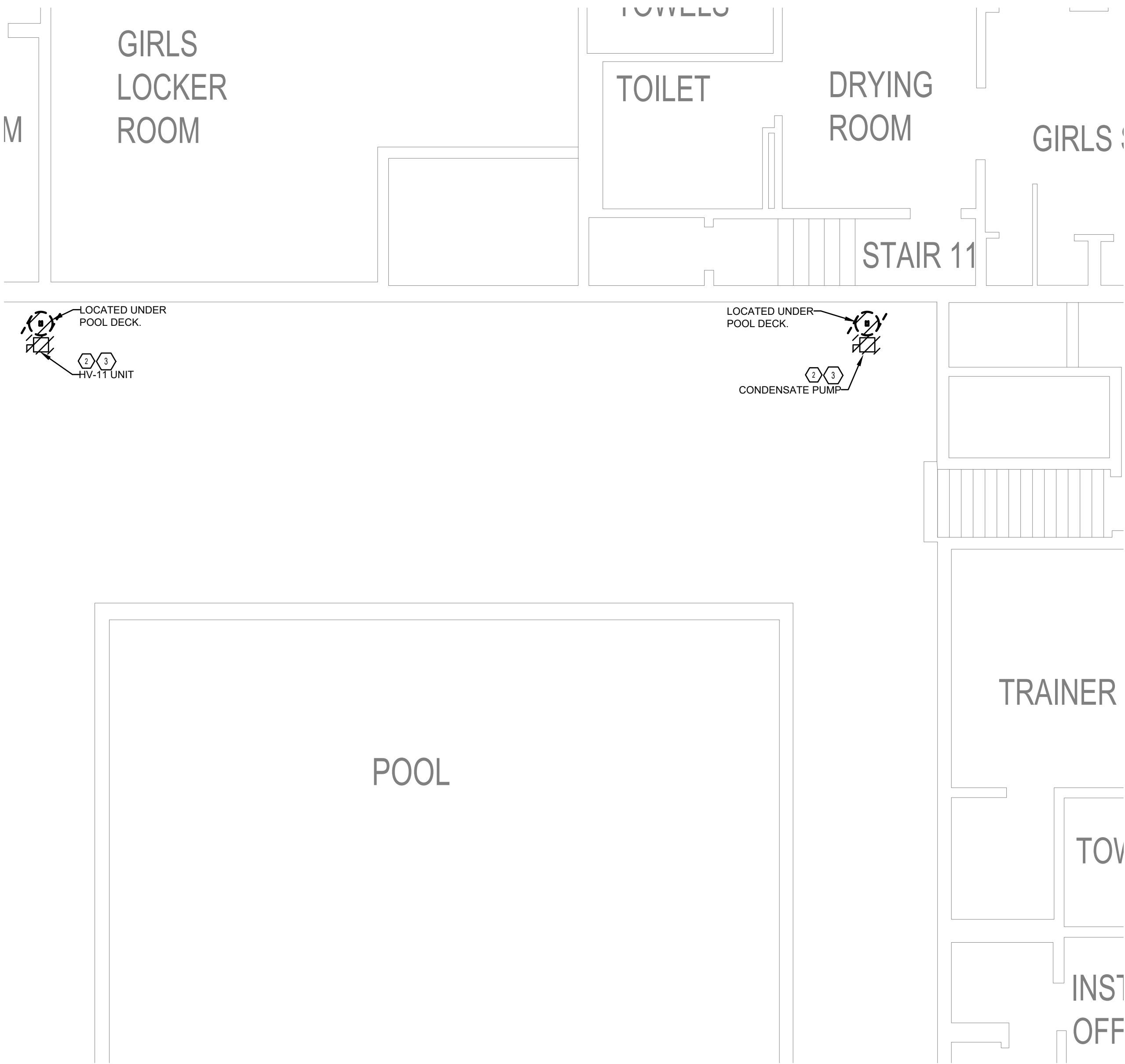
ED101



1 ELECTRICAL DEMOLITION PLAN FAN ROOM 1
SCALE: 3/16" = 1'-0"



2 ELECTRICAL DEMOLITION PLAN FAN ROOM 2
SCALE: 3/16" = 1'-0"



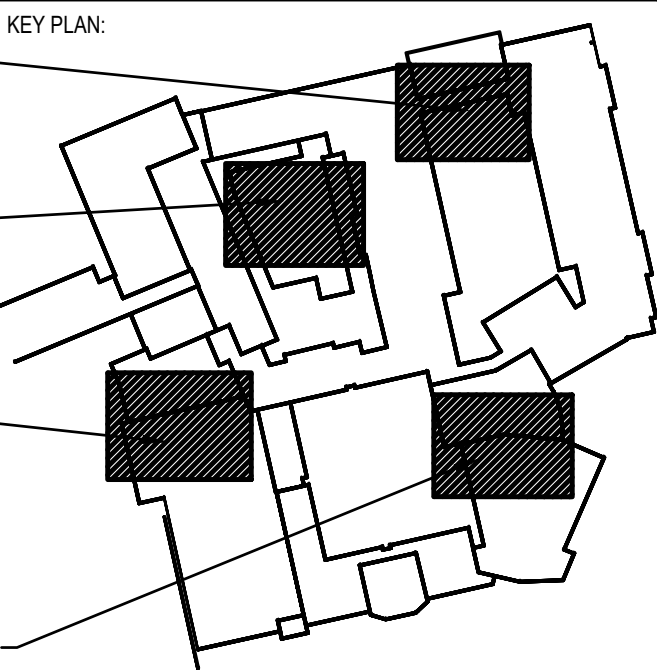
3 ELECTRICAL DEMOLITION - PARTIAL BASEMENT PLAN
SCALE: 3/16" = 1'-0"

0 4' 8' 16'
SCALE: 3/16" = 1'-0"

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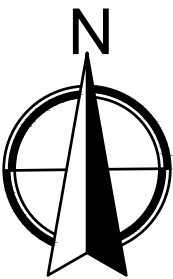
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DRAWING TITLE:
ELECTRICAL DEMOLITION
PARTIAL ROOF PLANS

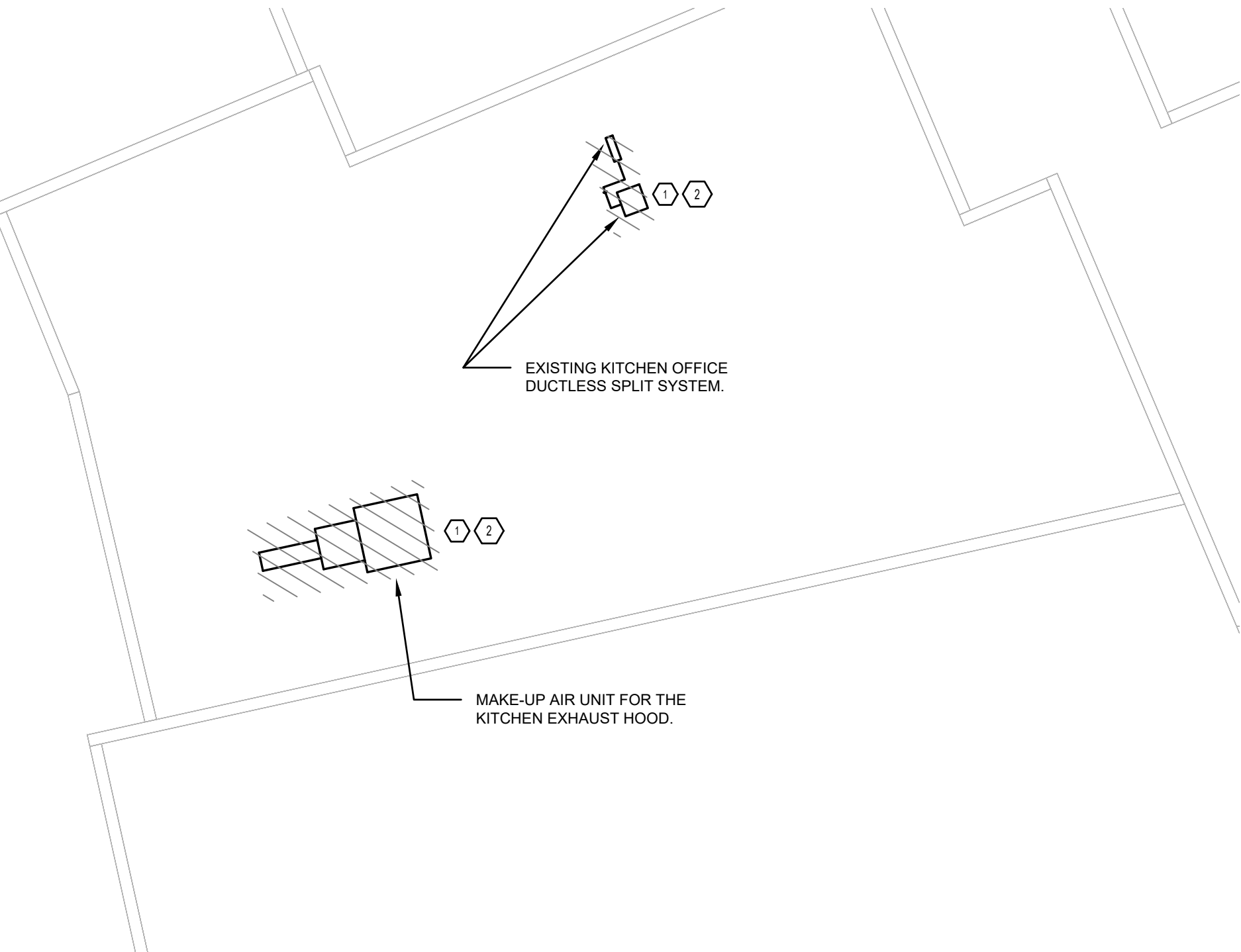
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ED102

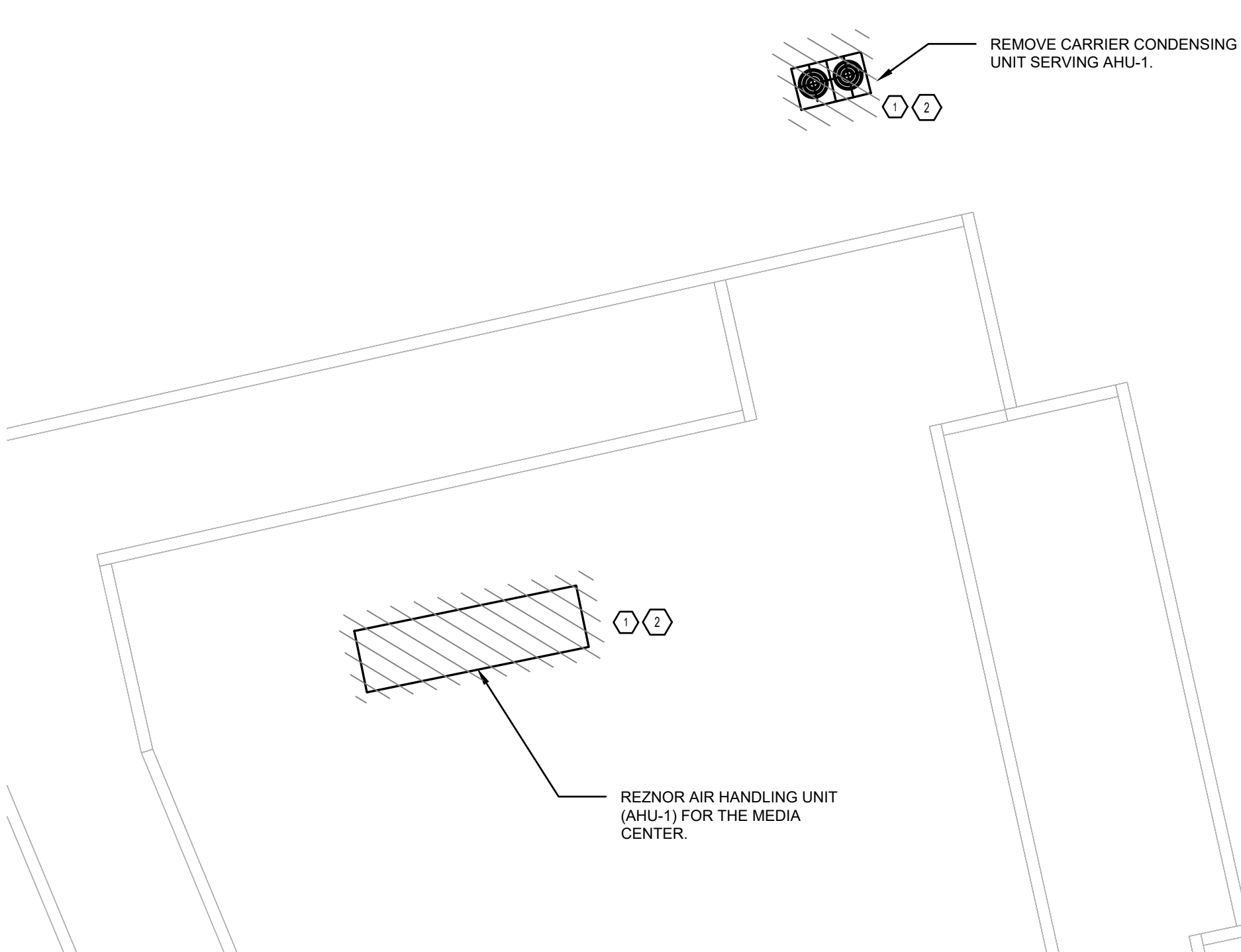


KEY NOTES

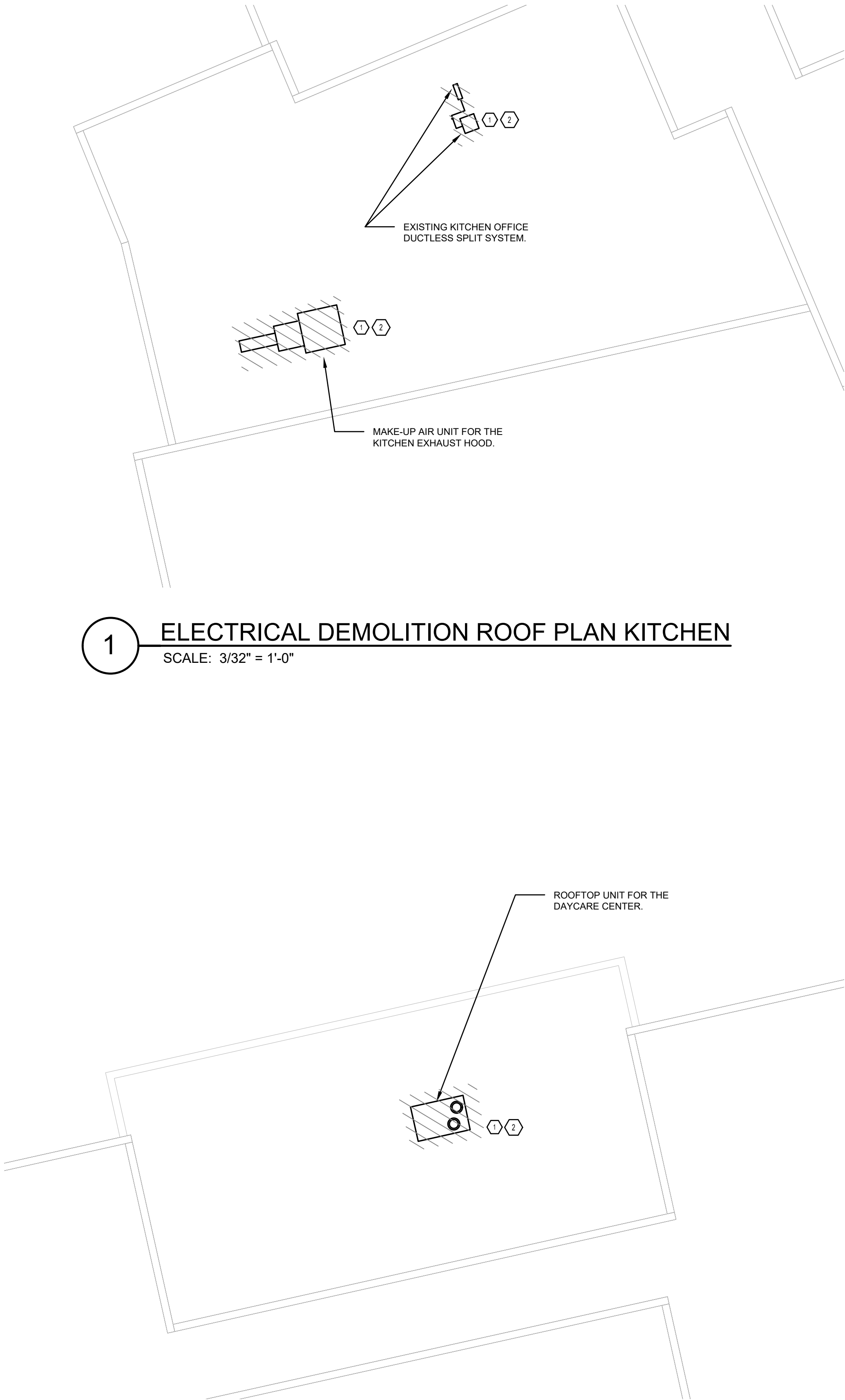
- 1 REMOVE EXISTING DEDICATED MECHANICAL EQUIPMENT DISCONNECT SWITCH, ASSOCIATED CONDUIT & WIRING BACK TO ELECTRICAL SOURCE. CONTRACTOR TO TRACE CIRCUIT AND VERIFY LOCATION AND ROUTING IN FIELD FOR REMOVAL. APPROXIMATE FEEDER LENGTH 200' (TYP).
- 2 CONTRACTOR TO TRACE OUT CIRCUITS IN THE DEMOLITION PHASE TO CONFIRM PANEL BOARD CIRCUIT FOR HVAC EQUIPMENT. LABEL CIRCUIT AT BOTH THE EQUIPMENT AND DISCONNECT AND ON THE REVISED PANEL BOARD SCHEDULE.



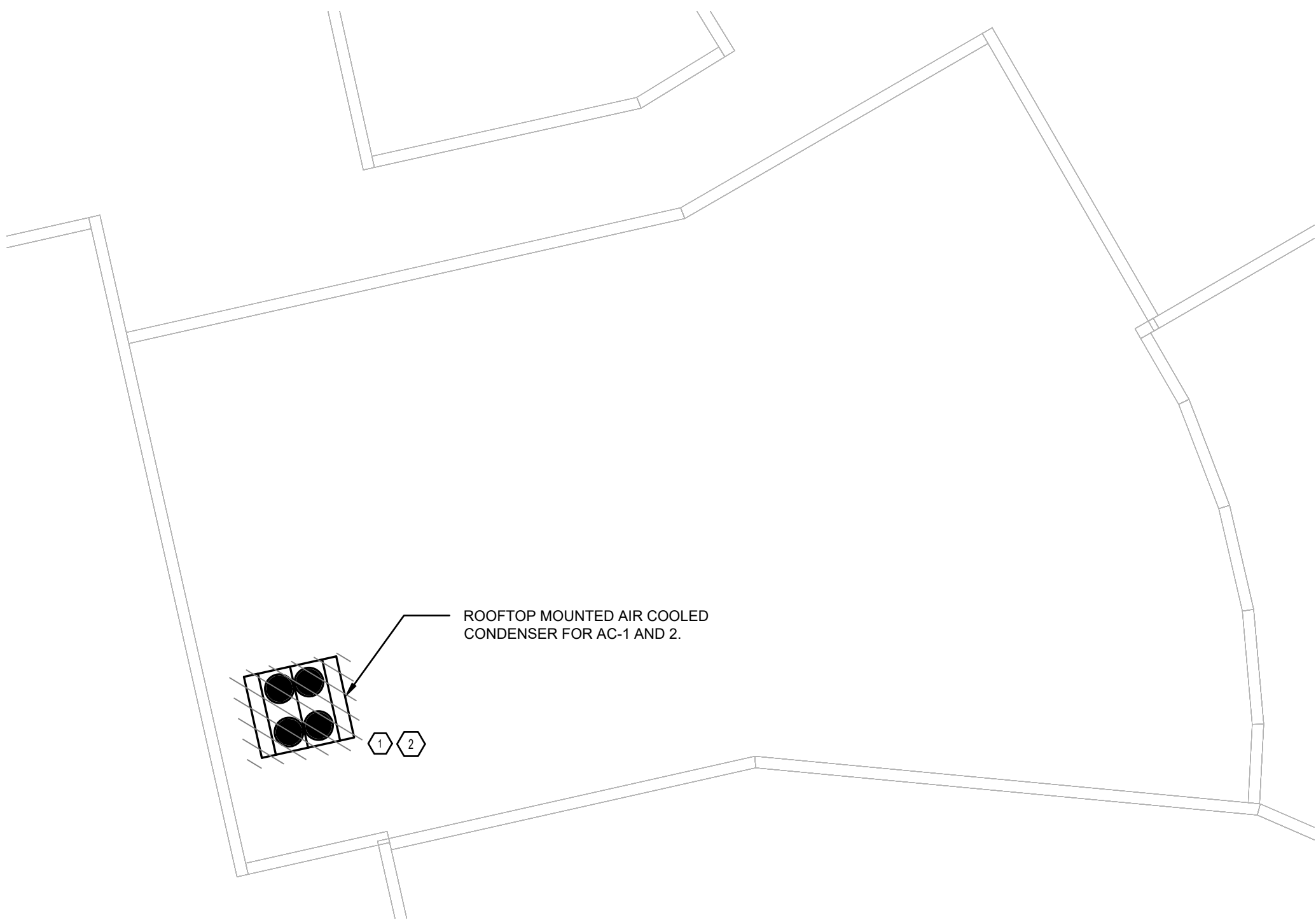
1 ELECTRICAL DEMOLITION ROOF PLAN KITCHEN
SCALE: 3/32" = 1'-0"



2 ELECTRICAL DEMOLITION ROOF PLAN MEDIA CENTER
SCALE: 3/32" = 1'-0"

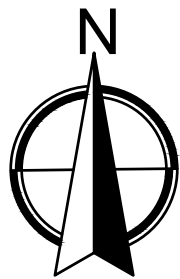


3 ELECTRICAL DEMOLITION ROOF PLAN DAYCARE CENTER
SCALE: 3/32" = 1'-0"



4 ELECTRICAL DEMOLITION ROOF PLAN LOWER LOBBY - FAN ROOM 2
SCALE: 3/32" = 1'-0"

0 8' 16' 32'
SCALE: 3/32" = 1'-0"



KEY NOTES

- 1

ABANDON EXHAUST FAN IN PLACE. DISCONNECT UNIT AND REMOVE WIRING BACK TO SOURCE PANEL. APPROXIMATE FEEDER LENGTH 175' (TYP).
- 2

CONTRACTOR TO TRACE OUT CIRCUITS IN THE DEMOLITION PHASE TO CONFIRM PANEL BOARD CIRCUIT FOR HVAC EQUIPMENT. LABEL CIRCUIT AT BOTH THE EQUIPMENT AND DISCONNECT AND ON THE REVISED PANEL BOARD SCHEDULE.

1 2
EXHAUST FAN 30

1 2
EXHAUST FAN 31

1 1
EXHAUST FAN 32

1

ELECTRICAL DEMOLITION POOL ROOF PLAN

SCALE: 3/32" = 1'-0"



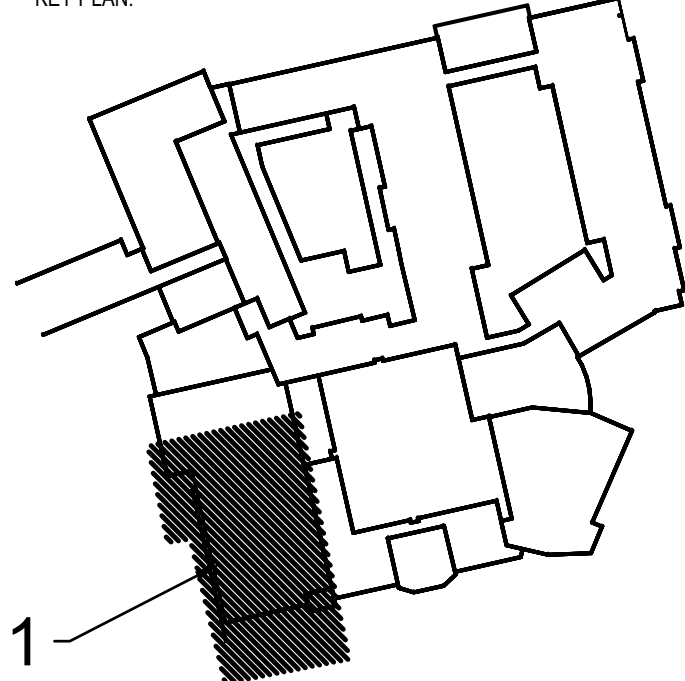
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PROJECT NAME:

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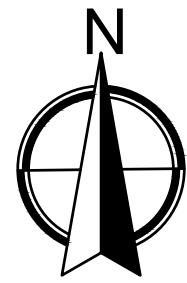
422 HIGHLAND AVENUE
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DRAWING TITLE:

ELECTRICAL DEMOLITION
PARTIAL ROOF PLAN

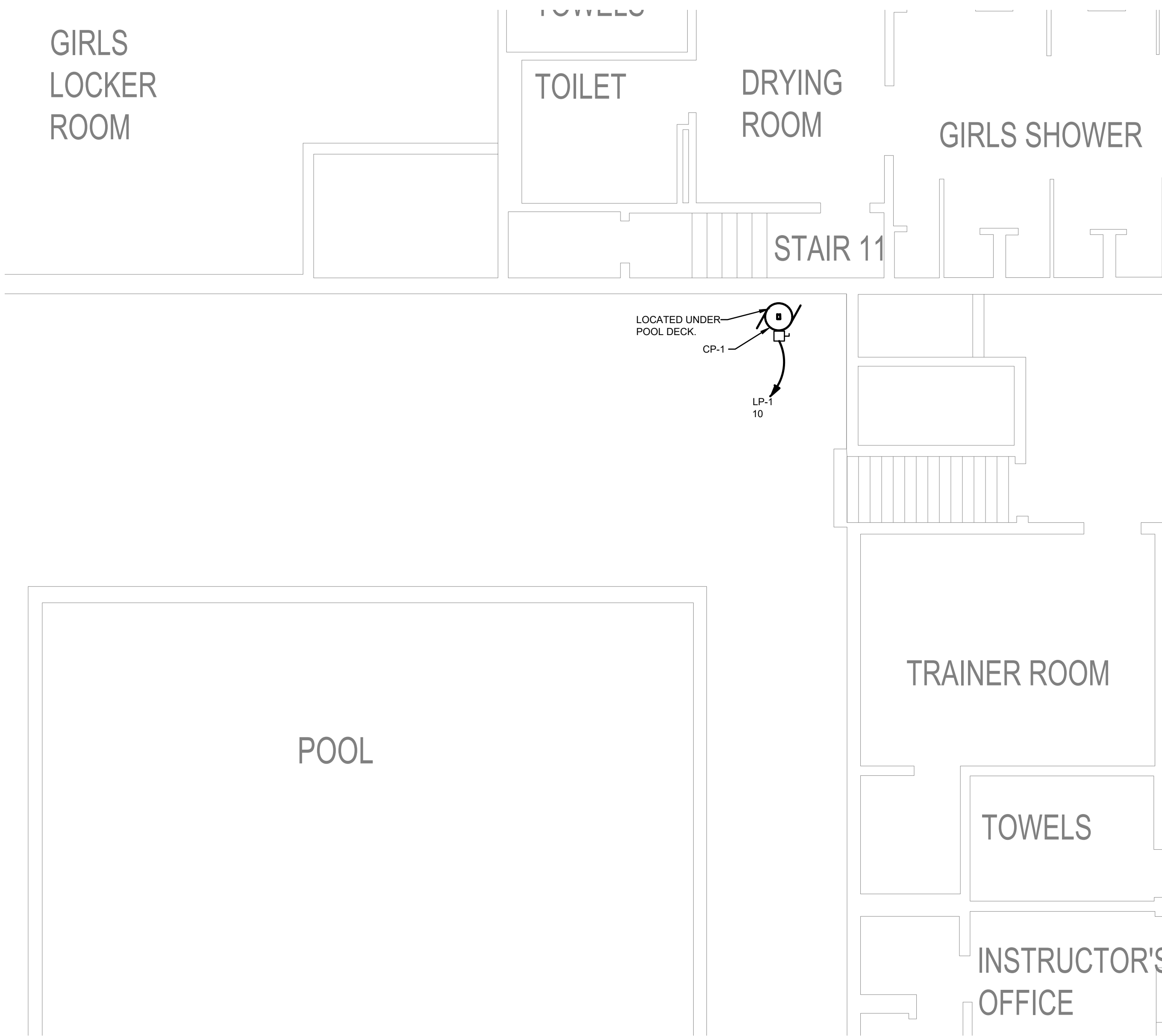
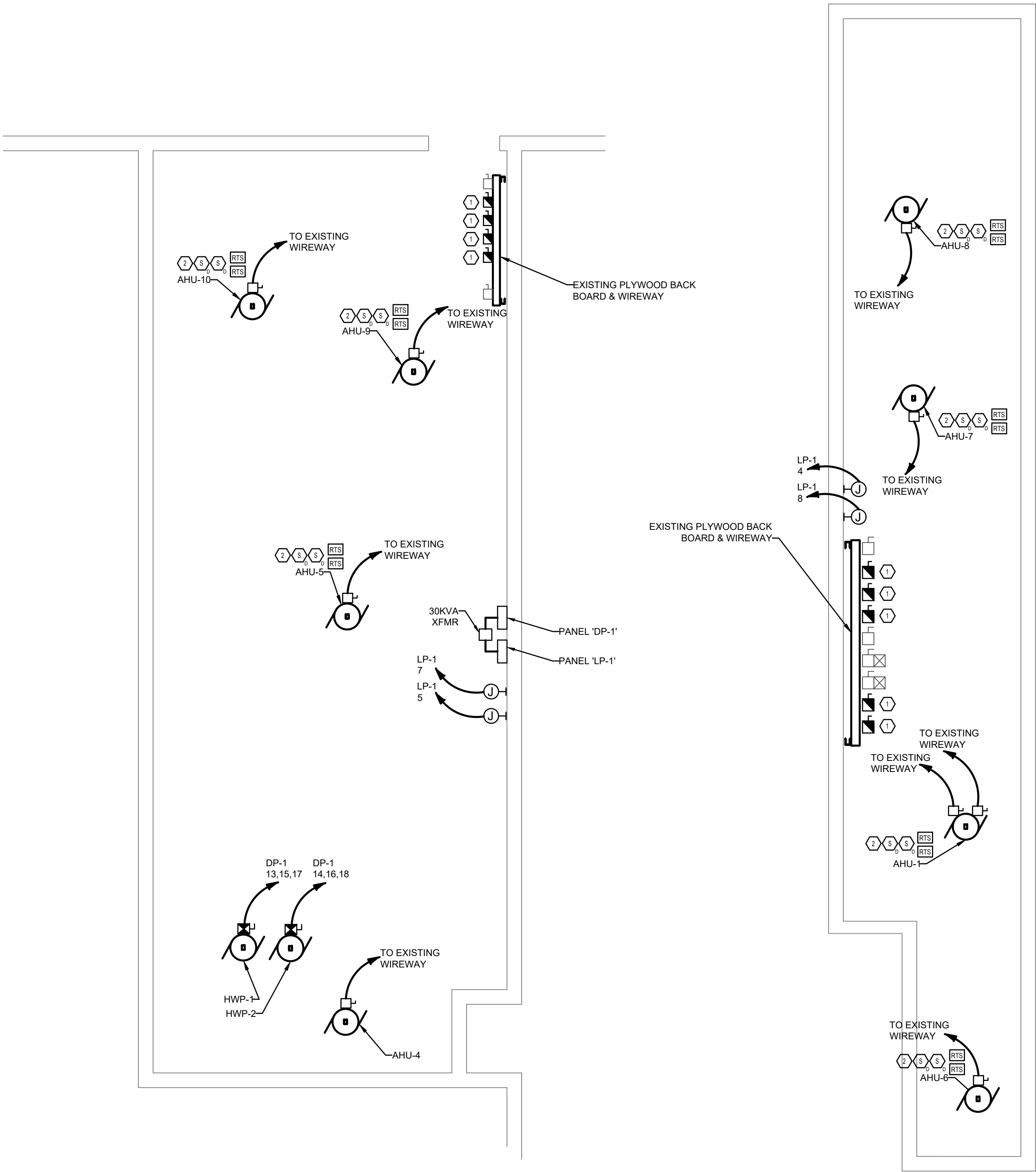
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KEY NOTES

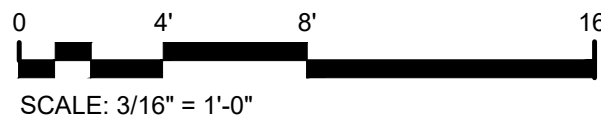
- 1 TAP EXISTING FEEDER IN WIREWAY.
- 2 PROVIDE DUCT SMOKE DETECTOR WITH REMOTE TEST SWITCH (LOCATED ON WALL AT 72" AFF) FOR EACH SUPPLY AND RETURN DUCT. LOCATE THE EXISTING INITIATING FIRE ALARM LOOP IN CORRIDOR, AND EXTEND LOOP TO DEVICES WITH 3/4"C. QTY. 2 #16 AWG TWISTED UNSHIELDED PAIRS. COORDINATE PROGRAM OF FIRE ALARM DEVICES WITH THE FIRE ALARM SERVICE PROVIDER (ITS-203-265-8100)



1 ELECTRICAL PLAN FAN ROOM 1
SCALE: 3/16" = 1'-0"

2 ELECTRICAL PLAN FAN ROOM 2
SCALE: 3/16" = 1'-0"

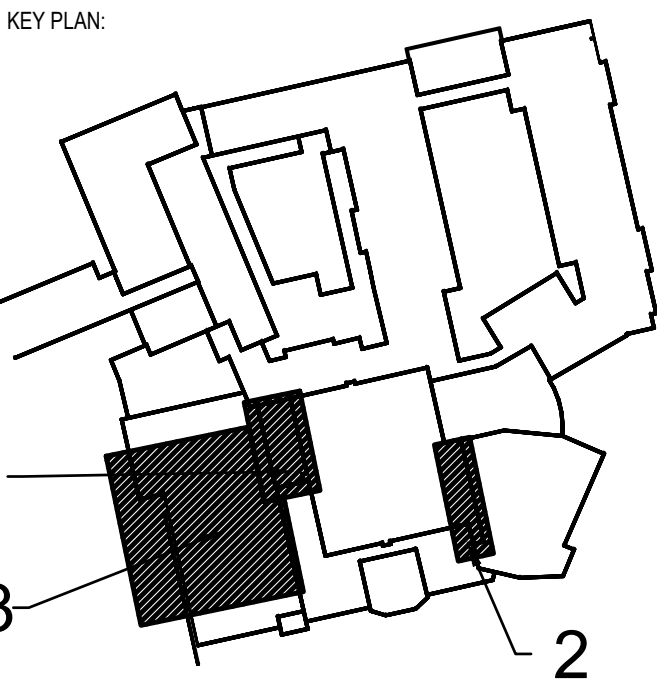
3 ELECTRICAL - PARTIAL BASEMENT PLAN
SCALE: 3/16" = 1'-0"



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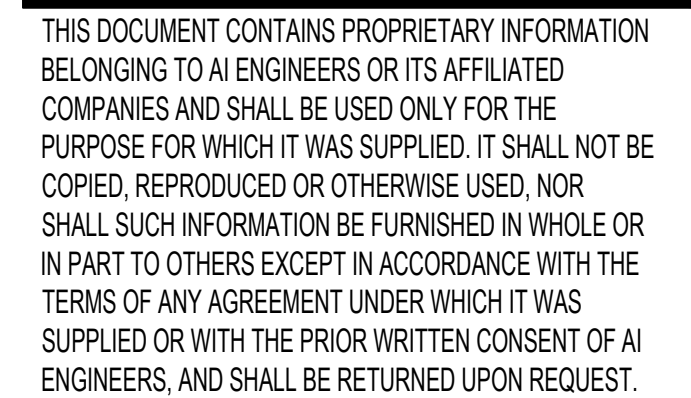
PROJECT NAME:
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REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
ELECTRICAL FAN ROOMS
& BASEMENT PLAN

FILE: 2022/32580C-9
DRAWN BY: ZR
CHECKED BY: JP
DATE: 08/08/2023
DRAWING NO:

E101



KEY PLAN:

A key plan map showing the site's location within a larger urban context. The site is highlighted in a darker shade of grey. The map includes various building footprints, streets, and a green area representing a park or open space. The site is located in the central part of the map, surrounded by other buildings and streets.

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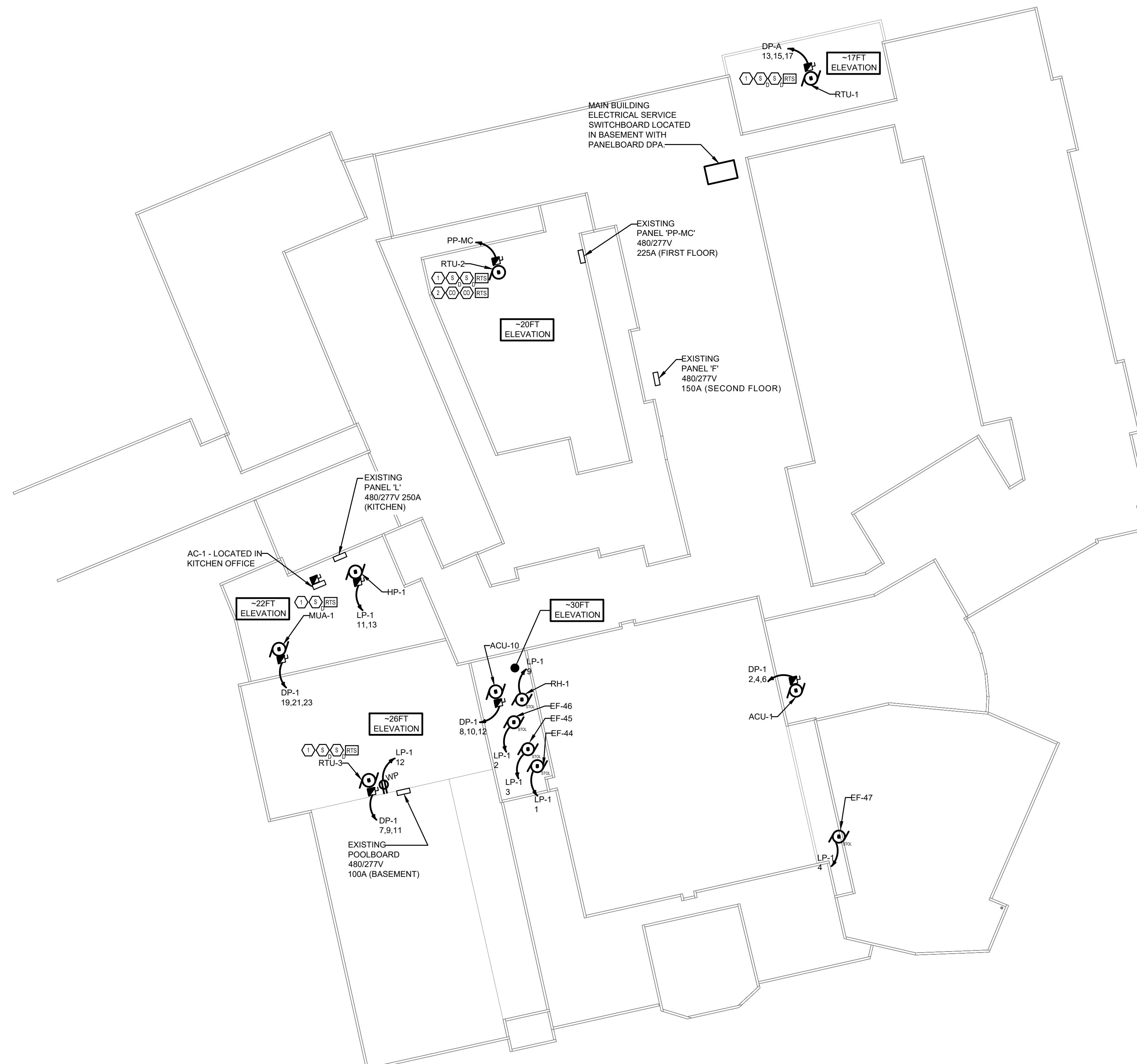
DRAWING TITLE:
ELECTRICAL ROOF PLAN

FILE: 2022/3258OC-9
DRAWN BY: ZR
CHECKED BY: JP
DATE: 08/08/2023
DRAWING NO:

E102

⑥ PROVIDE DUCT SMOKE DETECTOR WITH REMOTE TEST SWITCH (LOCATED IN SPACE BELOW UNIT AT 72" AFF) FOR EACH SUPPLY AND RETURN DUCT. LOCATE THE EXISTING INITIATING FIRE ALARM LOOP IN CEILING BELOW, AND EXTEND LOOP TO DEVICES WITH 3/4". QTY. 2 #16 AWG TWISTED UNSHIELDED PAIRS. COORDINATE PROGRAM OF FIRE ALARM DEVICES WITH THE FIRE ALARM SERVICE PROVIDER (ITS - 203-265-8100)

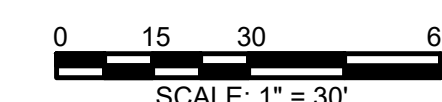
⑦ PROVIDE CARBON MONOXIDE DETECTOR WITHIN THE FIRST ROOM OR AREA SERVED BY THE FIRST AIR SUPPLY REGISTER BY EACH MAIN DUCT LEAVING THE AIR HANDLING UNIT. WIRE CO DETECTOR TO NEAREST FIRE ALARM LOOP. PROVIDE 3/4". QTY. 2 #16 AWG TWISTED PAIR CABLES FROM MAIN FACP LOCATED IN MAIN OFFICE, PROGRAM FIRE ALARM CONTROL PANEL TO ACTIVATE A SUPERVISORY SIGNAL FOR NEW CO DETECTORS.



NOTE:
PANELS DP-1 AND LP-1 ARE LOCATED IN FAN ROOM #1. SEE DRAWING E101.

ELECTRICAL ROOF PLAN

SCALE: 1"=30'-0"



E601

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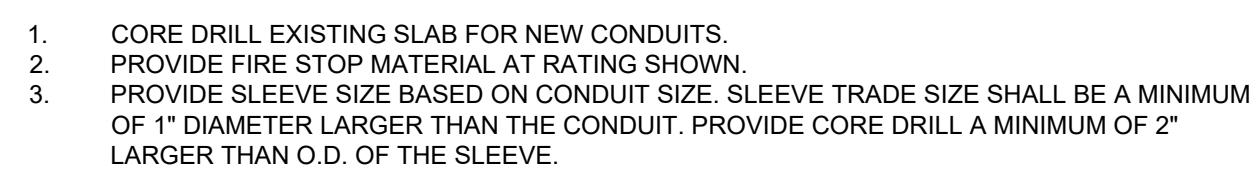
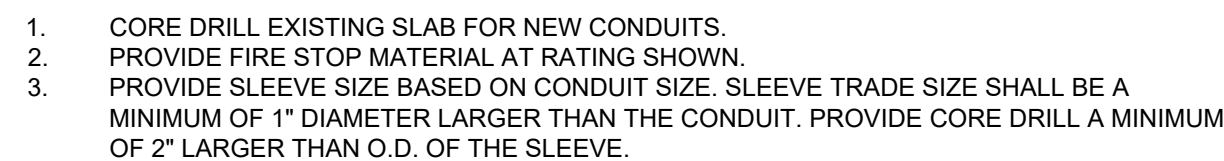
A key plan of the site showing the layout of buildings and surrounding roads. The plan includes a large rectangular building at the top, a smaller rectangular building to its left, and a large irregular building at the bottom. A road runs along the top and right sides of the site, and another road runs along the bottom. A small rectangular building is located at the bottom right corner.

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WATERBURY, CT 06702

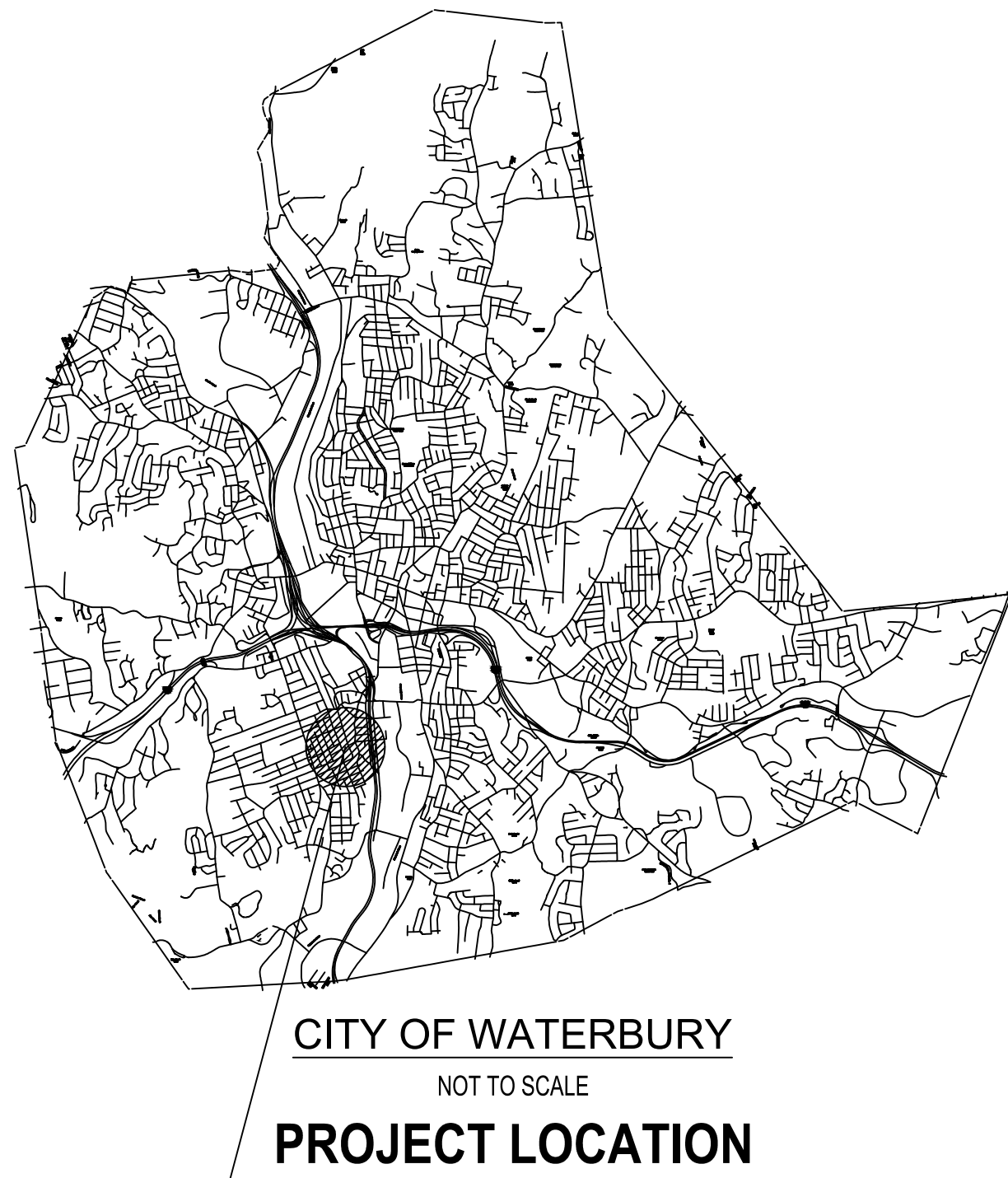
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ELECTRICAL DETAILS

E701



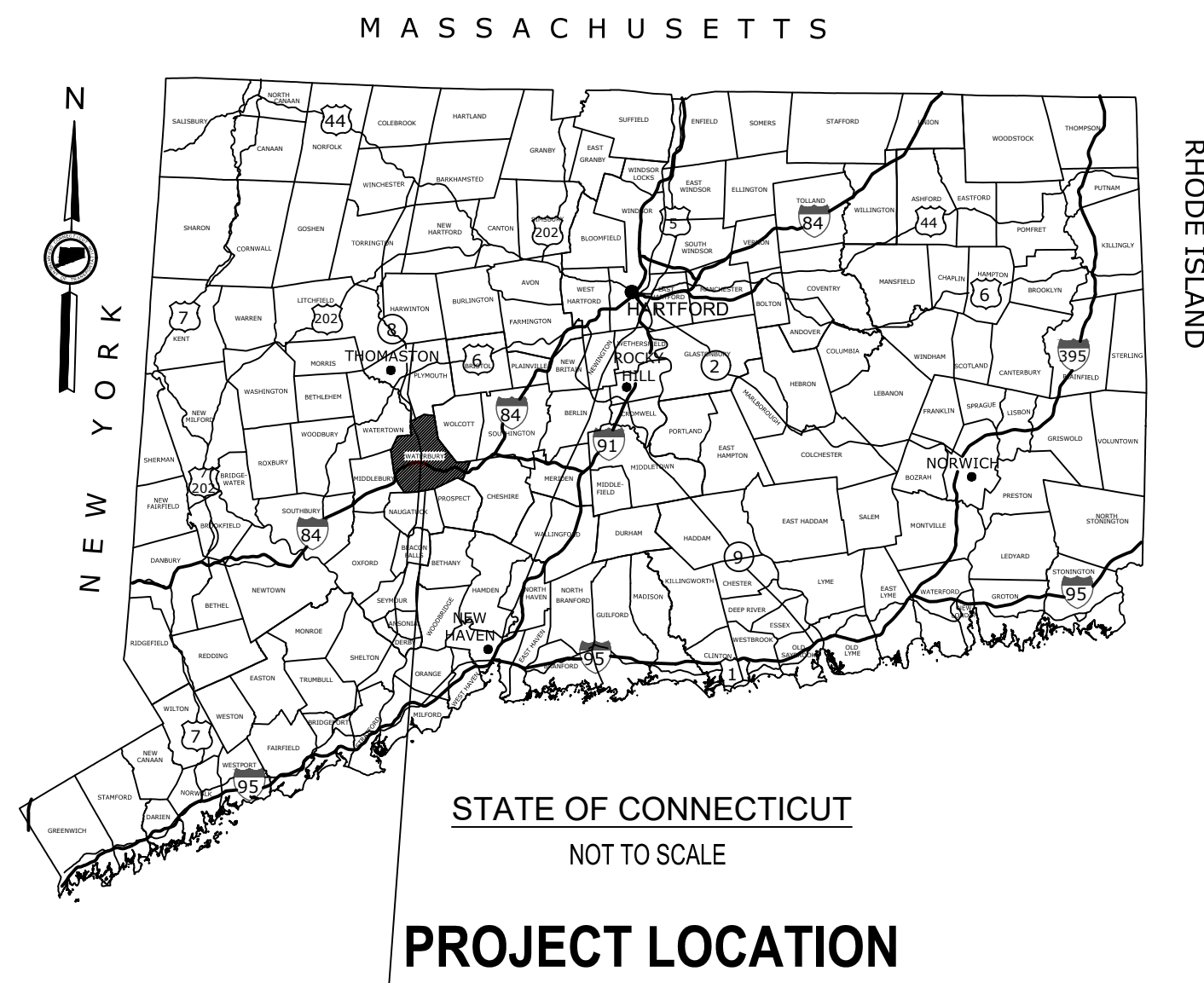
FILE: 2022/3258OC-9
DRAWN BY: ZR
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KENNEDY HIGH SCHOOL EXHAUST FANS REPLACEMENT 422 HIGHLAND AVENUE CITY OF WATERBURY, CT

ISSUED FOR CONSTRUCTION

JUNE 29, 2022



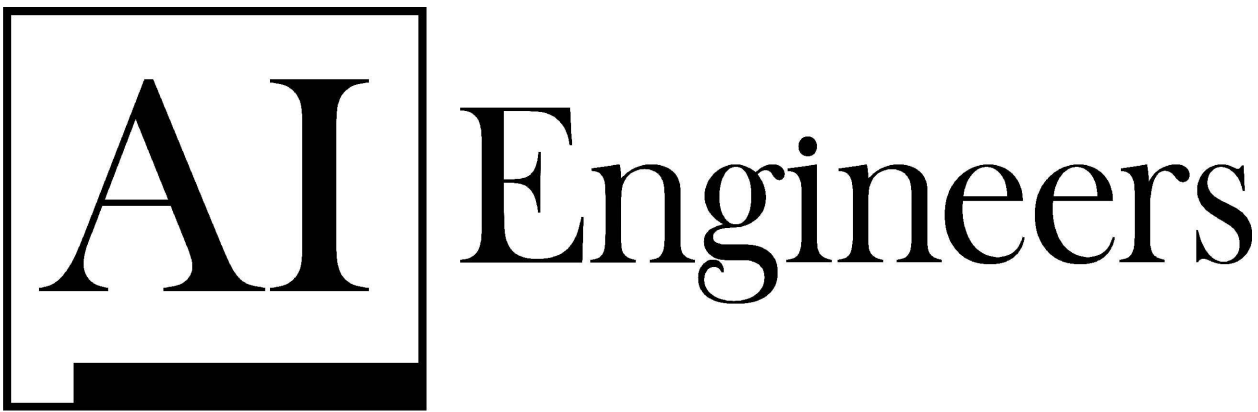
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SHEET NUMBER	SHEET DESCRIPTION
T-000	COVERSHEET
MECHANICAL	
M-001	MECHANICAL SYMBOLS, NOTES, AND ABBREVIATIONS
M-002	MECHANICAL SPECIFICATIONS
MD-101	MECHANICAL DEMOLITION ROOF PLAN SECTION 1
MD-102	MECHANICAL DEMOLITION ROOF PLAN SECTION 2
MD-103	MECHANICAL DEMOLITION ROOF PLAN SECTION 3
MD-104	MECHANICAL DEMOLITION ROOF PLAN SECTION 4
M-101	MECHANICAL NEW WORK ROOF PLAN SECTION 1
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HVAC SPECIFICATION SHEET

DIVISION 23-HVAC SPECIFICATIONS

1.1 GENERAL REQUIREMENTS

A. DRAWINGS AND OWNER REQUIREMENTS, INCLUDING ANY GENERAL AND SUPPLEMENTARY CONDITIONS AND APPLY TO THE WORK IN THIS SECTION.

1.2 DESCRIPTION OF WORK

A. THE WORK REFERRED TO UNDER THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND TRANSPORTATION FOR THE SATISFACTORY INSTALLATION AND COMPLETION OF ALL WORK REFERRED TO HEREIN, OR THAT MAY BE SHOWN ON THE DRAWINGS AND NOT SPECIFICALLY MENTIONED IN THIS SECTION, OR BOTH.

B. THE FOLLOWING ARE PART, BUT NOT NECESSARILY ALL INCLUSIVE OF THE ITEMS IN THIS SECTION OF THE CONTRACT.

1. SELECTED DEMOLITION.
2. RIG AND INSTALL EXHAUST FANS.
3. INTEGRATE NEW EQUIPMENT AND CONTROLS INTO EXISTING BMS SYSTEM.
4. PROVIDE TESTING AND BALANCING FOR ALL NEW AND RENOVATED SYSTEMS.

C. CONTRACTOR SHALL REVIEW THE PLANS AND SPECIFICATIONS OF OTHER TRADES TO DETERMINE COMPLETE SCOPE OF WORK. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING AND SHALL BE RESPONSIBLE FOR EXISTING CONDITIONS.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. ELECTRICAL POWER WIRING

1.4 SEISMIC RESTRAINT SYSTEMS

A. PROVIDE SEISMIC RESTRAINT SYSTEMS FOR ALL EQUIPMENT AND RELATED SYSTEMS. SYSTEMS SHALL COMPLY WITH 2015 INTERNATIONAL BUILDING CODE AND 2015 MECHANICAL CODE, SPECIFICALLY SECTION 301.18, OF THE IMC. SYSTEMS SHALL MAINTAIN EQUIPMENT AND RELATED SYSTEMS IN A CAPTIVE POSITION.

B. 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 AND PIPING STRESSES OR MISALIGNMENT.

C. SUBMIT FOR REVIEW SHOP DRAWINGS ON EVERY PRODUCT AND MATERIAL FURNISHED UNDER THIS SECTION. SHOP DRAWINGS SHALL INCLUDE:

1. ITEMIZED LIST DETAILING HVAC SYSTEMS AND COMPONENTS TO BE SEISMICALLY RESTRAINED, ASSOCIATED SEISMIC RESTRAINT SYSTEM TO BE USED, DEVISE 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 WHICH THE PROJECT IS LOCATED.
4. DETAIL DRAWINGS ON EQUIPMENT BASES INCLUDING DIMENSIONS, STRUCTURAL MEMBER SIZES, SUPPORT POINT LOCATIONS, MAXIMUM LOADING AT EACH LOCATION, AND CONCRETE AND STEEL DETAIL WITH ANCHOR BOLT LOCATIONS.
5. ALL SEISMIC RESTRAINING DEVICES SHALL HAVE A PRE-APPROVED NUMBER FROM CALIFORNIA OSHPD OR OTHER RECOGNIZED GOVERNMENT AGENCY SHOWING MAXIMUM RESTRAINT RATINGS.
6. DETAIL DRAWINGS ON SEISMIC RESTRAINT SYSTEMS FOR PIPING, DUCTWORK, AND OTHER SYSTEMS, INCLUDING METHODS OF SUSPENSION, SUPPORT GUIDES, AND MAXIMUM LOADINGS AT EACH LOCATION.

1.5 CODES, STANDARDS, AND ORDINANCES

A. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF ALL CODES AND REGULATIONS GOVERNING SUCH WORK, AS REQUIRED BY 2018 STATE OF CONNECTICUT BUILDING CODE AND LOCAL ORDINANCES.

1. WHERE THE PROVISIONS OF THE CONTRACT DOCUMENTS CONFLICT WITH ANY CODES, RULES, OR REGULATIONS, THE LATTER SHALL GOVERN.
2. WHERE THE CONTRACT DOCUMENTS ARE IN EXCESS OF APPLICABLE CODES, RULES, OR REGULATIONS, THE CONTRACT DOCUMENTS SHALL GOVERN.

B. ALL MATERIAL SPECIFIED BY REFERENCE TO THE PUBLISHED SPECIFICATIONS OF A MANUFACTURER AND ALL SPECIFIED MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH:

1. AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS (ASHRAE).
2. UNDERWRITERS LABORATORY (UL).
3. OWNER'S INSURANCE UNDERWRITER.

C. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND PAY ALL FEES AND CHARGES INCIDENTAL WITH HIS WORK.

1.6 SUBMITTALS

A. SUBMIT SHOP DRAWINGS AND MANUFACTURER'S DETAIL DRAWINGS AND LITERATURE FOR ALL MATERIALS AND EQUIPMENT SCHEDULED ON PLANS OR SPECIFIED IN PART 2 OF THE SPECIFICATION.

B. NO FABRICATION, ORDERING, DELIVERY TO THE SITE, OR OTHER ACTION SHALL BE TAKEN WITH RESPECT TO THOSE ITEMS REQUIRING SUBMITTALS, PRIOR TO THE SUBMITTAL APPROVED BY THE ARCHITECT AND ENGINEER.

1.7 CLOSEOUT SUBMITTALS

A. OPERATION AND MAINTENANCE DATA: FOR ALL SCHEDULED EQUIPMENT AND SYSTEMS AND SPECIALTIES TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.

B. PROVIDE ONE HARD COPY SET AND ONE ELECTRONIC SET IN AUTOCAD AND PDF OF AS-BUILT HVAC AS- BUILT DRAWINGS, INCLUDING ALL FIELD CHANGES.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. FURNISH ONE COMPLETE EXTRA SET OF FILTERS AND STRAINERS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE AND IDENTIFIED WITH LABELS DESCRIBING CONTENTS.

1.9 WARRANTY

A. PROVIDE WARRANTY PER CONTRACT WITH OWNER.

1.10 LAYOUT OF THE WORK AND COORDINATION

A. ALL WORK SHOWN ON THE DRAWINGS IS DIAGRAMMATIC ONLY AND INDICATES THE MINIMUM REQUIREMENTS OF THIS WORK. FIELD CONDITIONS AND THE WORK OF OTHER TRADES SHALL DETERMINE THE ACTUAL ARRANGEMENTS OF RUNS AND OFFSETS.

B. CONTRACTOR SHALL LAYOUT AND COORDINATE ALL WORK WITH OTHER TRADES AND THE OWNER PRIOR TO INSTALLATION. OVERHEAD PIPING AND DUCTWORK SHALL BE LAID OUT TO OBTAIN MAXIMUM HEAD HEIGHT.

C. CONTRACTOR SHALL INSTALL EQUIPMENT WITH ACCESS FOR MAINTENANCE AS REQUIRED BY CODE AND THE MANUFACTURER'S WRITTEN INSTRUCTIONS. ALL EQUIPMENT, VALVES, VOLUME DAMPERS, CONTROLS, FILTERS, AND OTHER DEVICES REQUIRING MAINTENANCE AND ACCESS SHALL BE READILY ACCESSIBLE WITHOUT REMOVAL OF OTHER EQUIPMENT, PIPING, OR WIRING.

D. PROVIDE OWNER 7 WORKING DAYS' NOTICE OF INTERRUPTION OF UTILITIES.

1.11 PLANS AND SPECIFICATIONS

A. THE DRAWINGS AND SPECIFICATIONS OF ALL TRADES SHALL BE REVIEWED TO OBTAIN THE FULL SCOPE OF WORK.

B. THE DRAWINGS ARE DIAGRAMMATIC AND NOT TO SCALE. CONTRACTOR SHALL NOT SCALE DRAWINGS TO DETERMINE DIMENSIONS OF THE MATERIALS.

1.12 SCHEDULE

A. AS PERTAINING TO HIS SCOPE OF WORK, THE HVAC CONTRACTOR SHALL COORDINATE AND PROVIDE INPUT AND SUPPORT TO THE GENERAL CONTRACTOR FOR HIS SCHEDULING, AS DEFINED IN THE PARAGRAPHS BELOW:

B. DEVELOP CRITICAL PATH METHOD (CPM) PLAN AND SCHEDULE DEMONSTRATING FULFILLMENT OF CONTRACT DOCUMENTS AND SHALL KEEP THE PROJECT SCHEDULE UP TO DATE IN ACCORDANCE WITH THE REQUIREMENTS BELOW AND SHALL UTILIZE THE PLAN FOR SCHEDULING, COORDINATING, AND MONITORING WORK UNDER THIS CONTRACT AND TO BE PROVIDED BY THE OWNER (INCLUDING ALL ACTIVITIES OF CONTRACTORS, EQUIPMENT VENDORS, SUPPLIERS).

C. THE CONTRACTOR SHALL PROVIDE MONTHLY TIME SCHEDULES AND REPORTS BASED ON MONTHLY PROJECT UPDATES.

D. IN ADDITION TO THE SUBMISSION OF THE SCHEDULE, THE CONTRACTOR SHALL SUBMIT A PHASING PLAN IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SHOW ACTIVITIES AND EVENTS AS:

1. ALL PHASING ACTIVITIES WITH START AND END DATES, TOTAL TIME REQUIRED, INTERIM MILESTONES, AND REQUIRED APPROVALS.
2. CONTRACTOR'S TIME REQUIRED FOR SHOP DRAWINGS, FABRICATION, DELIVERY, AND PRE-CONSTRUCTION WORK.
3. OWNER, ARCHITECTS, AND ENGINEER'S REVIEW AND APPROVAL OF SHOP DRAWINGS, SAMPLES, SUBMITTALS, AND SIMILAR ITEMS.
4. INTERRUPTION OF THE FACILITY UTILITIES.

1.13 QUALITY ASSURANCE

A. ALL MATERIALS USED UNDER THIS SECTION OF THE SPECIFICATION, EXCEPT THOSE NOTED TO BE RELOCATED, SHALL BE NEW, TESTED, WITHOUT DEFECTS AND DESIGNED AND CONSTRUCTED TO FUNCTION PROPERLY IN THAT PORTION OF THE WORK FOR WHICH THEY ARE INTENDED.

B. CONTRACTOR SHALL EMPLOY ONLY COMPETENT AND EXPERIENCED TRADESMEN, EXPERIENCED IN THE INSTALLATION OF ALL MATERIALS AND EQUIPMENT, AND SHALL WORK IN CONJUNCTION WITH OTHER TRADES AND THE OWNER.

C. CONTRACTOR SHALL PROVIDE FOR THE DELIVERY OF ALL HIS MATERIAL TO THE BUILDING SITE WHEN REQUIRED IN ORDER TO PROGRESS THE PROJECT EFFICIENTLY AND TO AVOID DELAYING HIS WORK AND THAT OF OTHER TRADES.

1.14 PROTECTION OF WORK

A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PROTECTION OF EQUIPMENT, MATERIALS, AND TOOLS STORED OR INSTALLED ON THE JOB SITE FROM LOSS OR DAMAGE, UNTIL FINAL ACCEPTANCE BY THE OWNER.

B. CONTRACTOR SHALL PROVIDE PROTECTION OF FINISHED WORK FROM DAMAGE OR DEFACEMENT AND SHALL REMEDY ANY SUCH AT NO ADDITIONAL COST TO THE OWNER.

C. ALL OPEN DUCT WORK AND EQUIPMENT SHALL BE SEALED FROM DEBRIS AND DUST DURING CONSTRUCTION.

D. PROVIDE NEW FILTERS ON ALL NEW (AND OWNER FURNISHED) EQUIPMENT AND CLEAN ALL STRAINERS PIPING SYSTEMS AT COMPLETION OF PROJECT, JUST PRIOR TO TURN OVER TO OWNER.

1.15 DEMOLITION

A. MAKE SAFE, DISCONNECT, AND REMOVE ALL EXISTING EQUIPMENT, MATERIALS, DUCTWORK, HANGERS, PIPING, AND CONTROLS ASSOCIATED WITH SYSTEMS AND EQUIPMENT INDICATED ON PLANS TO BE REMOVED.

B. ALL MATERIALS AND EQUIPMENT NOT DESIGNATED FOR RE-USE OR TO BE TURNED OVER TO OWNER SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED OF BY THE CONTRACTOR.

C. ALL EQUIPMENT AND MATERIALS TO BE REUSED SHALL BE STORED AND PROTECTED DURING CONSTRUCTION.

D. ALL MATERIAL TO BE TURNED OVER TO OWNER SHALL BE DELIVERED TO LOCATION ON SITE PER OWNER'S DIRECTION.

2. PRODUCTS AND EXECUTION

2.1 HVAC POWER VENTILATORS

A. PERFORMANCE REQUIREMENTS

1. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY AN NRTL, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
2. NFPA COMPLIANCE: COMPLY WITH NFPA 90A FOR DESIGN, FABRICATION, AND INSTALLATION OF UNIT COMPONENTS.
3. ASHRAE 62.1 COMPLIANCE: APPLICABLE REQUIREMENTS IN ASHRAE 62.1, SECTION 5 - "SYSTEMS AND EQUIPMENT" AND SECTION 7 - "CONSTRUCTION AND STARTUP."
4. ASHRAE 90.1 COMPLIANCE: APPLICABLE REQUIREMENTS IN ASHRAE 90.1, SECTION 6 - "HEATING, VENTILATING, AND AIR-CONDITIONING."
5. WIND PERFORMANCE: AIR HANDLING UNITS SHALL WITHSTAND THE EFFECTS OF WIND DETERMINED IN ACCORDANCE WITH TO ASCE/SI 7.

B. CENTRIFUGAL VENTILATORS - ROOF DOWNBLAST, DIRECT DRIVE

1. MANUFACTURERS: THE BASIS OF DESIGN IS GREENHECK FAN CORPORATION. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PRODUCTS BY ONE OF THE FOLLOWING WILL BE ENTERTAINED:

- a. GREENHECK FAN CORPORATION.
- b. LOREN COOK COMPANY.
- c. CAPTIVEAIRE.

2. HOUSING: DOWNBLAST; REMOVABLE SPUN-ALUMINUM DOME TOP AND OUTLET BAFFLE; SQUARE, ONE-PIECE ALUMINUM BASE WITH VENTURI INLET CONE.

3. FAN WHEELS: ALUMINUM HUB AND WHEEL WITH BACKWARD-INCLINED BLADES.

4. ACCESSORIES:

- a. VARIABLE-FREQUENCY MOTOR CONTROLLER: SOLID-STATE CONTROL TO REDUCE SPEED FROM 100 TO LESS THAN 50 PERCENT.
- b. DISCONNECT SWITCH: NONFUSIBLE TYPE, WITH THERMAL-OVERLOAD PROTECTION MOUNTED INSIDE FAN HOUSING, FACTORY WIRED THROUGH AN INTERNAL ALUMINUM CONDUIT.
- c. BIRD SCREENS: REMOVABLE, 1/2-INCH MESH, ALUMINUM OR BRASS WIRE.
- d. MOUNTING PEDESTAL: GALVANIZED STEEL WITH REMOVABLE ACCESS PANEL.
- e. HINGED SUB-BASE TO PROVIDE ACCESS TO DAMPER OR AS CLEANOUT FOR GREASE APPLICATIONS.
- f. CURB ADAPTER: GALVANIZED STEEL.

C. CENTRIFUGAL VENTILATORS - ROOF UPBLAST, DIRECT DRIVE

1. MANUFACTURERS: THE BASIS OF DESIGN IS CAPTIVEAIRE. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PRODUCTS BY ONE OF THE FOLLOWING WILL BE ENTERTAINED:

- a. GREENHECK FAN CORPORATION.
- b. LOREN COOK COMPANY.
- c. CAPTIVEAIRE.

2. CONFIGURATION: CENTRIFUGAL ROOF UPBLAST, GREASE HOOD KITCHEN VENTILATOR.

3. HOUSING: REMOVABLE SPUN-ALUMINUM DOME TOP AND OUTLET BAFFLE; SQUARE, ONE-PIECE ALUMINUM BASE WITH VENTURI INLET CONE.

4. UPBLAST UNITS: PROVIDE SPUN-ALUMINUM DISCHARGE BAFFLE TO DIRECT DISCHARGE AIR UPWARD, WITH RAIN AND SNOW DRAINAGE.

5. PROVIDE GREASE COLLECTOR.

6. FAN WHEELS: ALUMINUM HUB AND WHEEL WITH BACKWARD-INCLINED BLADES.

7. ACCESSORIES:

- a. VARIABLE-FREQUENCY MOTOR CONTROLLER: SOLID-STATE CONTROL TO REDUCE SPEED FROM 100 TO LESS THAN 50 PERCENT.
- b. DISCONNECT SWITCH: NONFUSIBLE TYPE, WITH THERMAL-OVERLOAD PROTECTION MOUNTED INSIDE FAN HOUSING, FACTORY WIRED THROUGH AN INTERNAL ALUMINUM CONDUIT.
- c. BIRD SCREENS: REMOVABLE, 1/2-INCH MESH, ALUMINUM OR BRASS WIRE.
- d. SPARK-RESISTANT, ALL-ALUMINUM WHEEL CONSTRUCTION.
- e. MOUNTING PEDESTAL: GALVANIZED STEEL WITH REMOVABLE ACCESS PANEL.
- f. CURB ADAPTER: GALVANIZED STEEL.
- g. UL RATING: UL 705 AND UL 762
- h. TESTING: GREASE CLASSIFICATION

D. MOTORS

1. COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, AND EFFICIENCY REQUIREMENTS FOR MOTORS.

2. MOTOR SIZES: MINIMUM SIZE AS INDICATED. IF NOT INDICATED, LARGE ENOUGH SO DRIVEN LOAD WILL NOT REQUIRE MOTOR TO OPERATE IN SERVICE FACTOR RANGE ABOVE 1.0.

E. SOURCE QUALITY CONTROL

1. UL STANDARDS: POWER VENTILATORS SHALL COMPLY WITH UL 705. POWER VENTILATORS FOR USE FOR RESTAURANT KITCHEN EXHAUST SHALL ALSO COMPLY WITH UL 762.

2.2 EQUIPMENT LABELS

A. METAL LABELS FOR EQUIPMENT:

1. MATERIAL AND THICKNESS: STAINLESS STEEL, 0.025-INCH OR ANODIZED ALUMINUM, 0.032-INCH MINIMUM THICKNESS, WITH PREDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE.
2. LETTER AND BACKGROUND COLOR: AS INDICATED FOR SPECIFIC APPLICATION UNDER PART 3.
3. MINIMUM LABEL SIZE: LENGTH AND WIDTH VARY FOR REQUIRED LABEL CONTENT, BUT NOT LESS THAN 2-1/2 BY 3/4 INCH.
4. MINIMUM LETTER SIZE: 1/4 INCH FOR NAME OF UNITS IF VIEWING DISTANCE IS LESS THAN 24 INCHES, 1/2 INCH FOR VIEWING DISTANCES OF UP TO 72 INCHES, AND PROPORTIONATELY LARGER LETTERING FOR GREATER VIEWING DISTANCES. INCLUDE SECONDARY LETTERING TWO-THIRDS TO THREE-FOURTHS THE SIZE OF PRINCIPAL LETTERING.
5. FASTENERS: STAINLESS STEEL RIVETS OR SELF-TAPPING SCREWS.

B. LABEL CONTENT: INCLUDE EQUIPMENT'S UNIQUE EQUIPMENT NUMBER AND ELECTRICAL CIRCUIT NUMBER.

C. LABEL COLORS: WHITE LETTERS ON AN ANSI Z35.1 SAFETY-BLUE BACKGROUND.

D. FASTENER TYPE: PERMANENTLY FASTENED WITH MECHANICAL FASTENERS.

2.4 TESTING AND BALANCING

A. GENERAL SECTION REQUIREMENTS

1. SUBMITTALS: CERTIFIED TAB REPORTS.
2. TAB FIRM QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.
3. TAB REPORT FORMS: STANDARD TAB CONTRACTOR'S FORMS APPROVED BY ARCHITECT.
4. PERFORM TAB AFTER LEAKAGE AND PRESSURE TESTS ON AIR AND WATER DISTRIBUTION SYSTEMS HAVE BEEN SATISFACTORILY COMPLETED.
5. SYSTEMS TO BE BALANCED: EXHAUST FANS.

B. EXAMINATION

1. EXAMINE THE CONTRACT DOCUMENTS TO BECOME FAMILIAR WITH PROJECT REQUIREMENTS AND TO DISCOVER CONDITIONS IN SYSTEMS' DESIGNS THAT MAY PRECLUDE PROPER TAB OF SYSTEMS AND EQUIPMENT.
2. EXAMINE THE APPROVED SUBMITTALS FOR HVAC SYSTEMS AND EQUIPMENT.
3. EXAMINE SYSTEMS FOR INSTALLED BALANCING DEVICES, SUCH AS TEST PORTS, GAGE COCKS, THERMOMETER WELLS, FLOW-CONTROL DEVICES, BALANCING VALVES AND FITTINGS, AND MANUAL VOLUME DAMPERS. VERIFY THAT LOCATIONS OF THESE BALANCING DEVICES ARE ACCESSIBLE.
4. EXAMINE SYSTEM AND EQUIPMENT INSTALLATIONS AND VERIFY THAT FIELD QUALITY-CONTROL TESTING, CLEANING, AND ADJUSTING SPECIFIED IN INDIVIDUAL SECTIONS HAVE BEEN PERFORMED.
5. EXAMINE HVAC EQUIPMENT AND FILTERS AND VERIFY THAT BEARINGS ARE GREASED, BELTS ARE ALIGNED AND TIGHT, AND EQUIPMENT CONTROLS ARE READY FOR OPERATION.
6. EXAMINE AUTOMATIC TEMPERATURE-SYSTEM COMPONENTS TO VERIFY THE FOLLOWING:
 - a. DAMPERS, VALVES, AND OTHER CONTROLLED DEVICES ARE OPERATED BY THE INTENDED CONTROLLER.
 - b. DAMPERS AND VALVES ARE IN THE POSITION INDICATED BY THE CONTROLLER.
 - c. INTEGRITY OF DAMPERS AND VALVES FOR FREE AND FULL OPERATION AND FOR TIGHTNESS OF FULLY CLOSED AND FULLY OPEN POSITIONS.
 - d. AUTOMATIC MODULATING AND SHUTOFF VALVES, INCLUDING TWO-WAY VALVES AND THREE-WAY MIXING AND DIVERTING VALVES, ARE PROPERLY CONNECTED.
 - e. SENSORS ARE LOCATED TO SENSE ONLY THE INTENDED CONDITIONS.
 - f. SEQUENCE OF OPERATION FOR CONTROL MODES IS ACCORDING TO THE CONTRACT DOCUMENTS.
 - g. CONTROLLER SET POINTS ARE SET AT INDICATED VALUES.
 - h. INTERLOCKED SYSTEMS ARE OPERATING.
7. REPORT DEFICIENCIES DISCOVERED BEFORE AND DURING PERFORMANCE OF TEST AND BALANCE PROCEDURES.

C. GENERAL PROCEDURES FOR TESTING AND BALANCING

1. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN AABC'S "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE, AND IN THIS SECTION.
2. CUT INSULATION, DUCTS, PIPES, AND EQUIPMENT CABINETS FOR INSTALLATION OF TEST PROBES TO THE MINIMUM EXTENT NECESSARY FOR TAB PROCEDURES. INSTALL AND JOIN NEW INSULATION THAT MATCHES REMOVED MATERIALS. RESTORE INSULATION, COVERINGS, VAPOR BARRIER, AND FINISH.
3. MARK EQUIPMENT AND BALANCING DEVICES, INCLUDING DAMPER-CONTROL POSITIONS, VALVE POSITION INDICATORS, FAN-SPEED-CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, WITH PAINT OR OTHER SUITABLE, PERMANENT IDENTIFICATION MATERIAL TO SHOW FINAL SETTINGS.
4. TAKE AND REPORT TESTING AND BALANCING MEASUREMENTS IN INCH-POUND (IP) UNITS.

1. PREPARE TEST REPORTS FOR BOTH FANS AND OUTLETS. OBTAIN MANUFACTURER'S OUTLET FACTORS AND RECOMMENDED TESTING PROCEDURES. CROSSCHECK THE SUMMATION OF REQUIRED OUTLET VOLUMES WITH REQUIRED FAN VOLUMES.
2. PREPARE SCHEMATIC DIAGRAMS OF SYSTEMS' RECORD DRAWINGS DUCT LAYOUTS.
3. DETERMINE THE BEST LOCATIONS IN MAIN AND BRANCH DUCTS FOR ACCURATE DUCT-AIRFLOW MEASUREMENTS.
4. CHECK AIRFLOW PATTERNS FROM THE OUTDOOR-AIR LOUVERS AND DAMPERS AND THE RETURN- AND EXHAUST-AIR DAMPERS THROUGH THE SUPPLY-FAN DISCHARGE AND MIXING DAMPERS.
5. LOCATE START-STOP AND DISCONNECT SWITCHES, ELECTRICAL INTERLOCKS, AND MOTOR STARTERS.
6. VERIFY THAT MOTOR STARTERS ARE EQUIPPED WITH PROPERLY SIZED THERMAL PROTECTION.
7. CHECK DAMPERS FOR PROPER POSITION TO ACHIEVE DESIRED AIRFLOW PATH.
8. CHECK FOR AIRFLOW BLOCKAGES.
9. ADJUST AIR INLETS AND OUTLETS FOR EACH SPACE TO INDICATED AIRFLOWS.
 - a. SET AIRFLOW PATTERNS OF ADJUSTABLE OUTLETS FOR PROPER DISTRIBUTION WITHOUT DRAFTS.
 - b. MEASURE INLETS AND OUTLETS AIRFLOW.
 - c. ADJUST EACH INLET AND OUTLET FOR SPECIFIED AIRFLOW.
 - d. RE-MEASURE EACH INLET AND OUTLET AFTER THEY HAVE BEEN ADJUSTED.
10. VERIFY FINAL SYSTEM CONDITIONS.
 - a. RE-MEASURE AND CONFIRM THAT MINIMUM OUTDOOR, RETURN, AND RELIEF AIRFLOWS ARE WITHIN DESIGN. READJUST TO DESIGN IF NECESSARY.
 - b. RE-MEASURE AND CONFIRM THAT TOTAL AIRFLOW IS WITHIN DESIGN.
 - c. RE-MEASURE ALL FINAL FAN OPERATING DATA: SPEED, VOLTS, AMPS, AND STATIC PROFILE.
 - d. MARK ALL FINAL SETTINGS.
 - e. TEST SYSTEM IN ECONOMIZER MODE. VERIFY PROPER OPERATION AND ADJUST IF NECESSARY.
 - f. MEASURE AND RECORD ALL OPERATING DATA.

E. PROCEDURES FOR MOTORS

1. MOTORS 1/2 HP AND LARGER: TEST AT FINAL BALANCED CONDITIONS AND RECORD THE FOLLOWING DATA:

- a. MANUFACTURER'S NAME, MODEL NUMBER, AND SERIAL NUMBER.
- b. MOTOR HORSEPOWER RATING.
- c. MOTOR RPM.
- d. PHASE AND HERTZ.
- e. NAMEPLATE AND MEASURED VOLTAGE, EACH PHASE.
- f. NAMEPLATE AND MEASURED AMPERAGE, EACH PHASE.
- g. STARTER SIZE AND THERMAL-PROTECTION-ELEMENT RATING.
- h. SERVICE FACTOR AND FRAME SIZE.

2. MOTORS DRIVEN BY VARIABLE-FREQUENCY CONTROLLERS: TEST MANUAL BYPASS OF CONTROLLER TO PROVE PROPER OPERATION.

F. PROCEDURES FOR EXHAUST HOODS

1. ROOM PRESSURE: MEASURE AND RECORD ROOM PRESSURE WITH RESPECT TO ATMOSPHERE AND ADJACENT SPACE. EXHAUST HOODS IN ROOM INITIALLY NOT OPERATING AND THEN WITH HOODS OPERATING.
2. MAKEUP AIR: SYSTEMS SUPPLYING SOURCE OF MAKEUP AIR TO HOODS SHALL BE IN OPERATION DURING TESTING AND BALANCING OF EXHAUST HOODS.
 - a. MEASURE AND RECORD TEMPERATURE OF MAKEUP AIR ENTERING HOOD. IF HOOD MAKEUP AIR IS FROM MULTIPLE SOURCES HAVING DIFFERENT TEMPERATURES, MEASURE AND RECORD THE AIRFLOW AND TEMPERATURES OF EACH SOURCE AND CALCULATE THE WEIGHTED AVERAGE TEMPERATURE.
 - b. USE SIMULATED SMOKE TO OBSERVE SUPPLY AIR-DISTRIBUTION AIR PATTERNS IN VICINITY OF HOODS. CONSULT WITH HOOD MANUFACTURER AND REPORT CONDITIONS THAT HAVE A DETRIMENTAL EFFECT ON INTENDED CAPTURE, CONTAINMENT, AND OTHER ATTRIBUTES EFFECTING PROPER OPERATION.
3. CANOPY HOODS: MEASURE AND RECORD THE FOLLOWING:
 - a. PRESSURE DROP ACROSS HOOD.
 - b. AIRFLOW BY DUCT TRAVERSE WHERE DUCT DISTRIBUTION WILL ALLOW ACCURATE MEASUREMENT, AND CALCULATE HOOD AVERAGE FACE VELOCITY.
 - c. MEASURE VELOCITY ACROSS HOOD FACE AND CALCULATE HOOD AIRFLOW.
 - 1) CLEARLY INDICATE THE DIRECTION OF FLOW AT EACH POINT OF MEASUREMENT.
 - 2) MEASURE VELOCITY ACROSS OPENING ON NOT LESS THAN 12-INCH CENTERS. RECORD VELOCITY AT EACH MEASUREMENT, AND CALCULATE AVERAGE VELOCITY.
 - d. CAPTURE AND CONTAINMENT: CHECK EACH HOOD FOR PROPER CAPTURE AND CONTAINMENT USING A SMOKE-EMITTING DEVICE. OBSERVE AND REPORT PERFORMANCE. MAKE ADJUSTMENTS TO ACHIEVE OPTIMUM RESULTS.
4. LABORATORY FUME HOODS: MEASURE AND RECORD THE FOLLOWING:
 - a. PRESSURE DROP ACROSS HOOD.
 - b. AIRFLOW BY DUCT TRAVERSE WHERE DUCT DISTRIBUTION WILL ALLOW ACCURATE MEASUREMENT, AND CALCULATE HOOD AVERAGE FACE VELOCITY. IF HOOD IS CONNECTED TO EXHAUST DUCT DISTRIBUTION THROUGH AN INTERLOCK WITH INTEGRAL AIRFLOW MEASUREMENT, THAT READING MAY BE USED IN LIEU OF A DUCT TRAVERSE.
 - c. FACE VELOCITY ACROSS OPEN HOOD FACE AND CALCULATE HOOD AIRFLOW.
 - 1) CLEARLY INDICATE THE DIRECTION OF FLOW AT EACH POINT OF MEASUREMENT.
 - 2) MEASURE VELOCITY ACROSS OPENING ON NOT LESS THAN 6-INCH CENTERS. RECORD VELOCITY AT EACH MEASUREMENT, AND CALCULATE AVERAGE VELOCITY.
 - d. CAPTURE AND CONTAINMENT: CHECK EACH HOOD FOR PROPER CAPTURE AND CONTAINMENT USING A SMOKE-EMITTING DEVICE. OBSERVE AND REPORT PERFORMANCE. MAKE ADJUSTMENTS TO ACHIEVE OPTIMUM RESULTS.
5. KITCHEN HOODS:
 - a. TYPE 1: MEASURE AND RECORD PRESSURE DROP AND FACE VELOCITY OF HOOD FILTERS AND SLOTS IN ACCORDANCE WITH HOOD MANUFACTURER'S INSTRUCTIONS. CONSULT HOOD MANUFACTURER TO DETERMINE HOOD AIRFLOW USING RECORDED INFORMATION.
 - b. TYPE 2: MEASURE AND RECORD AIRFLOW BY DUCT TRAVERSE.
 - c. CAPTURE AND CONTAINMENT: CHECK EACH HOOD FOR PROPER CAPTURE AND CONTAINMENT USING A SMOKE-EMITTING DEVICE. OBSERVE AND REPORT PERFORMANCE. MAKE ADJUSTMENTS TO ACHIEVE OPTIMUM RESULTS.
6. AHJ TESTS: CONDUCT ADDITIONAL TESTS REQUIRED BY AUTHORITIES HAVING JURISDICTION.

G. HVAC CONTROLS VERIFICATION

1. IN CONJUNCTION WITH SYSTEM BALANCING, PERFORM THE FOLLOWING:
 - a. VERIFY HVAC CONTROL SYSTEM IS OPERATING WITHIN THE DESIGN LIMITATIONS.
 - b. CONFIRM THAT THE SEQUENCES OF OPERATION ARE IN COMPLIANCE WITH CONTRACT DOCUMENTS.
 - c. VERIFY THAT CONTROLLERS ARE CALIBRATED AND FUNCTION AS INTENDED.
 - d. VERIFY THAT CONTROLLER SET POINTS ARE AS INDICATED.
 - e. VERIFY THAT CONTROLLED DEVICES ARE PROPERLY INSTALLED AND CONNECTED TO CORRECT CONTROLLER.
2. REPORTING: INCLUDE A SUMMARY OF VERIFICATIONS PERFORMED, REMAINING DEFICIENCIES, AND VARIATIONS FROM INDICATED CONDITIONS.

H. TOLERANCES

1. EXHAUST FANS: PLUS OR MINUS 10 PERCENT.

I. FINAL REPORT

1. PREPARE A CERTIFIED WRITTEN REPORT. PROVIDE THE FOLLOWING INFORMATION:
 - a. FIELD REPORTS
 - b. MANUFACTURER'S TEST DATA
 - c. FAN CURVES
 - d. OTHER INFORMATION RELATIVE TO EQUIPMENT PERFORMANCE.
 - e. NOTES EXPLAINING WHY CERTAIN DATA MAY VARY FROM INDICATED VALUES

2.5 INSTALLATION

1. INSTALL POWER VENTILATORS LEVEL AND PLUMB.
2. USE ROOF CURB ADAPTERS TO MAKE TRANSITIONS FROM EXISTING TO NEW.
3. SECURE EXHAUST FANS TO ROOF CURBS WITH ZINC-PLATED HARDWARE.

4. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES FOR SERVICE AND MAINTENANCE.

5. MAINTAIN CLEARANCES REQUIRED BY GOVERNING CODE.

6. LABEL ALL UNITS.

2.6 ELECTRICAL POWER CONNECTIONS

1. CONNECT FIELD ELECTRICAL POWER SOURCE TO EACH SEPARATE ELECTRICAL DEVICE REQUIRING FIELD ELECTRICAL POWER. COORDINATE TERMINATION POINT AND CONNECTION TYPE WITH INSTALLER.
2. INSTALL ELECTRICAL DEVICES FURNISHED BY MANUFACTURER, BUT NOT FACTORY MOUNTED, ACCORDING TO NFPA 70 AND NECA 1.
3. INSTALL NAMEPLATE FOR EACH ELECTRICAL CONNECTION INDICATING ELECTRICAL EQUIPMENT DESIGNATION AND CIRCUIT NUMBER FEEDING CONNECTION. LOCATE NAMEPLATE WHERE EASILY VISIBLE.

2.7 CONTROLS CONNECTIONS

1. INSTALL CONTROL AND ELECTRICAL POWER WIRING TO FIELD-MOUNTED CONTROL DEVICES.
2. CONNECT CONTROL WIRING BETWEEN EXHAUST FANS AND BUILDING MANAGEMENT SYSTEM TO PROVIDE CENTRALIZED CONTROL. PROVIDE FRONT END SYSTEM INTEGRATION WITH EXISTING SYSTEM. SYSTEM SHALL PROVIDE CONTROL OF ALL FANS AND THE ABILITY TO RAMP UP AND DOWN AND SET A 7-DAY, 24-HOUR SCHEDULE.
3. THE FANS SHALL BE CONTROLLED VIA 0-10VDC CONNECTION VIE THE BUILDING MANAGEMENT SYSTEM. THE BUILDING MANAGEMENT SYSTEM SHALL ALSO MONITOR EQUIPMENT STATUS FOR FAILURE EVENTS.
4. COORDINATE INSTALLATION REQUIREMENTS WITH OWNER'S VENDOR, SNE BUILDING SYSTEMS, TO PROVIDE A FUNCTIONING SYSTEM.

2.8 GENERAL EQUIPMENT INSTALLATIONS

1. INSTALL EQUIPMENT TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS ARE NOT INDICATED.
2. INSTALL EQUIPMENT LEVEL AND PLUMB, PARALLEL, AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.
3. INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS. EXTEND GREASE FITTINGS TO ACCESSIBLE LOCATIONS.

2.9 VIBRATION ISOLATION AND SEISMIC CONTROL DEVICE INSTALLATION

1. ADJUST VIBRATION ISOLATORS TO ALLOW FREE MOVEMENT OF EQUIPMENT LIMITED BY RESTRAINTS.
2. INSTALL RESILIENT BOLT ISOLATION WASHERS AND BUSHINGS ON EQUIPMENT ANCHOR BOLTS.
3. INSTALL CABLES SO THEY DO NOT BEND ACROSS SHARP EDGES OF ADJACENT EQUIPMENT OR BUILDING STRUCTURE.

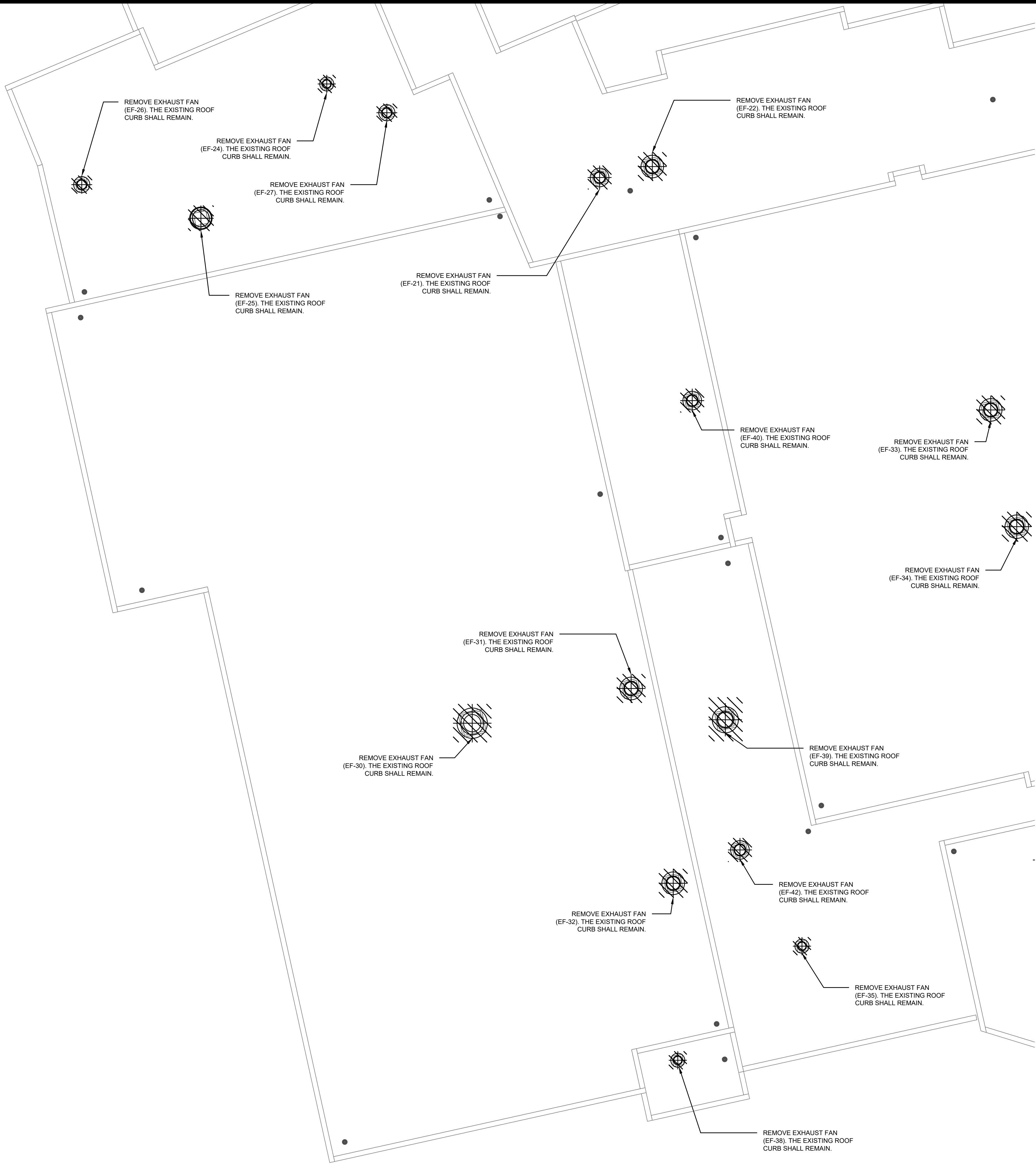
2.10 FIELD QUALITY CONTROL

1. TESTING AGENCY: ENGAGE A QUALIFIED TESTING AGENCY TO PERFORM TESTS AND INSPECTIONS.
2. MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO TEST AND INSPECT COMPONENTS, ASSEMBLIES, AND EQUIPMENT INSTALLATIONS, INCLUDING CONNECTIONS.
3. TESTS AND INSPECTIONS: FAN OPERATIONAL TEST.
4. EXHAUST FANS WILL BE CONSIDERED DEFECTIVE IF THEY DO NOT PASS TESTS AND INSPECTIONS.
5. PREPARE TEST AND INSPECTION REPORTS.

2.11 STARTUP SERVICE

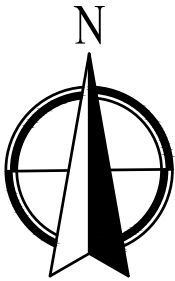
1. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO PERFORM STARTUP SERVICE.
2. INSPECT FIELD-ASSEMBLED COMPONENTS, EQUIPMENT INSTALLATION, AND PIPING; CONTROLS; AND ELECTRICAL CONNECTIONS FOR PROPER ASSEMBLIES, INSTALLATIONS, AND CONNECTIONS.
3. OBTAIN PERFORMANCE DATA FROM MANUFACTURER.
 - a. COMPLETE INSTALLATION AND STARTUP CHECKS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND PERFORM THE FOLLOWING:
 - i. COMPLETE INSTALLATION AND STARTUP CHECKS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
 - b. VERIFY THAT SHIPPING, BLOCKING, AND BRACING ARE REMOVED.
 - c. VERIFY THAT UNIT IS SECURE ON MOUNTINGS AND SUPPORTING DEVICES AND THAT CONNECTIONS TO DUCTS AND ELECTRICAL COMPONENTS ARE COMPLETE. VERIFY THAT PROPER

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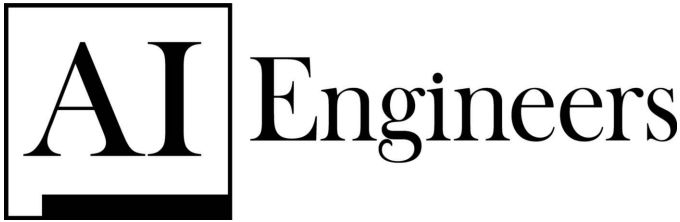


NOTES

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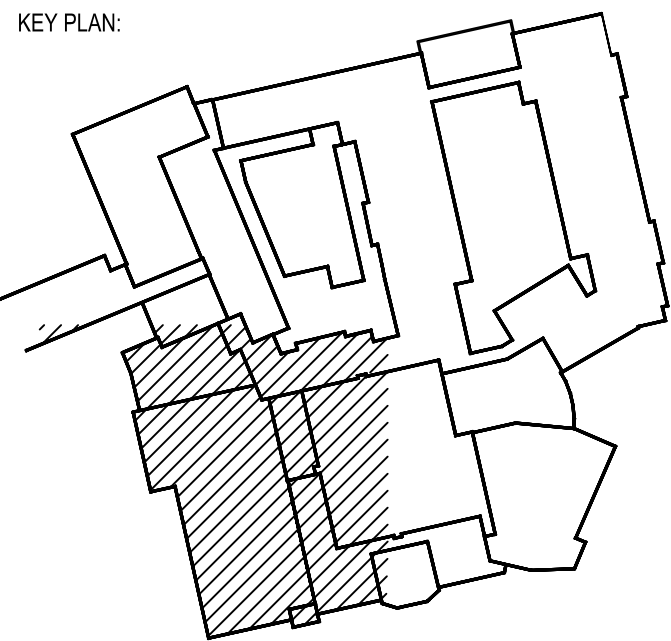


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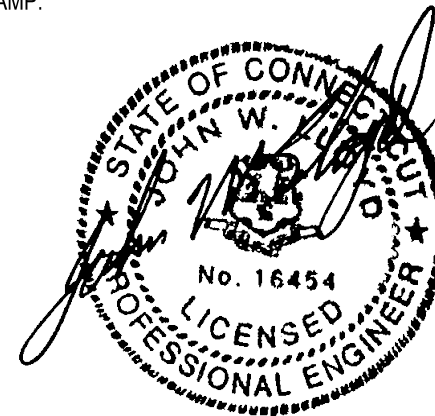
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PROJECT NAME:
KENNEDY HIGH
SCHOOL EXHAUST FAN
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL DEMOLITION
ROOF PLAN SECTION 1

FILE: 2022\32580C-2
DRAWN BY: AJK
CHECKED BY: CL
PROJ. NO: 32580C-2
DRAWING NO:

MD-101

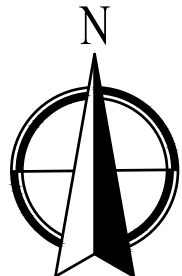
MECHANICAL DEMOLITION ROOF PLAN
SECTION 1

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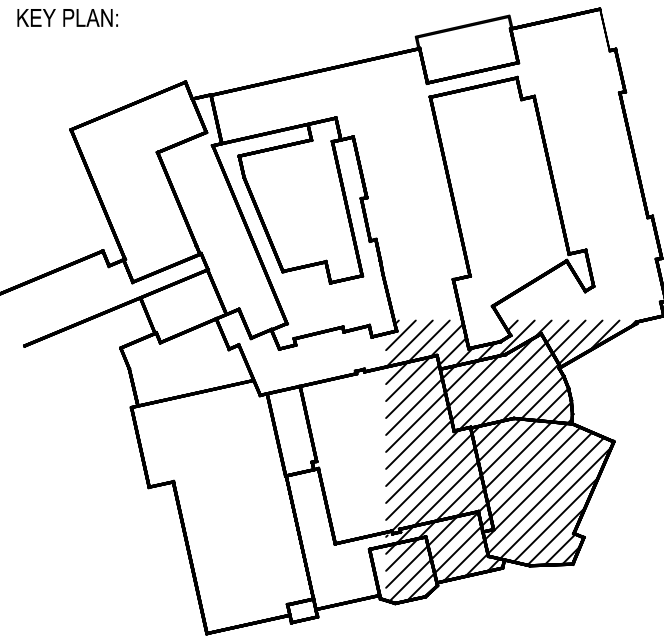


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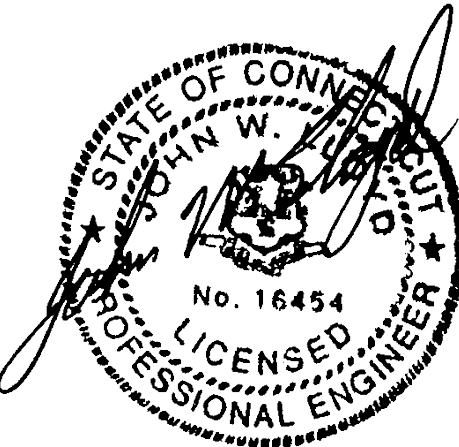
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DRAWING TITLE:
MECHANICAL DEMOLITION
ROOF PLAN SECTION 2

FILE: 2022\32580C-2
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CHECKED BY: CL
PROJ. NO: 32580C-2
DRAWING NO:

MD-102

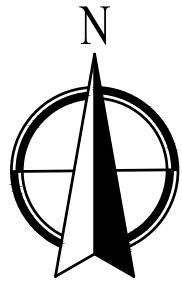
MECHANICAL DEMOLITION ROOF PLAN
SECTION 2

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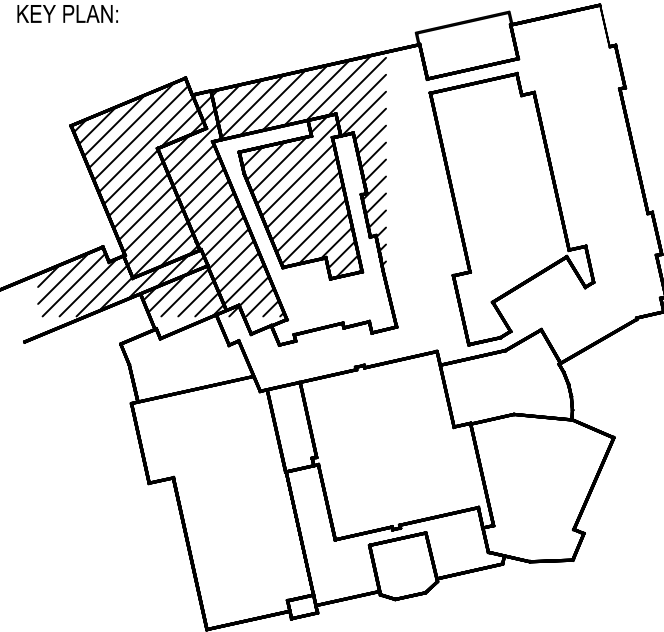


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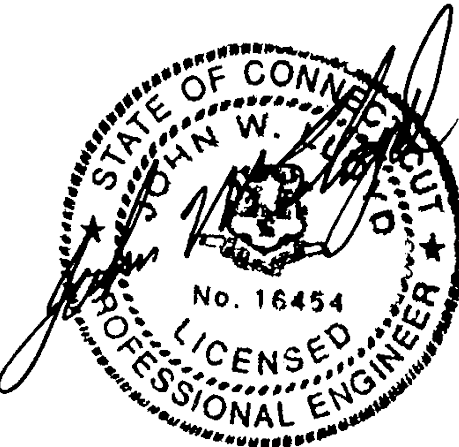
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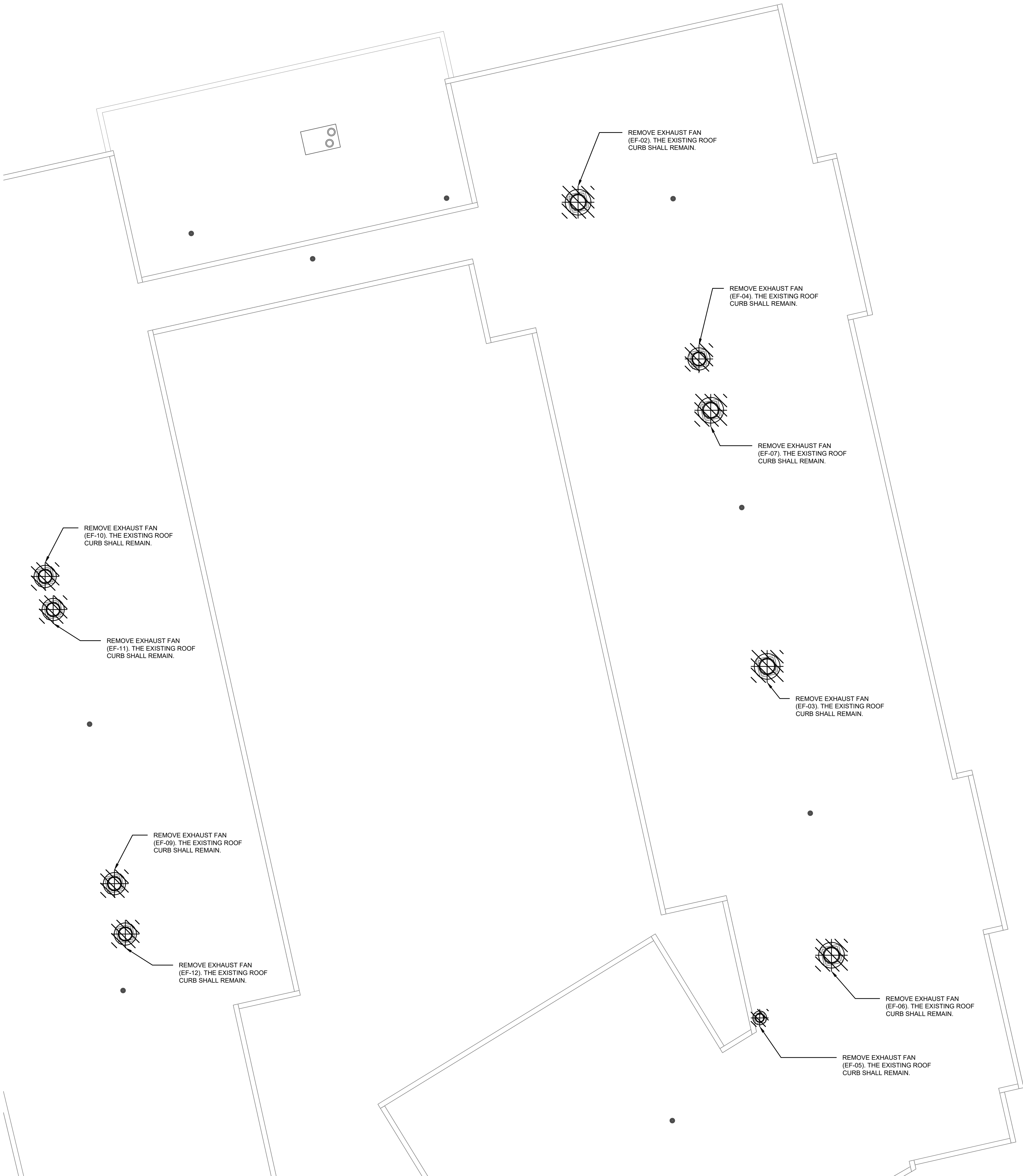
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MECHANICAL DEMOLITION
ROOF PLAN SECTION 3

MECHANICAL DEMOLITION ROOF PLAN
SECTION 3

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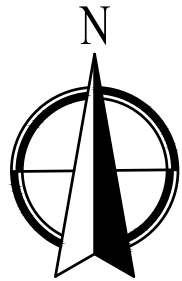
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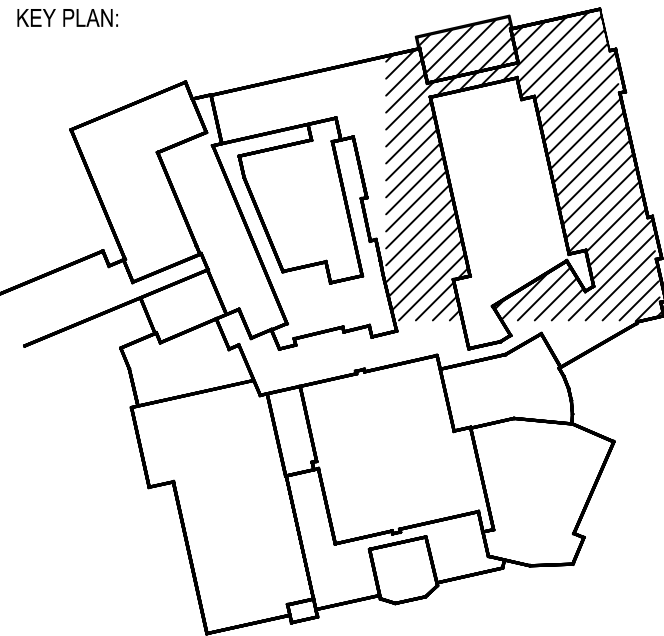


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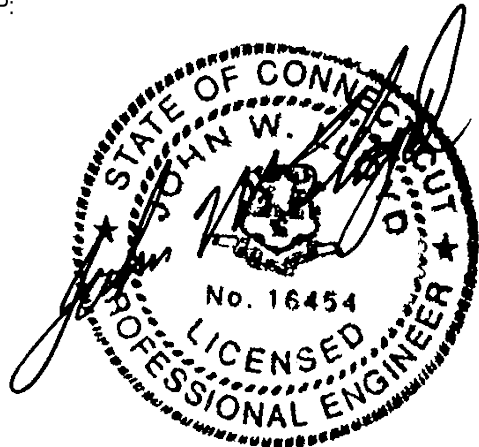
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DRAWING TITLE:
MECHANICAL DEMOLITION
ROOF PLAN SECTION 4

FILE: 2022\3258OC-2
DRAWN BY: AJK
CHECKED BY: CL
PROJ. NO: 3258OC-2
DRAWING NO:

MD-104

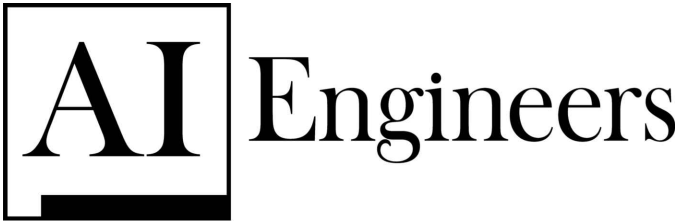
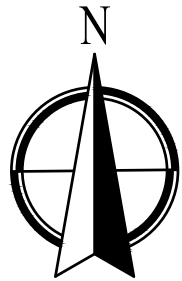
MECHANICAL DEMOLITION ROOF PLAN
SECTION 4

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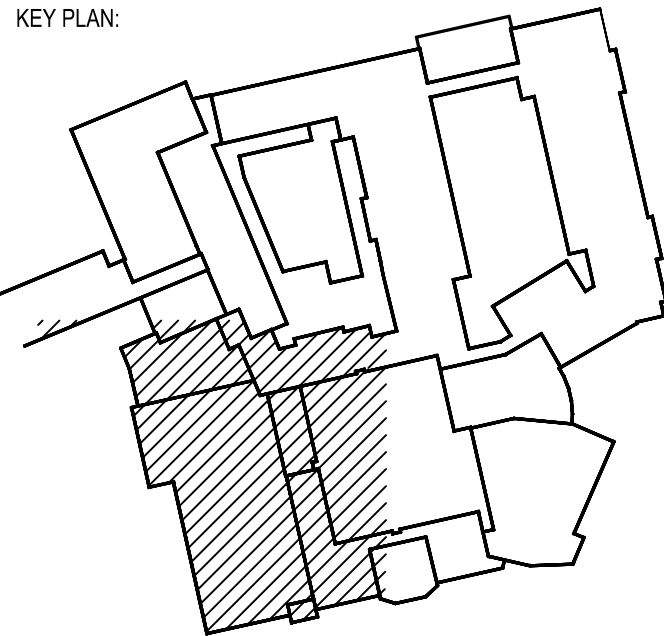
NOTES

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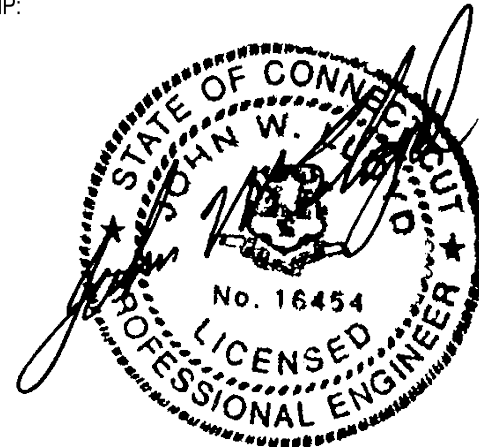
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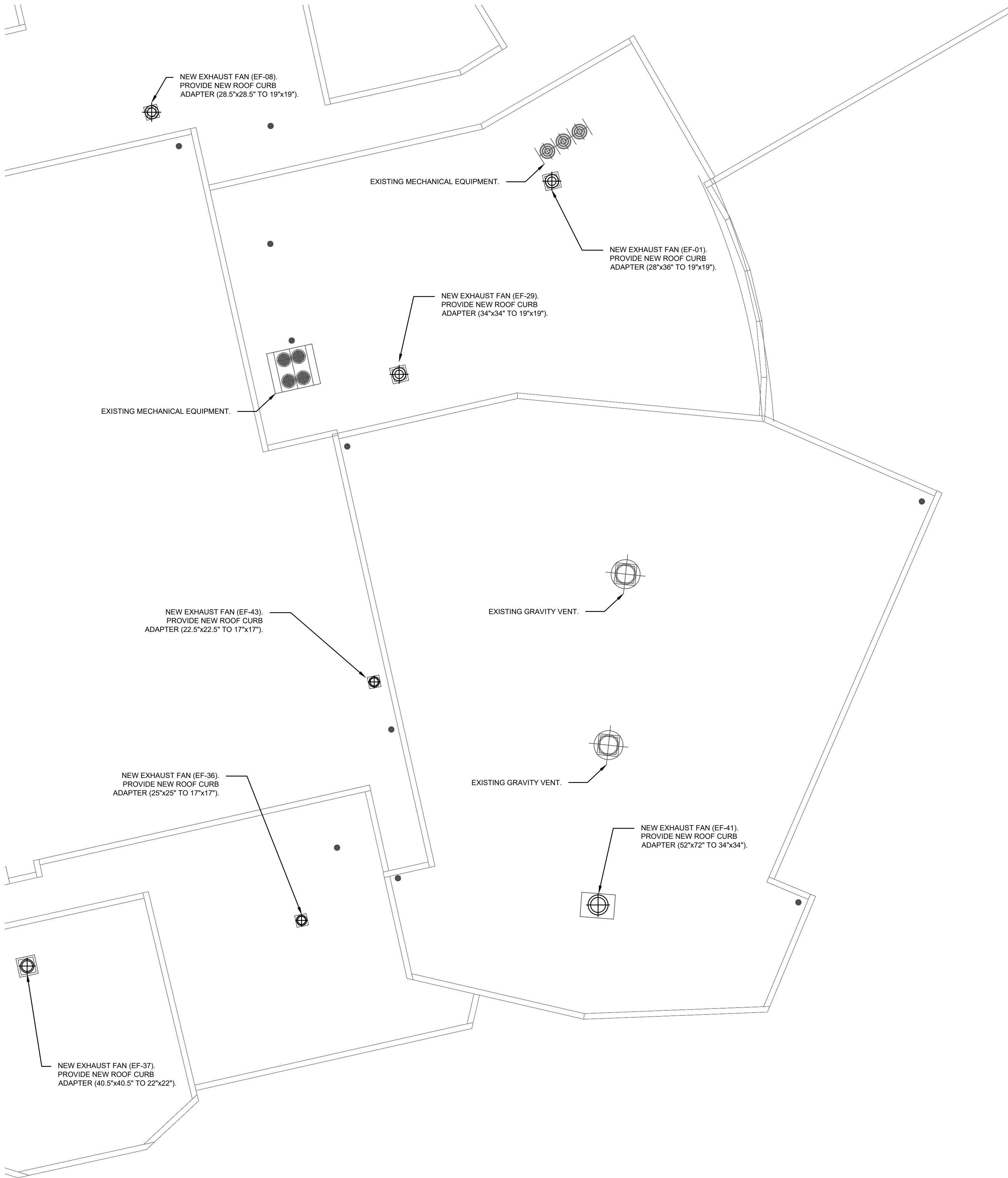
DRAWING TITLE:
**MECHANICAL NEW WORK
ROOF PLAN SECTION 1**

FILE: 2022\32580C-2
DRAWN BY: AJK
CHECKED BY: CL
PROJ. NO: 32580C-2
DRAWING NO:

M-101

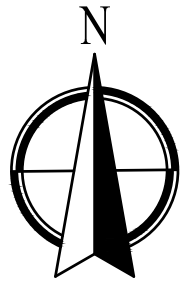
MECHANICAL NEW WORK ROOF PLAN SECTION 1

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- THE CONTRACTOR SHALL INSPECT BACKDRAFT DAMPERS AND CONFIRM THEY ARE FUNCTIONING AS INTENDED.
- THE CONTRACTOR SHALL PROVIDE CONNECTION WITH THE EXISTING BUILDING MANAGEMENT SYSTEM AND WORK WITH THE OWNER'S CONTROLS VENDOR TO INTEGRATE THE OPERATION OF THE NEW EXHAUST FANS.

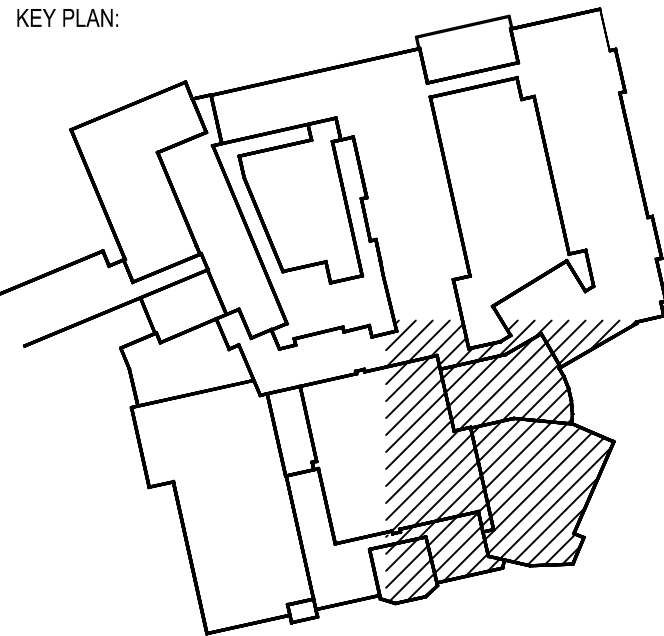


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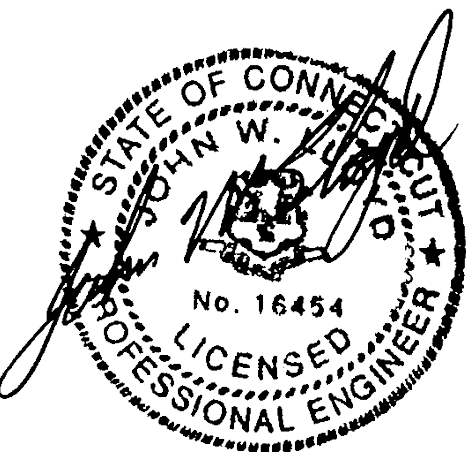
235 GRAND STREET
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PROJECT NAME:
KENNEDY HIGH
SCHOOL EXHAUST FAN
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL NEW WORK
ROOF PLAN SECTION 2

FILE: 2022\3258OC-2
DRAWN BY: A/K
CHECKED BY: CL
PROJ. NO: 3258OC-2
DRAWING NO:

M-102

MECHANICAL NEW WORK ROOF PLAN
SECTION 2

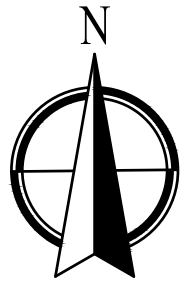
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MECHANICAL NEW WORK ROOF PLAN
SECTION 3

NOTES

- COORDINATE ALL WORK WITH ELECTRICAL DRAWINGS.
- LOCATION AND QUANTITIES OF EQUIPMENT IS BASED ON THE BEST AVAILABLE INFORMATION AT TIME OF DESIGN. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS PRIOR TO BID.
- CONTRACT DOCUMENT DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- THE CONTRACTOR SHALL INSPECT BACKDRAFT DAMPERS AND CONFIRM THEY ARE FUNCTIONING AS INTENDED.
- THE CONTRACTOR SHALL PROVIDE CONNECTION WITH THE EXISTING BUILDING MANAGEMENT SYSTEM AND WORK WITH THE OWNER'S CONTROLS VENDOR TO INTEGRATE THE OPERATION OF THE NEW EXHAUST FANS..

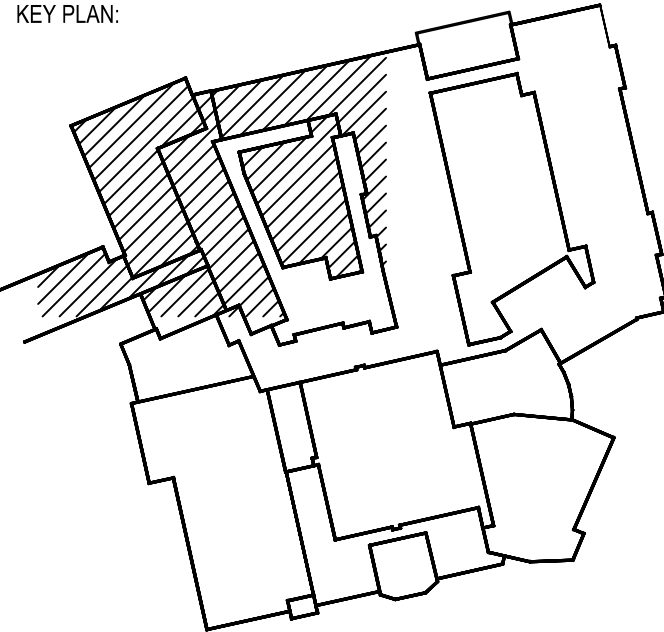


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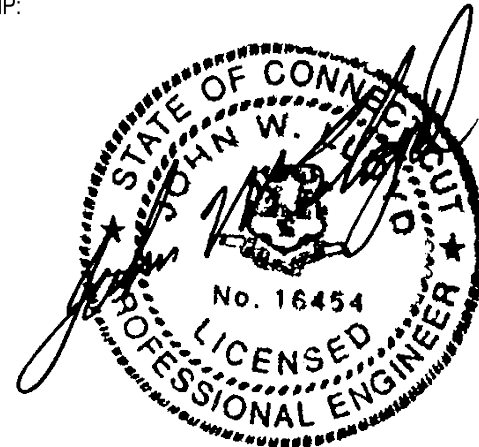
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REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL NEW WORK
ROOF PLAN SECTION 3

FILE: 2022\32580C-2
DRAWN BY: AJK
CHECKED BY: CL
PROJ. NO: 32580C-2
DRAWING NO:

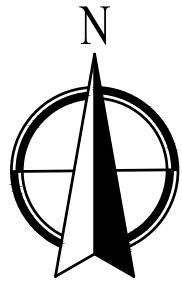
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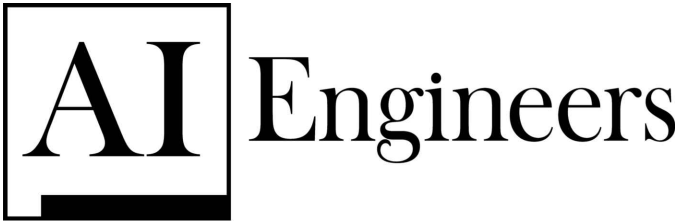


NOTES

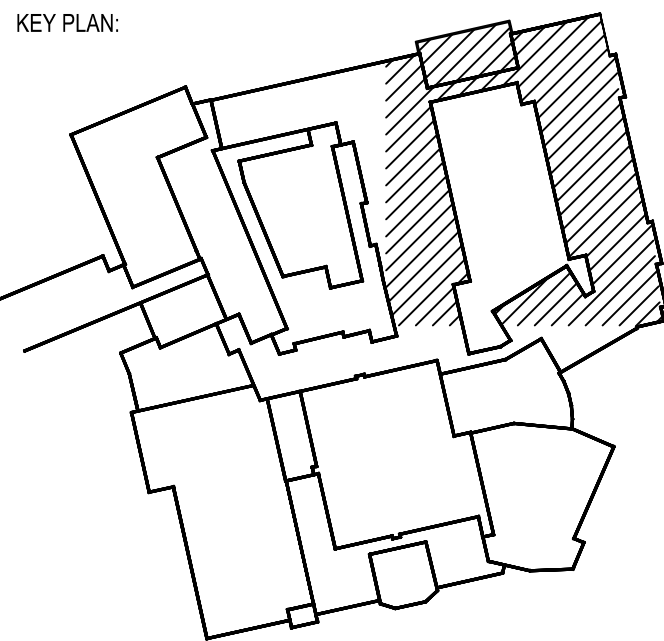
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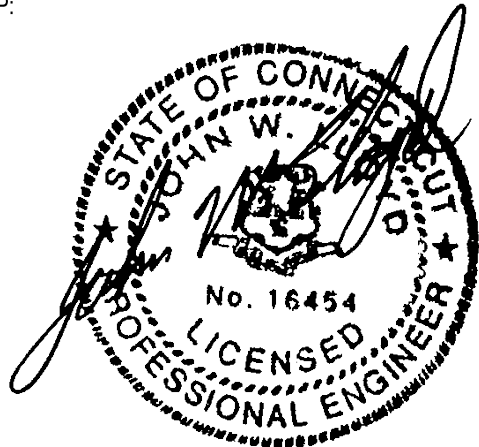
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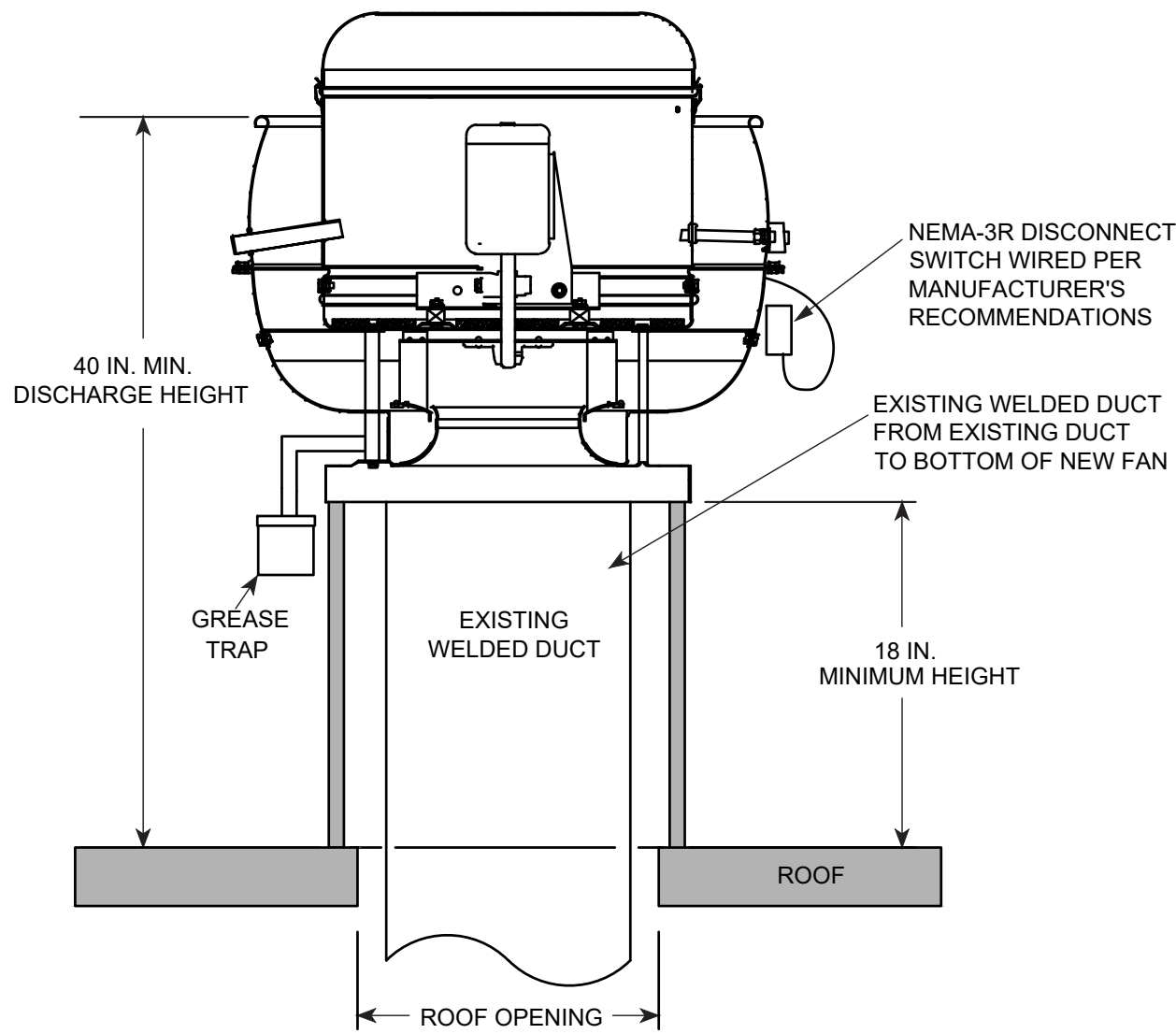
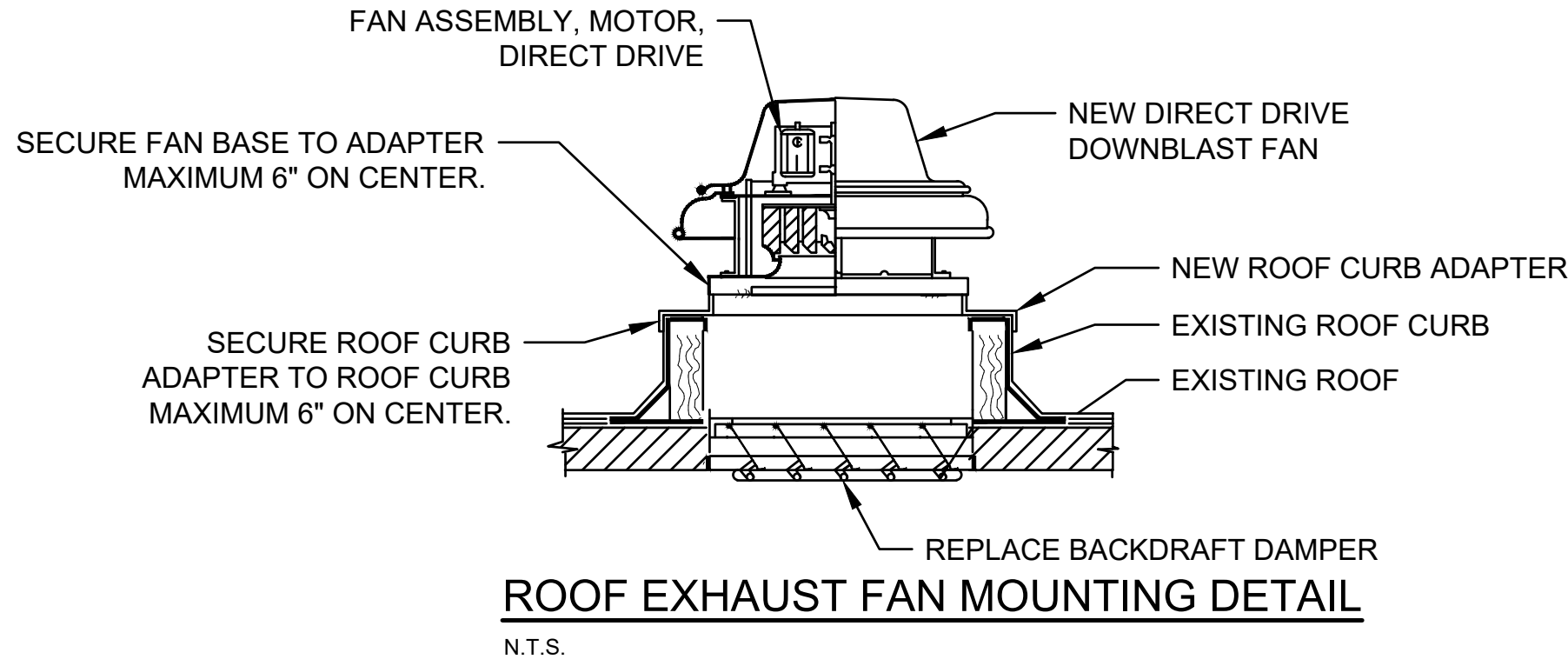
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SCHOOL EXHAUST FAN
REPLACEMENT

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL NEW WORK
ROOF PLAN SECTION 4

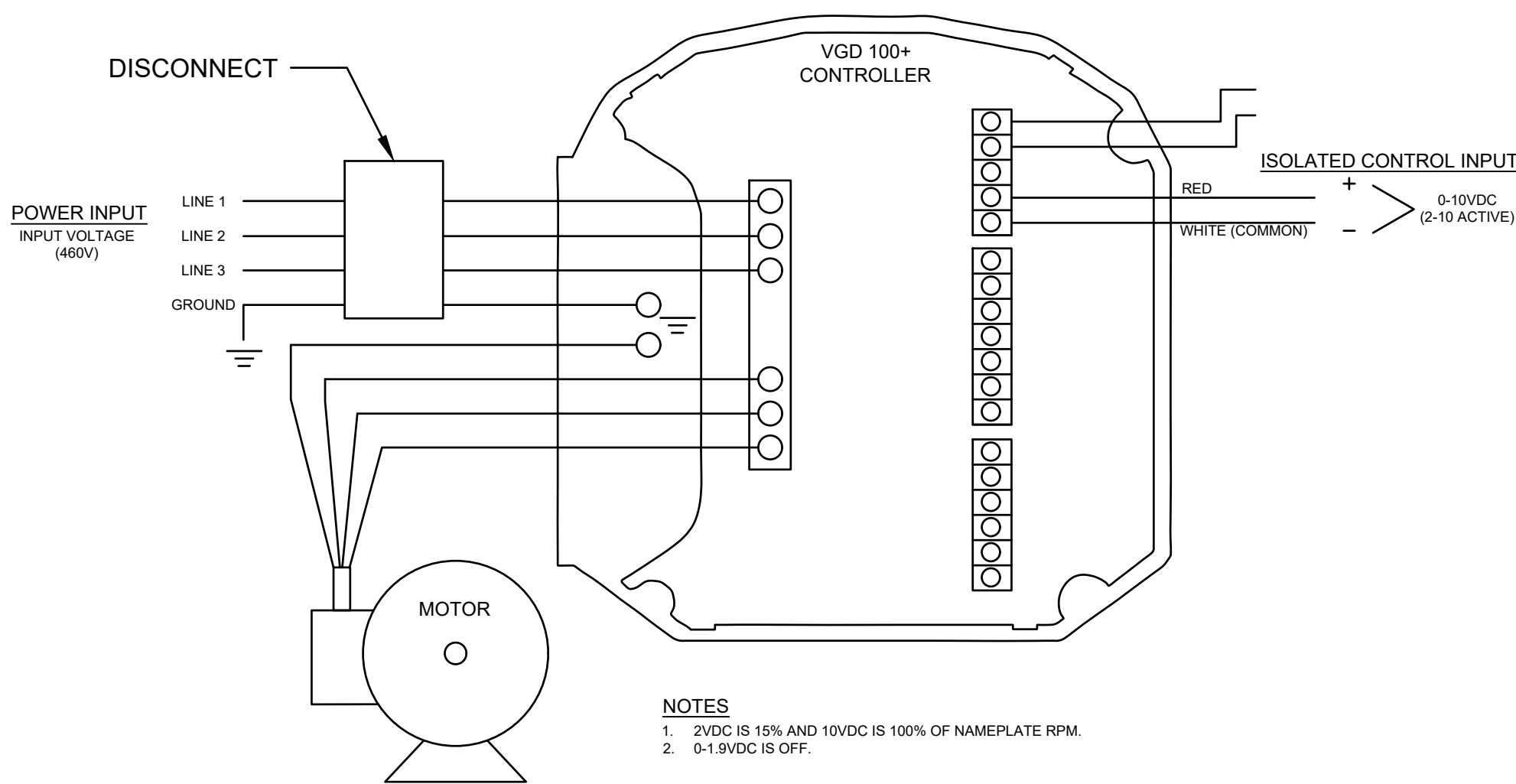
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M-104



KITCHEN UPBLAST EXHAUST FAN MOUNTING DETAIL

N.T.S.

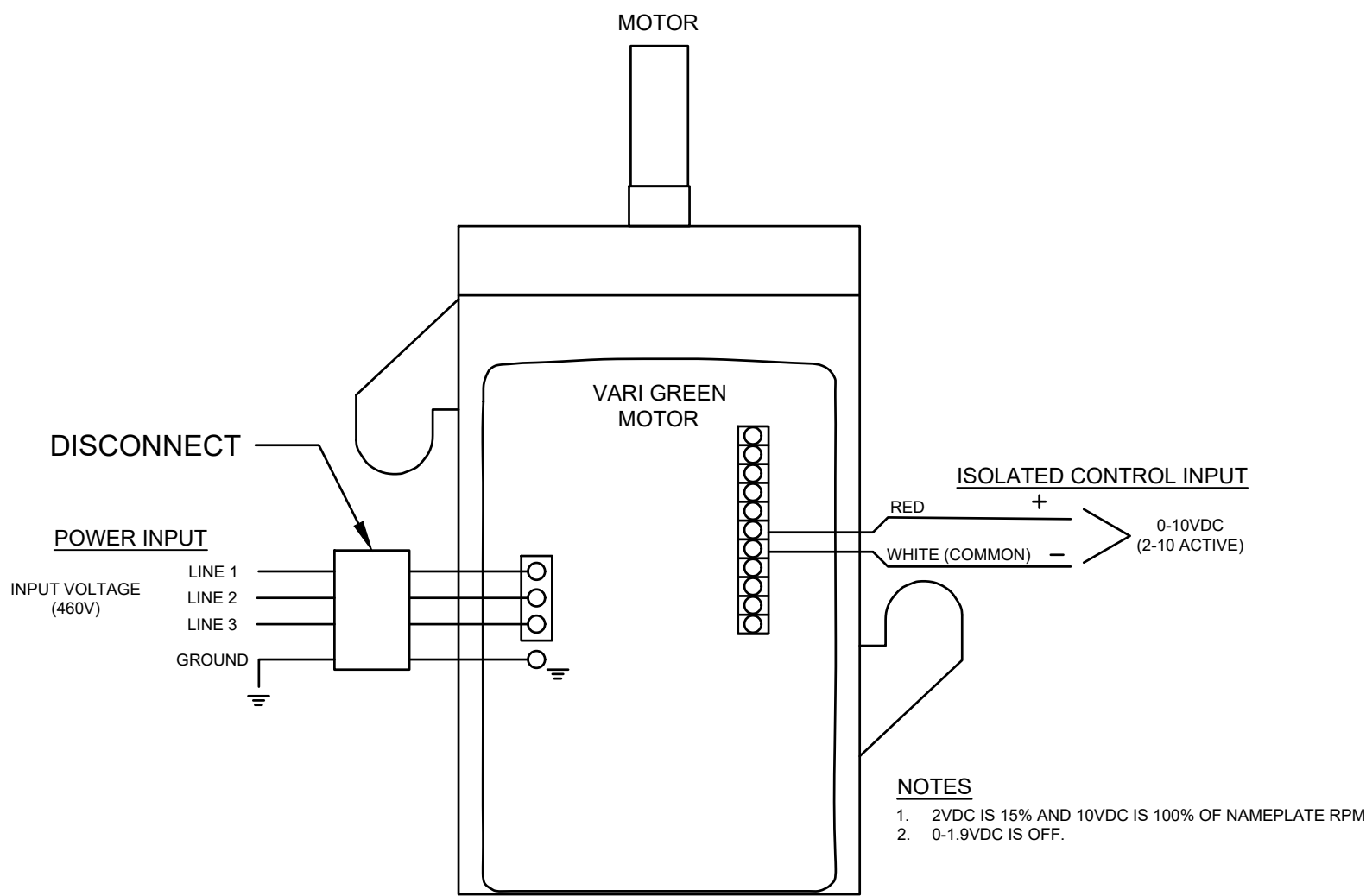


GREENHECK VARI-GREEN DRIVE 100+ (EF 17, 30, 41)

N.T.S.

NOTE:

1. COORDINATE CONTROL TIE-IN POINT WITH OWNER'S CONTROLS CONTRACTOR: SNE BUILDING SYSTEMS.

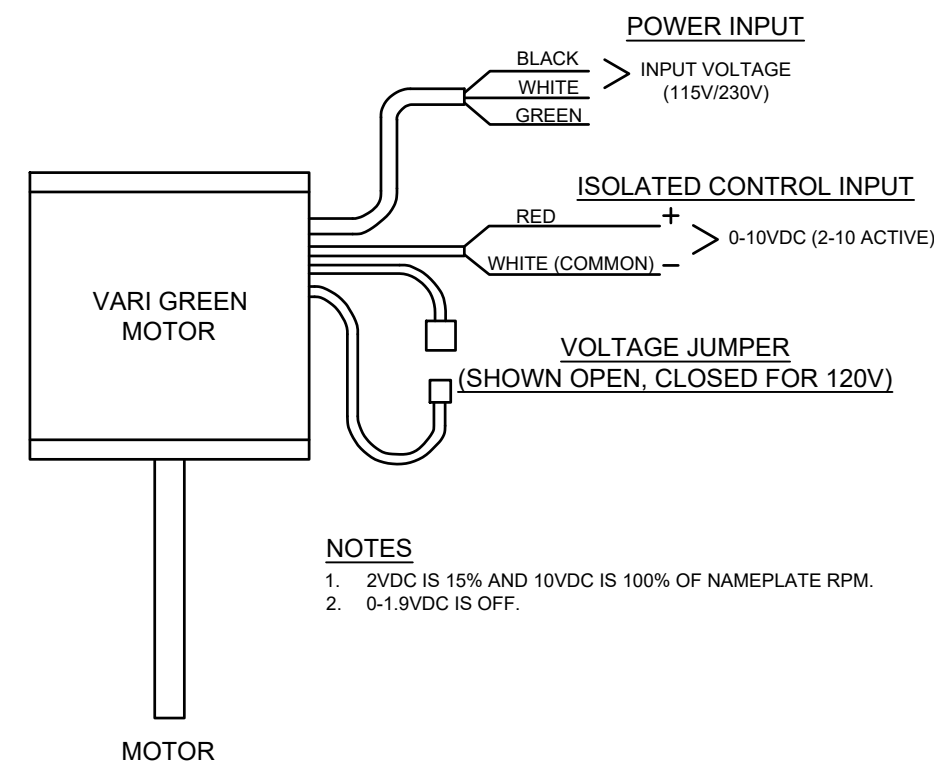


GREENHECK VARI-GREEN MOTOR (MODEL G-160-VG)

N.T.S.

NOTE:

1. COORDINATE CONTROL TIE-IN POINT WITH OWNER'S CONTROLS CONTRACTOR: SNE BUILDING SYSTEMS.



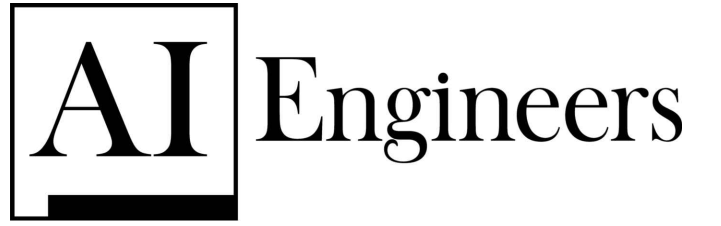
GREENHECK VARI-GREEN MOTOR (MODEL G-130-VG AND SMALLER)

N.T.S.

NOTE:

1. COORDINATE CONTROL TIE-IN POINT WITH OWNER'S CONTROLS CONTRACTOR: SNE BUILDING SYSTEMS.

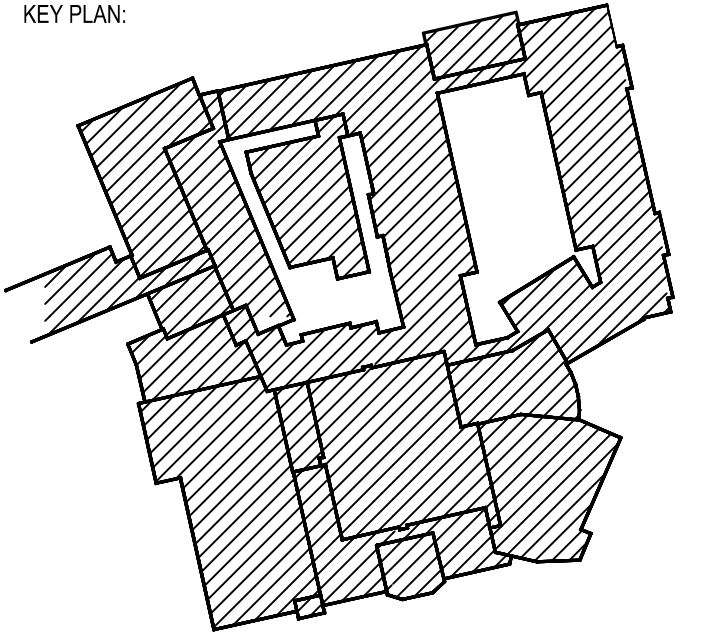
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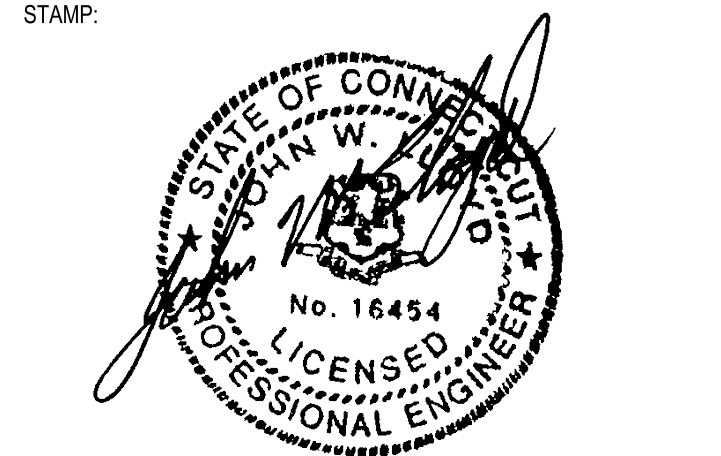
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422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL DETAILS

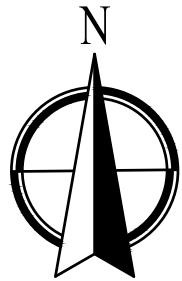
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PROJ. NO: 32580C-2
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M-501

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EXHAUST FANS													
TAG	MANUFACTURER	MODEL	LOCATION	FAN			MOTOR		ELECTRICAL		EXISTING ROOF CURB SIZE (OUTSIDE DIMENSION)	NEW ROOF CURB CAP SIZE	REMARKS
				CFM	STATIC PRESSURE (IN. H2O)	DRIVE	HP	RPM	VOLTS	PHASE			
EF-01	GREENHECK	G-130-VG	NURSE/MAIN OFFICE	2,000	0.25	DIRECT	1/2	1550	230	1	28"x36"	19"x19"	SEE NOTE 1,4
EF-01A	GREENHECK	G-090-VG	MEDIA CENTER	560	0.25	DIRECT	1/10	1725	115	1	16"x16"	17"x17"	SEE NOTE 1,4
EF-02	GREENHECK	G-160-VG	ROOMS 121/122	4,000	0.25	DIRECT	2	1725	460	3	45"x45"	22"x22"	SEE NOTE 1,4
EF-03	GREENHECK	G-160-VG	GUIDANCE/RMS 105,107,110, 112	4,200	0.25	DIRECT	2	1725	460	3	45"x45"	22"x22"	SEE NOTE 1,4
EF-04	GREENHECK	G-160-VG	RMS 109,111, 114, 116, 118	3,700	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-05	GREENHECK	G-090-VG	BATHROOMS-HIGHLAND WING	400	0.25	DIRECT	1/10	1725	230	1	25"x25"	17"x17"	SEE NOTE 1,4
EF-06	GREENHECK	G-160-VG	RMS 201,203, 200A, 200B, 206, 208, 205, 210	4,900	0.375	DIRECT	2	1725	460	3	45"x45"	22"x22"	SEE NOTE 1,4
EF-07	GREENHECK	G-160-VG	RMS 207, 209, 211, 212, 214, 216, 218, 220	3,900	0.375	DIRECT	2	1725	460	3	45"x45"	22"x22"	SEE NOTE 1,4
EF-08	GREENHECK	G-130-VG	BATHROOMS- CENTER CORRIDOR 1ST AND 2ND FLOOR	1,600	0.125	DIRECT	1/2	1550	230	1	28.5"x28.5"	19"x19"	SEE NOTE 1,4
EF-09	GREENHECK	G-160-VG	RMS 130, 131, 131A, 132, 133, 135	3,300	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-10	GREENHECK	G-160-VG	RMS 134, 136, 137, 139	3,500	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-11	GREENHECK	G-160-VG	RMS 234, 236, 238, 237, 239	3,600	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-12	GREENHECK	G-160-VG	RMS 231A, 231B, 232, 233, 235	3,300	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-13	GREENHECK	G-160-VG	RMS 123, 124, 125	3,750	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-13A	GREENHECK	G-160-VG	RMS 221, 222, 223, 224, 225, 226	3,750	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-14	GREENHECK	G-160-VG	RMS 150, 152, 154, 156, 158	4,900	0.375	DIRECT	2	1725	460	3	45"x45"	22"x22"	SEE NOTE 1,4
EF-15	GREENHECK	G-130-VG	WOODWORKING ROOM 157	2,200	0.25	DIRECT	1/2	1550	230	1	34"x34"	19"x19"	SEE NOTE 1,4
EF-16	GREENHECK	G-099-VG	FUME HOOD - ROOM 256	900	0.25	DIRECT	1/4	1725	230	1	25"x25"	19"x19"	SEE NOTE 1,5
EF-17	GREENHECK	G-300-C-VGD	METAL WORKING EXHAUST HOOD - ROOM 155	12,000	0.25	DIRECT	5	860	460	3	57"x57"	40"x40"	SEE NOTE 2,4
EF-18	GREENHECK	G-130-VG	AUTOSHOP - ROOM 153	2,200	0.25	DIRECT	1/2	1550	230	1	34"x34"	19"x19"	SEE NOTE 1,4
EF-20	GREENHECK	G-200-VG	GRAPHIC ARTS - ROOM 151	6,600	0.25	DIRECT	3	1360	460	3	34"x34"	30"x30"	SEE NOTE 1,4
EF-21	GREENHECK	G-130-VG	BATHROOMS- CAFETERIA 1ST AND 2ND FLOOR	1,800	0.25	DIRECT	1/2	1550	230	1	34"x34"	19"x19"	SEE NOTE 1,4
EF-22	GREENHECK	G-160-VG	RMS - 242, FACULTY, ATH. DIR., 142	3,000	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-23	GREENHECK	G-160-VG	RMS - 256, 254, 250	5,300	0.25	DIRECT	2	1725	460	3	45"x45"	22"x22"	SEE NOTE 1,4
EF-24	GREENHECK	G-099-VG	BATHROOMS - KITCHEN HELP	800	0.25	DIRECT	1/4	1725	230	1	28.5"x28.5"	19"x19"	SEE NOTE 1,4
EF-25	CAPTIVEAIRE	DU240HFA	KITCHEN EXHAUST RANGE HOOD	5,500	1.5	DIRECT	5	990	460	3	38.5"x38.5"	31.5"x31.5"	SEE NOTE 3,5
EF-26	GREENHECK	G-130-VG	KITCHEN STORAGE	1,810	0.125	DIRECT	1/2	1550	230	1	28.5"x28.5"	19"x19"	SEE NOTE 1,4
EF-27	GREENHECK	G-130-VG	FACULTY DINING	1,140	0.25	DIRECT	1/2	1550	230	1	28.5"x28.5"	19"x19"	SEE NOTE 1,4
EF-29	GREENHECK	G-130-VG	MAIN ENTRANCE LOBBY	2,150	0.125	DIRECT	1/2	1550	230	1	34"x34"	19"x19"	SEE NOTE 1,4
EF-30	GREENHECK	G-300-C-VGD	SWIMMING POOL	12,000	0.125	DIRECT	5	860	460	3	58"x58"	40"x40"	SEE NOTE 2,4
EF-31	GREENHECK	G-160-VG	SWIMMING POOL SPECTATOR SEATING	4,000	0.125	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-32	GREENHECK	G-160-VG	SWIMMING POOL SPECTATOR SEATING	4,000	0.125	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-33	GREENHECK	G-160-VG	GYMNASIUM	4,000	0.25	DIRECT	2	1725	460	3	42"x42"	22"x22"	SEE NOTE 1,4
EF-34	GREENHECK	G-160-VG	GYMNASIUM	3,050	0.25	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-35	GREENHECK	G-090-VG	VISITING TEAM BATHROOM AND SHOWERS	600	0.2	DIRECT	1/10	1725	230	1	25"x25"	17"x17"	SEE NOTE 1,4
EF-36	GREENHECK	G-090-VG	MUSIC BATHROOMS, DRESSING ROOMS, STORAGE	600	0.25	DIRECT	1/10	1725	230	1	25"x25"	17"x17"	SEE NOTE 1,4
EF-37	GREENHECK	G-160-VG	MUSIC ROOM	3,050	0.375	DIRECT	2	1725	460	3	40.5"x40.5"	22"x22"	SEE NOTE 1,4
EF-38	GREENHECK	G-090-VG	MUD ROOM	650	0.125	DIRECT	1/10	1725	230	1	25"x25"	17"x17"	SEE NOTE 1,4
EF-39	GREENHECK	G-160-VG	BOYS LOCKER ROOM	3,000	0.375	DIRECT	2	1725	460	3	45"x45"	22"x22"	SEE NOTE 1,4
EF-40	GREENHECK	G-130-VG	GIRLS LOCKER ROOM	2,050	0.375	DIRECT	1/2	1550	230	1	34"x34"	19"x19"	SEE NOTE 1,4
EF-41	GREENHECK	G-240-B-VGD	STAGE/AUDITORIUM	8,000	0.125	DIRECT	5	1140	460	3	52"x72"	34"x34"	SEE NOTE 2,4
EF-42	GREENHECK	G-130-VG	POOL CORRIDOR/STORAGE ROOMS	2,150	0.125	DIRECT	1/2	1550	230	1	34"x34"	19"x19"	SEE NOTE 1,4
EF-43	GREENHECK	G-090-VG	FAN ROOM 2	475	0.25	DIRECT	1/10	1725	115	1	22.5"x22.5"	17"x17"	SEE NOTE 1,4

- NOTES:
1. PROVIDE VARI-GREEN EC MOTOR, 0-10VDC INPUT AND DIAL CONTROLS, FACTORY-SUPPLIED NEMA-1 DISCONNECT SWITCH, GALVANIZED BIRDSCREEN WITH 84% FREE AREA
 2. PROVIDE NEMA PREMIUM EFFICIENT MOTOR, MOTOR VFD RATED, VARI-GREEN DRIVE 100+ 0-10 VDC INPUT SIGNAL, FACTORY SUPPLIED NEMA-1 DISCONNECT SWITCH, GALVANIZED BIRDSCREEN WITH 84% FREE AREA.
 3. PROVIDE PREMIUM EFFICIENT MOTOR, GREASE BOX, SHIPPED LOOSE HINGE KIT, VAV PACKAGE W/ PRESET OR REFERENCE SPEEDS, LOAD REACTOR MOUNTED IN FAN, FAN BASE CERAMIC SEAL.
 4. CONTROL FAN WITH EXISTING BUILDING SYSTEM TO PROVIDE 24/7 SCHEDULING. COORDINATE WITH SNE BUILDING SYSTEMS TO PROVIDE THE PROPER EQUIPMENT, PROGRAMMING AND WIRING TO PROVIDE A FUNCTIONING SYSTEM. PROVIDE MONITORING OF EQUIPMENT STATUS TO THE BUILDING SYSTEM.
 5. CONTROL FAN WITH EXISTING CONTROLS. PROVIDE MONITORING OF EQUIPMENT STATUS TO THE BUILDING SYSTEM. COORDINATE WITH SNE BUILDING SYSTEMS.

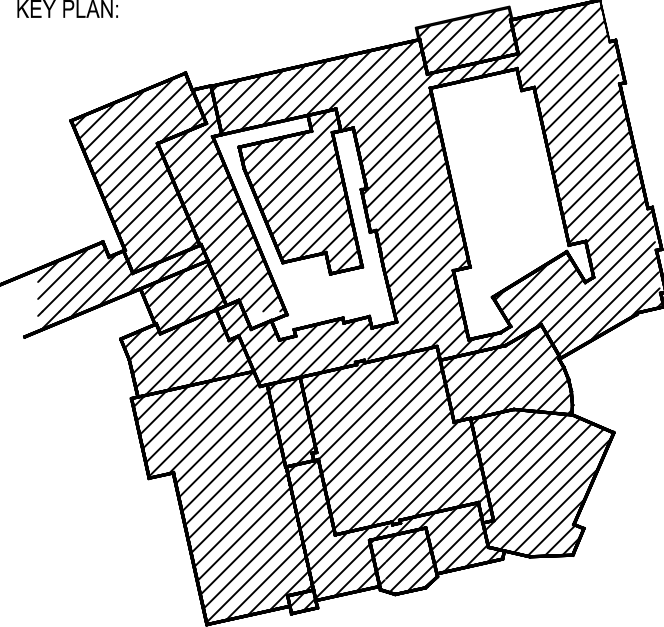


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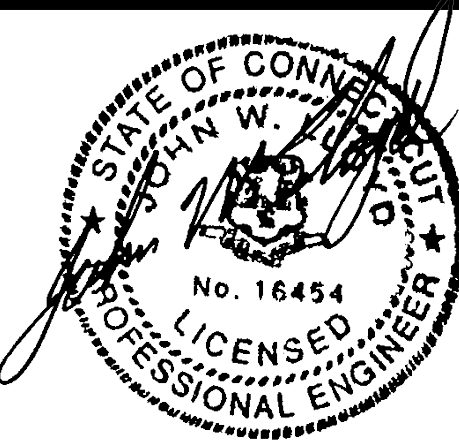
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422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
MECHANICAL SCHEDULES

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W:\2022\32580C-X-WATERBURY KENNEDY HIGH SCHOOL EXHAUST FAN REPLACEMENT\DRAWINGS\PLOT FILES\PDf'S

ELECTRICAL ABBREVIATIONS LIST			
1P	1 POLE (2P, 3P, 4P, ETC.)	MCB	MAIN CIRCUIT BREAKER
A	AMPERE	MCC	MOTOR CONTROL CENTER
AC	ABOVE COUNTER	MDC	MAIN DISTRIBUTION CENTER
ACLG	ABOVE CEILING	MDP	MAIN DISTRIBUTION PANEL
ADO	AUTOMATIC DOOR OPENER	MFR	MANUFACTURER
AF	AMP FRAME	MFS	MAIN FUSED DISCONNECT SW
AFF	ABOVE FINISHED FLOOR	MH	MANHOLE
AFG	ABOVE FINISHED GRADE	MIC	MICROPHONE
AFI	ARC FAULT CIRCUIT	MIN	MINIMUM
	INTERRUPTER	MISC	MISCELLANEOUS
AHU	AIR HANDLING UNIT	MLO	MAIN LUGS ONLY
AL	ALUMINUM	MMS	MANUAL MOTOR STARTER
ALT	ALTERNATE	MOA	MULTIOUTLET ASSEMBLY
AMP	AMPERE	MSP	MOTOR STARTER PANELBOARD
AMPL	AMPLIFIER	MSBD	MAIN SWITCHBOARD
ANUNJ	ANNUNCIATOR	MT	MOUNT
APPROX	APPROXIMATELY	MT C	EMPTY CONDUIT
AQ-STAT	AQUASTAT	MTS	MANUAL TRANSFER SWITCH
ARCH	ARCHITECT, ARCHITECTURAL	MTR	MOTOR, MOTORIZED
AS	AMP SWITCH	N.C.	NORMALLY CLOSED
AT	AMP TRIP	NEC	NATIONAL ELECTRICAL CODE
ATS	AUTOMATIC TRANSFER SWITCH	NEMA	NATIONAL ELECTRICAL
AUTO	AUTOMATIC		MANUFACTURER'S ASSOCIATION
AUX	AUXILIARY	NFDS	NON-FUSED SAFETY DISCONNECT
AV	AUDIO VISUAL		SWITCH
AWG	AMERICAN WIRE GAUGE	NIC	NOT IN CONTRACT
BATT	BATTERY	NL	NIGHT LIGHT
BD	BOARD	N.O.	NORMALLY OPEN
BLDG	BUILDING	NPF	NORMAL POWER FACTOR
BMS	BUILDING MANAGEMENT SYSTEM	NTS	NOT TO SCALE
C	CONDUIT	OH	OVERHEAD
CAB	CABINET	OL	OVERLOADS
CAT	CATALOG	PA	PUBLIC ADDRESS
CATV	CABLE TELEVISION	PB	PULL BOX OR PUSHBUTTON
CB	CIRCUIT BREAKER	PE	PNEUMATIC ELECTRIC
CCTV	CLOSED CIRCUIT TELEVISION	PED	PEDESTAL
CKT	CIRCUIT	PF	POWER FACTOR
CLG	CEILING	PH	PHASE
COMB	COMBINATION	PV	POST INDICATING VALVE
CMPR	COMPRESSOR	PNL	PANEL
CONN	CONNECTION	PP	POWER POLE
CONST	CONSTRUCTION	PR	PAIR
CONT	CONTINUATION OR CONTINUOUS	PRI	PRIMARY
CONTR	CONTRACTOR	PROJ	PROJECTION
CONV	CONVECTOR	PRV	POWER ROOF VENTILATOR
CP	CIRCULATING PUMP	PT	POTENTIAL TRANSFORMER
CRT	CATHODE-RAY TUBE	PVC	POLYVINYL CHLORIDE (CONDUIT)
CT	CURRENT TRANSFORMER	PWR	POWER
CTR	CENTER	QUAN	QUANTITY
CU	COPPER	RCPT	RECEPTACLE
DCP	DOMESTIC WATER CIRCULATING PUMP	REQD	REQUIRED
DEPT	DEPARTMENT	RM	ROOM
DET	DETAIL	RSC	RIGID STEEL CONDUIT
DIA	DIAMETER	RTU	ROOF TOP UNIT
DISC	DISCONNECT	SC	SURFACE CONDUIT
DIST	DISTRIBUTION	SEC	SECONDARY
DN	DOWN	SHT	SHEET
DPR	DAMPER	SIM	SIMILAR
DS	SAFETY DISCONNECT SWITCH	S/N	SOLID NEUTRAL
DT	DOUBLE THROW	SPEC	SPECIFICATION
DWG	DRAWING	SPKR	SPEAKER
EC	ELECTRICAL CONTRACTOR	SP	SPARE
ELEC	ELECTRIC, ELECTRICAL	SR	SURFACE RACEWAY
ELEV	ELEVATOR	SS	STAINLESS STEEL
ELU	EMERGENCY LIGHTING UNIT	SSW	SELECTOR SWITCH
EM	EMERGENCY	S/S	STOP/START PUSHBUTTONS
EMS	ENERGY MANAGEMENT SYSTEM	STA	STATION
EMT	ELECTRICAL METALLIC TUBING	STD	STANDARD
EP	ELECTRIC PNEUMATIC	SURF	SURFACE MOUNTED
EQUIP	EQUIPMENT	SW	SWITCH
EWC	ELECTRIC WATER COOLER	SWBD	SWITCHBOARD
EXIST	EXISTING	SYM	SYMMETRICAL
EXH	EXHAUST	SYM	SYSTEM
EXP	EXPLOSION PROOF	TEL	TELEPHONE
FA	FIRE ALARM	TEL/DATA	TELEPHONE/DATA
FABP	FIRE ALARM BOOSTER POWER	TERM	TERMINAL
	SUPPLY PANEL	TL	TWIST LOCK
FACP	FIRE ALARM CONTROL PANEL	TR	TAMPER RESISTANT
FCU	FAN COIL UNIT	T-STAT	THERMOSTAT
FIXT	FIXTURE	TTC	TELEPHONE TERMINAL CABINET
FLR	FLOOR	TV	TELEVISION
FLUOR	FLUORESCENT	TVTC	TELEVISION TERMINAL CABINET
FU	FUSE	TYP	TYPICAL
FUDS	FUSED SAFETY DISCONNECT SWITCH	UC	UNDER COUNTER
GA	GAUGE	UE	UNDERGROUND ELECTRICAL
GAL	GALLON	UG	UNDERGROUND
GALV	GALVANIZED	UH	UNIT HEATER
GC	GENERAL CONTRACTOR	UT	UNDERGROUND TELEPHONE
GEN	GENERATOR	UTIL	UTILITY
GFI	GROUND FAULT CIRCUIT INTERRUPTER	UV	ULTRAVIOLET
GFP	GROUND FAULT PROTECTOR	V	VOLT
GND	GROUND	VA	VOLT-AMPERES
GRS	GALVANIZED RIGID STEEL (CONDUIT)	VDT	VIDEO DISPLAY TERMINAL
GYP BD	GYP SUM BOARD	VERT	VERTICAL
HOA	HANDS-OFF-AUTOMATIC SWITCH	VFD	VARIABLE FREQUENCY DRIVE
HORIZ	HORIZONTAL	VOL	VOLUME
HP	HORSEPOWER	W	WATT
HPF	HIGH POWER FACTOR	W/	WITH
HT	HEIGHT	WG	WIRE GUARD
HTG	HEATING	WH	WATER HEATER
HTR	HEATER	W/O	WITHOUT
HV	HIGH VOLTAGE	WP	WEATHERPROOF
HVAC	HEATING, VENTILATING AND AIR	XFMR	TRANSFORMER
	CONDITIONING	XFR	TRANSFER
IC	INTERRUPTING CAPACITY		
IG	ISOLATED GROUND	∠	ANGLE
IMC	INTERMEDIATE METAL CONDUIT	@	AT
INCAND	INCANDESCENT	▲	DELTA
IR	INFRARED	'	FEET
I/W	INTERLOCK WITH	"	INCHES
J-BOX	JUNCTION BOX	#	NUMBER
KV	KILOVOLT	Ø	PHASE
KVA	KILOVOLT-AMPERE	C	CENTER LINE
KVAR	KILOVOLT-AMPERE REACTIVE	P	PLATE
KW	KILOWATT		
KWH	KILOWATT HOUR		
LOC	LOCATE OR LOCATION		
LT	LIGHT		
LTG	LIGHTING		
LTNG	LIGHTNING		
LV	LOW VOLTAGE		
MAX	MAXIMUM		
MAG.S	MAGNETIC STARTER		
MIC	MOMENTARY CONTACT		
MC	MECHANICAL CONTRACTOR		

ELECTRICAL SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	SINGLE RECEPT.
	DUPLEX RECEPT.
	(DESIGNATES SPECIFIC MOUNTING HEIGHT) DUPLEX RECEPT.
	GFI DUPLEX RECEPT. (FEED THROUGH)
	GFI WEATHERPROOF RECEPT.
	SPLIT DUPLEX RECEPT.
	DUPLEX ISOLATED GROUND RECEPT.
	DUPLEX RECEPT. ON EMERG. CIRCUIT
	FLOOR DUPLEX RECEPT.
	CEILING DUPLEX RECEPT.
	FOURPLEX RECEPT.
	FOURPLEX RECEPT. ON EMERG. CIRCUIT
	240V RECEPTACLE
	RECEPT. ON CORD REEL
	SPECIAL RECEPT.
	JUNCTION BOX
	FLOOR JUNCTION BOX
	CEILING JUNCTION BOX
	COMB. MOTOR STARTER (FUSED)
	SAFETY DISC. SW. (NON-FUSED)
	SAFETY DISC. SW. (FUSED)
	RELAY
	PUSH BUTTON
	MOTOR XX-1 ← IDENTITY (SEE SCHEDULE)
	EXISTING TO REMAIN XX-1
	RELOCATED XX-1
	DEMOLISHED XX-1
	T1 TRANSFORMER
	BUS DUCT W/ PLUG IN DISCONNECT CABLE TAP BOX

ELECTRICAL SYMBOL NOTES	
	SPECIAL CONNECTIONS. THE EQUIPMENT IS INDICATED BY A NUMBER IN A CIRCLE. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE LOAD DESCRIPTION AND TYPE OF CONNECTION. THE CIRCUIT DESIGNATION IS INDICATED BY NUMBER(S) ADJACENT TO THE SYMBOL. EXAMPLE: EQUIPMENT NO. ELEC-1; 1 PHASE CONNECTION TO CIRCUITS 2, 4.
	PANELBOARDS. PANELBOARD DOORS MAY BE SHOWN TO INDICATE OPENING SIDE OF RECESSED PANELBOARDS. SEE PANELBOARD IDENTIFICATION FOR DESIGNATION CODES.
	FLOOR CLEARANCE AREA
	MOTOR CONNECTIONS. THE MOTOR IS INDICATED BY A NUMBER WITHIN OR CHARACTERS ADJACENT TO THE MOTOR SYMBOL. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE MOTOR DESCRIPTION AND ELECTRICAL REQUIREMENTS.
	TRANSFORMERS. THE TRANSFORMER TYPE IS INDICATED BY A NUMBER FOLLOWING THE UPPER CASE LETTER "T". SEE THE TRANSFORMER SCHEDULE OR THE SINGLE LINE DIAGRAM FOR THE TRANSFORMER DESCRIPTION AND REQUIREMENTS. EXAMPLE: TRANSFORMER TYPE "T1".
	CONDUIT IN CEILING, FLOOR OR WALL AS REQUIRED BY FIELD CONDITIONS
	CONDUIT IN FLOOR
	CONDUIT SHOWN WITHOUT SLASH MARKS SHALL CONTAIN 1 # 12 CONDUCTOR PER PHASE, NEUTRAL, AND GROUND IN 1/2" CONDUIT UNLESS SPECIFIC EQUIPMENT REQUIRES A DIFFERENT SIZE.
	CONDUIT SHOWN SHALL CONTAIN 1 # 10 CONDUCTOR PER PHASE IN ELECTRICAL CODE SIZED MINIMUM CONDUIT UNLESS A CONDUCTOR AND CONDUIT SIZE IS SHOWN ADJACENT.
	HOME RUN TO BRANCH CIRCUIT PANELBOARD. THE PANELBOARD DESIGNATION IS SHOWN ADJACENT TO THE HOME RUN ARROW AS A NUMERATOR AND THE CIRCUIT DESIGNATION IS SHOWN AS THE DENOMINATOR. CIRCUIT BREAKER SIZES (AMPS/NUMBER OF POLES) ARE SHOWN IN THE PANELBOARD SCHEDULE WITH THE CORRESPONDING PANELBOARD AND CIRCUIT DESIGNATION. EXAMPLE: HOME RUN TO PANELBOARD P4N-102; CIRCUITS 1, 3, 5.
	GRAPHICAL REPRESENTATION OF PHASING, TYPICAL FOR ALL SYMBOLS.
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW
	REVISION NUMBER - SHOWN ON PLANS
	NUMBER OF DETAIL ON SHEET
	NUMBER OF SHEET WHERE DETAIL APPEARS
	KEYED NOTE (SEE SCHEDULE)
	ROOM NAME AND NUMBER
<div><div>1.</div><div>ACCESS TO AND CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL CONFORM TO N.E.C. ARTICLES 110 AND 408. 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.</div></div> <div><div>2.</div><div>THIS DRAWING SHOWS EQUIPMENT LOCATIONS ONLY. WIRING SHOWN IS SCHEMATIC IN NATURE. REFER TO RISERS AND DETAILS FOR ALL REQUIRED POWER AND CONTROL WIRING. COORDINATE CONDUIT ROUTE IN FIELD WITH OTHER TRADES, EQUIPMENT AND OWNER. VERIFY ALL MOUNTING HEIGHTS WITH OWNER AND ENGINEER PRIOR TO INSTALLATION.</div></div> <div><div>3.</div><div>UNLESS NOTED OTHERWISE, ALL WIRING OF CIRCUIT SHALL MATCH HOMERUN WIRING OF CIRCUIT. PROVIDE ADDITIONAL CONDUCTORS AS REQUIRED TO ACCOMPLISH INDICATED WIRING ARRANGEMENT. THIS INCLUDES WIRING AND CONNECTION TO EQUIPMENT PROVIDED BY OTHERS.</div></div> <div><div>4.</div><div>WIRING OF DIFFERENT VOLTAGES OR TYPES SUCH AS EMERGENCY OR NORMAL SHALL NOT BE COMBINED IN CONDUITS OR JUNCTIONS BOXES UNLESS OTHERWISE NOTED.</div></div> <div><div>5.</div><div>RECONNECT ALL EXISTING MAINTAINED EQUIPMENT TO NEW PANELBOARDS AND EQUIPMENT. PROVIDE NEW WIRING, RACEWAY AND DEVICES AS REQUIRED TO RECONNECT EXISTING EQUIPMENT TO NEW POWER SOURCES. PATCH FILL AND WEATHERSTOP ALL OPENINGS WITH LIKE MATERIALS, I.E. MASONRY WITH MASONRY.</div></div>	

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CLIENT:
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235 GRAND STREET
WATERBURY, CT 06702

THIS SQUARE APPEARS 1/2"x1/2"
ON FULL SIZE SHEETS

SCALE: 3/32" = 1'-0"

NO	DATE	RELEASE
	6/29/2022	ISSUED FOR CONSTRUCTION

STAMP:

PROJECT NAME:
**KENNEDY HIGH
SCHOOL EXHAUST FAN
REPLACEMENT**

422 HIGHLAND AVENUE
WATERBURY, CT 06708

DRAWING TITLE:
**ELECTRICAL NOTES,
SYMBOLS AND
ABBREVIATIONS**

FILE: 2022/32580C-2
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E-001

W:\0223\2580C-X WATERBURY KENNEDY HIGH SCHOOL EXHAUST FAN REPLACEMENT\DRAWINGS\PLOT FILES\PDF'S

ELECTRICAL SPECIFICATION

1.1 GENERAL REQUIREMENTS

- A. DRAWINGS AND OWNER REQUIREMENTS, INCLUDING ANY GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATIONS APPLY TO THE WORK IN THIS SECTION.

1.2 DESCRIPTION OF WORK

- A. THE WORK REFERRED TO UNDER THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND TRANSPORTATION FOR THE SATISFACTORY INSTALLATION AND COMPLETION OF ALL WORK REFERRED TO HEREIN, OR THAT MAY BE SHOWN ON THE DRAWINGS AND NOT SPECIFICALLY MENTIONED IN THIS SECTION, OR BOTH.
- B. THE FOLLOWING ARE PART, BUT NOT NECESSARILY ALL INCLUSIVE OF THE ITEMS IN THIS SECTION OF THE CONTRACT.
1. SELECTED DEMOLITION.
 2. POWER PANELS AND CIRCUIT BREAKERS.
 3. CONDUIT AND WIRING.

CONTRACTOR SHALL REVIEW THE PLANS AND SPECIFICATIONS OF OTHER TRADES TO DETERMINE COMPLETE SCOPE OF WORK. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING AND SHALL BE RESPONSIBLE FOR EXISTING CONDITIONS.

1.3 RELATED WORK SPECIFIED ELSEWHERE - N/A

1.4 SEISMIC RESTRAINT SYSTEMS - N/A

1.5 CODES, STANDARDS, AND ORDINANCES

- A. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF ALL CODES AND REGULATIONS GOVERNING SUCH WORK, AS REQUIRED BY 2018 STATE OF CONNECTICUT BUILDING CODE AND LOCAL ORDINANCES.
1. WHERE THE PROVISIONS OF THE CONTRACT DOCUMENTS CONFLICT WITH ANY CODES, RULES, OR REGULATIONS, THE LATTER SHALL GOVERN.
 2. WHERE THE CONTRACT DOCUMENTS ARE IN EXCESS OF APPLICABLE CODES, RULES, OR REGULATIONS, THE CONTRACT DOCUMENTS SHALL GOVERN.
- B. ALL MATERIAL SPECIFIED BY REFERENCE TO THE PUBLISHED SPECIFICATIONS OF A MANUFACTURER AND ALL SPECIFIED MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH:
1. UNDERWRITERS LABORATORY (UL).
 2. OWNER'S INSURANCE UNDERWRITER.

- C. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND PAY ALL FEES AND CHARGES INCIDENTAL WITH HIS WORK.

1.6 SUBMITTALS

- A. SUBMIT SHOP DRAWINGS AND MANUFACTURER'S DETAIL DRAWINGS AND LITERATURE FOR ALL MATERIALS AND EQUIPMENT SCHEDULED ON PLANS OR SPECIFIED IN PART 2 OF THE SPECIFICATION.
- B. NO FABRICATION, ORDERING, DELIVERY TO THE SITE, OR OTHER ACTION SHALL BE TAKEN WITH RESPECT TO THESE ITEMS REQUIRING SUBMITTALS, PRIOR TO THE SUBMITTAL APPROVED BY THE ARCHITECT AND ENGINEER.
- C. SUBSTITUTION: USE ONLY MATERIALS AND EQUIPMENT LISTED IN THE SPECIFICATIONS OR ON THE PLANS, WHERE THE TERM "OR ACCEPTABLE EQUIVALENT IS USED". SUBSTITUTIONS ARE SUBJECT TO APPROVAL BY THE ENGINEER OR OWNER.

1.7 CLOSEOUT SUBMITTALS

- A. OPERATION AND MAINTENANCE DATA: FOR ALL SCHEDULED EQUIPMENT AND SYSTEMS AND SPECIALTIES TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.
- B. PROVIDE ONE HARD COPY SET AND ONE ELECTRONIC SET IN AUTOCAD AND PDF OF AS-BUILT ELECTRICAL AS- BUILT DRAWINGS, INCLUDING ALL FIELD CHANGES.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. FURNISH ONE COMPLETE EXTRA SET OF EACH TYPE OF LAMP, EXIT SIGN, AND FIRE ALARM DEVICE INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE AND IDENTIFIED WITH LABELS DESCRIBING CONTENTS.

1.9 WARRANTY

- A. PROVIDE WARRANTY PER CONTRACT WITH OWNER.

1.10 LAYOUT OF THE WORK AND COORDINATION

- A. ALL WORK SHOWN ON THE DRAWINGS IS DIAGRAMMATIC ONLY AND INDICATES THE MINIMUM REQUIREMENTS OF THIS WORK. FIELD CONDITIONS AND THE WORK OF OTHER TRADES SHALL DETERMINE THE ACTUAL ARRANGEMENTS OF RUNS AND OFFSETS.
- B. CONTRACTOR SHALL LAYOUT AND COORDINATE ALL WORK WITH OTHER TRADES AND THE OWNER PRIOR TO INSTALLATION.
- C. CONTRACTOR SHALL INSTALL AND EQUIPMENT WITH ACCESS FOR MAINTENANCE AS REQUIRED BY CODE AND THE MANUFACTURER'S WRITTEN INSTRUCTIONS. ALL EQUIPMENT, SYSTEMS, CONTROLS, STRAINER, TRAPS, AND WITH DEVICES REQUIRING MAINTENANCE AND ACCESS SHALL BE READILY ACCESSIBLE WITH REMOVAL OF OTHER EQUIPMENT, PIPING, OR WIRING.
- D. PROVIDE OWNER 7 WORKING DAYS' NOTICE OF INTERRUPTION OF UTILITIES.

1.11 PLANS AND SPECIFICATIONS

- A. THE DRAWINGS AND SPECIFICATIONS OF ALL TRADES SHALL BE REVIEWED TO OBTAIN THE FULL SCOPE OF WORK.
- B. THE DRAWINGS ARE DIAGRAMMATIC AND NOT TO SCALE. CONTRACTOR SHALL NOT SCALE DRAWINGS TO DETERMINE DIMENSIONS OF THE MATERIALS.

1.12 SCHEDULE

- A. AS PERTAINING TO HIS SCOPE OF WORK, THE ELECTRICAL CONTRACTOR SHALL COORDINATE AND PROVIDE INPUT AND SUPPORT TO THE GENERAL CONTRACTOR FOR HIS SCHEDULING, AS DEFINED IN THE PARAGRAPHS BELOW.
- B. DEVELOP CRITICAL PATH METHOD (CPM) PLAN AND SCHEDULE DEMONSTRATING FULFILLMENT OF CONTRACT DOCUMENTS AND SHALL KEEP THE PROJECT SCHEDULE UP TO DATE IN ACCORDANCE WITH THE REQUIREMENTS BELOW AND SHALL UTILIZE THE PLAN FOR SCHEDULING, COORDINATING AND MONITORING WORK UNDER THIS CONTRACT AND TO BE PROVIDED BY THE OWNER (INCLUDING ALL ACTIVITIES OF CONTRACTORS, EQUIPMENT VENDORS, SUPPLIERS).
- C. THE CONTRACTOR SHALL PROVIDE MONTHLY COMPUTER-GENERATED TIME SCHEDULES AND REPORTS BASED ON MONTHLY PROJECT UPDATES.
- D. IN ADDITION TO THE SUBMISSION OF THE SCHEDULE, THE CONTRACTOR SHALL SUBMIT A PHASING PLAN IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SHOW ACTIVITIES AND EVENTS AS:
1. ALL PHASING ACTIVITIES WITH START AND END DATES, TOTAL TIME REQUIRED, INTERIM MILESTONES, AND REQUIRED APPROVALS.
 2. CONTRACTOR'S TIME REQUIRED FOR SHOP DRAWINGS, FABRICATION, DELIVERY, AND PRE-CONSTRUCTION WORK.
 3. OWNER, ARCHITECT'S, AND ENGINEER'S REVIEW AND APPROVAL OF SHOP DRAWINGS, SAMPLES, SUBMITTALS, AND SIMILAR ITEMS.
 4. INTERRUPTION OF THE FACILITY UTILITIES.

1.13 QUALITY ASSURANCE

- A. ALL MATERIALS USED UNDER THIS SECTION OF THE SPECIFICATION, EXCEPT THOSE NOTED TO BE RELOCATED, SHALL BE NEW, TESTED, WITHOUT DEFECTS AND DESIGNED AND CONSTRUCTED TO FUNCTION PROPERLY IN THAT PORTION OF THE WORK FOR WHICH THEY ARE INTENDED.
- B. CONTRACTOR SHALL EMPLOY ON COMPETENT AND EXPERIENCED TRADESMEN, EXPERIENCED IN THE INSTALLATION OF ALL MATERIALS AND EQUIPMENT AND SHALL WORK IN A CONJUNCTION WITH OTHER TRADES AND THE OWNER.
- C. CONTRACTOR SHALL PROVIDE FOR THE DELIVERY OF ALL HIS MATERIAL TO THE BUILDING SITE WHEN REQUIRED ON ORDER TO PROGRESS THE PROJECT EFFICIENTLY AND TO AVOID DELAYING HIS WORK AND THAT OF OTHER TRADES.

1.14 PROTECTION OF WORK

- A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PROTECTION OF EQUIPMENT, MATERIALS, AND TOOLS STORED OR INSTALLED ON THE JOB SITE FROM LOSS OR DAMAGE, UNTIL FINAL ACCEPTANCE BY THE OWNER.
- B. CONTRACTOR SHALL BE PROTECTION OF FINISHED WORK FROM DAMAGE OR DEFAACEMENT AND SHALL REMEDY ANY SUCH AT NO ADDITIONAL COST TO THE OWNER.
- C. ALL EQUIPMENT AND PIPING SHALL BE SEALED FROM DEBRIS AND DUST DURING CONSTRUCTION.

1.15 DEMOLITION

- A. MAKE SAFE, DISCONNECT AND REMOVE ALL EXISTING EQUIPMENT, MATERIALS, HANGERS, PIPING, AND CONTROLS ASSOCIATED WITH SYSTEMS AND EQUIPMENT INDICATED ON PLANS TO BE REMOVED.
- B. ALL MATERIALS AND EQUIPMENT NOT DESIGNATED FOR RE-USE OR TO BE TURNED OVER TO OWNER SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED OF BY THE CONTRACTOR.
- C. ALL EQUIPMENT AND MATERIALS TO BE REUSED SHALL BE STORED AND PROTECTED DURING CONSTRUCTION.
- D. ALL MATERIAL TO BE TURNED OVER TO OWNER SHALL BE DELIVERED TO LOCATION ON SITE PER OWNER'S DIRECTION.
- E. PROPERLY DISPOSE OF FLUORESCENT LAMPS, LIGHTING BALLASTS AND OTHER HAZARDOUS MATERIALS.
- F. EXAMINATION: DEMOLITION WORK SHOWN ON DRAWINGS ARE BASED ON LIMITED FIELD OBSERVATION AND EXISTING RECORD DOCUMENTS. REPORT DISCREPANCIES TO A/E BEFORE DISTURBING EXISTING INSTALLATION. DRAWINGS ARE FOR CONTRACTOR'S CONVENIENCE AND ACCURACY OR EXACTNESS IS NOT GUARANTEED.
- G. PREPARATION: PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEM IN SERVICE DURING CONSTRUCTION. WHEN CONTRACTOR ELECTS TO PERFORM WORK ON ENERGIZED EQUIPMENT OR CIRCUITS, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.

2.0 PRODUCTS AND EXECUTION

2.1 VIBRATION ISOLATION AND SEISMIC CONTROL DEVICE INSTALLATION

- A. ADJUST VIBRATION ISOLATORS TO ALLOW FREE MOVEMENT OF EQUIPMENT LIMITED BY RESTRAINTS.
- B. INSTALL RESILIENT BOLT ISOLATION WASHERS AND BUSHINGS ON EQUIPMENT ANCHOR BOLTS.
- C. INSTALL CABLES SO THEY DO NOT BEND ACROSS SHARP EDGES OF ADJACENT EQUIPMENT OR BUILDING STRUCTURE.

2.2 SECONDARY GROUNDING

- A. PROVIDE GROUNDING SYSTEMS, INCLUDING POWER SYSTEM GROUNDING, ELECTRICAL EQUIPMENT AND RACEWAY GROUNDING AND BONDING, STRUCTURAL STEEL GROUNDING, AND MISCELLANEOUS SYSTEM GROUNDING.

B. 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 "B" 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 SWITCHBOARDS, PANELBOARDS, DISCONNECT SWITCHES, RECEPTACLES, CONTROLS, FANS, AIR HANDLING UNITS, PUMPS AND FLEXIBLE DUCT CONNECTIONS.

2.3 SUPPORTING DEVICES

A. INSTALLATION:

1. SECURE EQUIPMENT AND CONDUIT WITH HANGER RODS, CONDUIT CLAMPS, EXPANSION ANCHORS, BEAM CLAMPS OR BOLTS AS REQUIRED.
2. 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.
3. 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.

2.4 ELECTRICAL IDENTIFICATION

- A. PROVIDE ENGRAVED THREE-LAYER LAMINATED PLASTIC NAMEPLATES WITH WHITE LETTERS ON A BLACK BACKGROUND FOR ALL EQUIPMENT ENCLOSURES, INCLUDING PANELBOARDS, SWITCHBOARDS, AUTOMATIC TRANSFER SWITCHES, DISCONNECT SWITCHES AND CIRCUIT BREAKERS.
- B. PERMANENTLY LABEL ALL RECEPTACLES, LIGHTING CONTROLS MOTORS, POWER DISCONNECTS, AND REMOTE LOADS WITH THE PANEL AND CIRCUIT NUMBER SERVING THE DEVICE.
- C. 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. IN MANHOLES PROVIDE STAINLESS STEEL TAGS WITH PLASTIC TIES.

2.5 ELECTRICAL TESTING

A. PREPARATION:

1. PERFORM TESTS BY AND UNDER THE SUPERVISION OF FULLY EXPERIENCED AND QUALIFIED PERSONNEL. ADVISE EACH RESPECTIVE MANUFACTURER'S REPRESENTATIVE OF TESTS ON THEIR EQUIPMENT.
2. FURNISH PROPOSED TEST PROCEDURES, RECORDING FORMS, LIST OF PERSONNEL, AND TEST EQUIPMENT FOR A/E REVIEW.
3. FOLLOW RECOMMENDED PROCEDURES FOR TESTING AS PUBLISHED BY EQUIPMENT MANUFACTURER.
4. SUBMIT TEST REPORTS TO OWNER AND ARCHITECT/ENGINEER.

B. WIRE AND CABLE:

1. TEST INSULATION RESISTANCE OF EACH MAIN FEEDER AND SERVICE AFTER THE INSTALLATION IS COMPLETE BUT BEFORE THE CONNECTION IS MADE TO ITS SOURCE AND POINT OF TERMINATION.
2. TEST INSULATION RESISTANCE USING BIDOLE MEGGER OR EQUIVALENT TEST INSTRUMENT AT A VOLTAGE NOT LESS THAN 1,000 VOLTS DC. MEASURE RESISTANCE FROM PHASE-TO-PHASE AND PHASE-TO-GROUND.
3. ENSURE THAT GROUNDING CONDUCTOR IS ELECTRICALLY CONTINUOUS.
4. TEST BRANCH CIRCUITS FOR GROUNDS, SHORTS OR INCORRECT WIRING.
5. MEASURE GROUND RESISTANCE FROM SYSTEM NEUTRAL CONNECTION AT SERVICE ENTRANCE TO CONVENIENT GROUND REFERENCE POINT USING SUITABLE GROUND TESTING EQUIPMENT.

C. CIRCUIT BREAKERS

1. VERIFY FINAL TRIP SETTINGS FOR ADJUSTABLE CIRCUIT BREAKER ELEMENTS. INSTANTANEOUS MAGNETIC SETTINGS SHALL BE MINIMUM, UNLESS OTHERWISE NOTED.
2. PER "NETA" PROCEDURES, TEST ALL CIRCUIT BREAKERS WITH TRIP RATINGS OF 100A OR GREATER.

D. ELECTRICAL SWITCHGEAR, SWITCHBOARDS, PANELBOARDS

1. BEFORE ENERGIZATION:

- A) VISUALLY INSPECT CONNECTIONS FOR TIGHTNESS AND CORRECTNESS.
- B) VERIFY PROPER FUSING.

2. AFTER ENERGIZATION:

- A) VERIFY PROPER VOLTAGE WITH SYSTEM OPERATING AT LOAD CONDITIONS.
- B) VERIFY PROPER OPERATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- C) OPERATE EVERY CIRCUIT BREAKER, SWITCH AND CONTACTOR.
- D) MEASURE LINE AMPERES WITH SYSTEM OPERATING AT LOAD CONDITIONS.
- E) MODIFY O/C BREAKER AND RELAY SETTINGS AS REQUIRED TO COORDINATE ELECTRICAL SYSTEM.

2.6 WORK IN EXISTING BUILDING

A. PREPARATION

1. VISIT AND INSPECT THE JOB SITE PRIOR TO BIDDING AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS. INCLUDE THE COST OF THE WORK REQUIRED TO ACCOMMODATE THE EXISTING CONDITIONS IN THE BID PROPOSAL.
2. PROVIDE A TYPED INVENTORY (INCLUDE PICTURES AS NECESSARY) OF ALL EQUIPMENT AND FACILITIES WHICH ARE DAMAGED OR NOT OPERATING PROPERLY AT THE TIME CONSTRUCTION COMMENCES. ANY DAMAGE OR INOPERATIVE EQUIPMENT WHICH IS DISCOVERED DURING THE COURSE OF CONSTRUCTION AND IS NOT ITEMIZED ON THE WRITTEN INVENTORY WILL BE ASSUMED TO HAVE BEEN CAUSED BY THE CONTRACTOR, AND THE CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT AT NO ADDITIONAL COST.

B. EXISTING PANELBOARDS

1. EXISTING PANELBOARDS TO BE REUSED:
- A) CLEAN INTERIORS AND EXTERIORS.
 - B) INSPECT FOR DAMAGE. NOTIFY A/E IF REPAIRS OR DAMAGED COMPONENTS NEED REPLACING.
 - C) TIGHTEN CONDUIT AND WIRE TERMINATIONS.
2. VERIFY PANELBOARDS AND PANELBOARD FEEDERS ARE OF ADEQUATE CAPACITY FOR LOADS TO BE SERVED.
- A) ACTIVATE LOADS CONNECTED TO PANELBOARDS TO ACHIEVE FULL LOAD CONDITION.
 - B) MEASURE AND RECORD AMPERAGE, READINGS OF PHASE AND NEUTRAL CONDUCTORS OF PANELBOARD'S FEEDERS.
 - C) PROVIDE TYPEWRITTEN RECORD OF RECORDED MEASUREMENTS TO THE A/E FOR REVIEW.
3. PROVIDE NEW TYPEWRITTEN CIRCUIT DIRECTORY.
4. PROVIDE NEW NAMEPLATE FOR EACH PANELBOARD.
5. MOLDED CASE CIRCUIT BREAKERS: BOLT-ON TYPE THERMAL MAGNETIC TRIP CIRCUIT BREAKER, WITH COMMON TRIP HANDLE FOR ALL POLES. PROVIDE CIRCUIT BREAKERS "UL" LISTED AS TYPE SWD FOR LIGHTING CIRCUITS. PROVIDE "UL" CLASS "A" GROUND FAULT INTERRUPTER CIRCUIT BREAKER WHERE SCHEDULED.

C. SHUTDOWNS OF ELECTRICAL SERVICES

1. ESTABLISH A SCHEDULE OF SHUTDOWNS(S) COMPLETE WITH STARTING TIME AND DURATION.
2. PRESENT SCHEDULE TO OWNER FOR APPROVAL.
3. REVISE SCHEDULE AS NECESSARY TO COORDINATE WITH OWNER.
4. BEYOND ANY SCHEDULED SHUTDOWNS, MAINTAIN CONTINUITY OF ELECTRICAL SERVICE TO ALL EXISTING FACILITIES.
5. COORDINATE UTILITY SERVICE OUTAGES WITH UTILITY COMPANY.

2.7 WIRE AND CABLE

A. BUILDING WIRE

1. FEEDERS AND BRANCH CIRCUITS LARGER THAN NO. 6 AWG: COPPER, STRANDED CONDUCTOR, 600 VOLT INSULATION, THHN/THWN OR XHHW, IN ACCORDANCE WITH NEMA WGS AND NEMA WC3.
2. FEEDERS AND BRANCH CIRCUITS NO. 6 AWG AND SMALLER: COPPER CONDUCTOR, 600 VOLT INSULATION, THHN/THWN OR XHHW, SMALLER THAN NO. 8 AWG, SOLID CONDUCTOR IN ACCORDANCE WITH NEMA WGS.
3. CONTROL CIRCUITS: COPPER, STRANDED CONDUCTOR 600 VOLT INSULATION, THHN/THWN.

B. WIRING CONNECTIONS AND SPLICES

1. CONNECT AND SPLICE WIRE NO. 8 AWG AND SMALLER WITH SELF-INSULATING, WIRE NUT CONNECTORS.
2. SPLICE ALL NO. 6 AWG AND LARGER COPPER CONDUCTORS WITH HIGH CONDUCTIVITY, WROUGHT COPPER, COLOR-KETON CORROSION-RESISTANT CONNECTOR SIMILAR TO BUNDOY OR TAB.
3. 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.
4. 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

1. 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 TO WHICH IT IS ASSOCIATED. COMMON NEUTRALS SHALL NOT BE USED FOR BRANCH CIRCUITS.
2. USE NO. 10 AWG CONDUCTOR MINIMUM FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS LONGER THAN 100 FEET, AND FOR 20 AMPERE, 277 VOLT BRANCH CIRCUITS LONGER THAN 200 FEET.
3. PROVIDE HOMERUN AND FEEDER CONDUCTORS OF CONTINUOUS LENGTH WITHOUT JOINT OR SPLICE FROM OVERCURRENT DEVICE TO FIRST OUTLET.
4. INSTALL WIRING IN CONDUIT.
5. NEATLY TRAIN AND LACE WIRING INSIDE BOXES, PANELBOARDS, SWITCHGEAR, MOTOR CONTROL CENTERS, WIRING GUTTERS, AND OTHER EQUIPMENT.
6. PROVIDE APPROPRIATELY SIZED LUGS AND TERMINATIONS AT ALL EQUIPMENT. DO NOT REDUCE WIRE SIZE AT EQUIPMENT LUGS.
7. 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.
8. 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.
- D. WIRING INSTALLATION IN RACEWAYS.
1. PULL ALL CONDUCTORS INTO A RACEWAY AT THE SAME TIME. USE UL LISTED WIRE PULLING LUBRICANT. DO NOT EXCEED MANUFACTURER'S RECOMMENDED TENSION.
2. 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.
3. COMPLETELY AND THOROUGHLY SWAG RACEWAY SYSTEM BEFORE INSTALLING CONDUCTORS.
4. REMOVE AND DISCARD CONDUCTORS CUT TOO SHORT OR INSTALLED IN WRONG RACEWAY. DO NOT INSTALL CONDUCTORS WHICH HAVE BEEN REMOVED FROM A RACEWAY.

2.8 BOXES

A. OUTLET BOXES

1. PROVIDE GALVANIZED OR CADMIUM-PLATED PRESSED STEEL OUTLET BOXES SUITABLE FOR THE CONDITIONS OF EACH OUTLET. PROVIDE MULTI-GANG OUTLETS OF SINGLE BOX DESIGN; SECTIONAL BOXES WILL NOT BE ACCEPTABLE.
2. PROVIDE DEEP TYPE CAST METAL OUTLET BOXES LOCATED IN DAMP LOCATIONS EXPOSED TO WEATHER OR EXPOSED AREAS SUBJECT TO DAMAGE, COMPLETE WITH GASKETED COVER AND THREADED HUBS.
3. PROVIDE OUTLET BOXES OF SUFFICIENT VOLUME TO ACCOMMODATE THE NUMBER OF CONDUCTORS ENTERING THE BOX IN ACCORDANCE WITH THE 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 A/E.
4. PROVIDE NON METALLIC NEMA 13X TYPE OUTLET BOXES IN CORROSIVE ENVIRONMENTS.

B. PULL AND JUNCTION BOXES

1. 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.
2. PROVIDE SEPARATE PULL BOXES AND JUNCTION BOXES FOR ELECTRIC POWER, CONTROL, AND COMMUNICATION SYSTEMS.

C. INSTALLATION

1. SET BOXES INSTALLED IN CONCEALED LOCATIONS FLUSH WITH THE FINISH SURFACES, AND PROVIDE WITH THE PROPER TYPE EXTENSION RINGS AND/OR COVERS WHERE REQUIRED.
2. PROVIDE RECESSED OUTLET BOXES IN FINISHED AREAS. SECURE BOXES TO INTERIOR WALL AND PARTITION STUDS, ACCURATELY POSITIONING TO ALLOW FOR SURFACE FINISH THICKNESS.
3. 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.
4. LOCATE PULL BOXES AND JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS OR IN UNFINISHED AREAS.
5. PROVIDE PULL BOXES IN FEEDER AND BRANCH CIRCUITS AT LEAST EVERY 150 FEET IN STRAIGHT RUNS, AND AS REQUIRED BY CODE.
6. IDENTIFY ALL JUNCTION BOXES BY CIRCUIT NUMBER ON COVER WITH LEGIBLE PERMANENT INK MARKER.
7. COVER PLATES OF ALL JUNCTION BOXES USED FOR FIRE ALARM WIRING SHALL BE PAINTED "RED".

2.9 CONDUIT

A. MATERIALS

1. PROVIDE RIGID METAL CONDUIT AND FITTINGS IN ACCORDANCE WITH ANSI C80.1; HOT DIP GALVANIZED.
2. PROVIDE ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS IN ACCORDANCE WITH ANSI C80.3; HOT-DIPPED GALVANIZED TUBING.

B. CONDUIT SIZING, ARRANGEMENT AND SUPPORT

1. MINIMUM SIZE OF CONDUIT IS 3/4-INCH. INDICATED SIZES ARE MINIMUM BASED ON THHN/THWN COPPER WIRE AND LARGER SIZES MAY BE USED FOR CONVENIENCE OF WIRE PULLING.
2. CONCEAL CONDUIT IN CEILING OF ALL FINISHED AREAS AND IN WALLS OF ALL 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.
3. MAINTAIN MINIMUM 6 INCH CLEARANCE BETWEEN CONDUIT AND PIPING. MAINTAIN 12 INCH CLEARANCE BETWEEN CONDUIT AND HEAT SOURCES SUCH AS FLUES, STEAM PIPES, AND HEATING APPLIANCES. ROUTE CONDUIT TO ALLOW FOR EQUIPMENT ACCESS AND MAINTENANCE.
4. ARRANGE CONDUIT SUPPORTS TO PREVENT DISTORTION OR ALIGNMENT BY WIRE PULLING OPERATIONS. FASTEN CONDUIT SECURELY TO BUILDING STRUCTURE USING CLAMPS, HANGERS AND THREADED ROD. ROUTE CONDUIT TO ALLOW FOR EQUIPMENT ACCESS AND MAINTENANCE.
5. CONDUIT USED FOR FIRE ALARM CIRCUITS SHALL HAVE A 2 (TWO) INCH PAINTED "RED" BAND EVERY 10 (TEN) FEET.

C. CONDUIT INSTALLATION SCHEDULE

1. INTERIOR
- A) EXPOSED
- 1) RIGID METAL CONDUIT IN AREAS SUBJECT TO MOISTURE, CORROSIVE AGENTS, PHYSICAL ABUSE, IN UNCONDITIONED SPACES OR FOR CONDUIT SIZES GREATER THAN 4 INCHES.
 - 2) ELECTRICAL METALLIC TUBING IN AREAS NOT SUBJECT TO MOISTURE, CORROSIVE AGENTS OR PHYSICAL ABUSE.
- B) CONCEALED
- 1) RIGID METAL CONDUIT IN AREAS SUBJECT TO MOISTURE OR CORROSIVE AGENTS.
 - 2) ELECTRICAL METALLIC TUBING IN AREAS NOT SUBJECT TO MOISTURE OR CORROSIVE AGENTS.
- C) CAST IN CONCRETE: RIGID NONMETALLIC CONDUIT.
- D) CONNECTIONS TO EQUIPMENT:
- 1) LIQUIDTIGHT FLEXIBLE METAL CONDUIT IN AREAS SUBJECT TO MOISTURE, HIGH HUMIDITY, OR CORROSIVE AGENTS.
 - 2) FLEXIBLE METAL CONDUIT IN DRY, NONCORROSIVE AREAS.

2.10 WIRING DEVICES

- A. PROVIDE SPECIFICATION GRADE WIRING DEVICES, INCLUDING WALL SWITCHES, RECEPTACLES, AND DEVICE PLATES AND BOX COVERS. COLORED WHITE SWITCHES AND RECEPTACLES TO MATCH DECOR OR AS DIRECTED BY OWNER/ARCHITECT.

B. DEVICES

1. 20A, 120V/277V SINGLE POLE "1221" HUBBELL.
2. 20A, 125V, 2P3W DUPLEX, NEMA 5-20R "5382" HUBBELL.
3. 20A, 125V, 2P3W DUPLEX GROUND FAULT INTERRUPTING; NEMA 5-20R "GF5352" HUBBELL.
4. 20A, 125V, 2P3W DUPLEX ISOLATED GROUND; NEMA IGS-20R "IG5362" HUBBELL.

- C. COVER PLATES: PROVIDE WHITE FOR INTERIOR AND GASKETED CAST METAL WITH HINGED GASKETED DEVID COVERS FOR EXTERIOR.

2.11 PANELBOARDS

- A. FURNISH AND INSTALL SERVICE, DISTRIBUTION, LIGHTING, POWER AND APPLIANCE PANELBOARDS. WHEN APPLICABLE, PANELBOARDS SHALL BE SERVICE ENTRANCE RATED.

- B. MANUFACTURERS
1. CUTLER-HAMMER (WESTINGHOUSE).
 2. GENERAL ELECTRIC.
 3. SIEMENS.

- C. PROVIDE WITH MAIN LUGS AND BREAKERS OR FUSES AS SCHEDULED ON THE DRAWINGS. PROVIDE MAIN LUG CONNECTION TO ACCOMMODATE T & B COMPRESSION CONNECTOR ON END OF CABLE. ATTACH CONNECTOI PANEL BUS WITH TWO BOLTS PER LUG. PROVIDE CAPTIVE TYPE BOLTS OR STUDS TO FACILITATE REINSTALLATION OF THE LUGS WITH THE WIRE ATTACHED.

- D. PROVIDE PANELBOARDS WITH COPPER BUS OF THE RATINGS SCHEDULED AND DESIGNED FOR ALL INDICATED DEVICES AND SPACES. COMPLETE WITH TAPS AND TRIM AND COPPER GROUND BUS. PANELBOA AND CIRCUIT BREAKERS SHALL BE FULLY RATED AT THE SCHEDULED SHORT CIRCUIT DUTY. PANELBOARD COVERS SHALL BE DOOR IN DOOR CONSTRUCTION WITH FULL LENGTH PIANO TYPE HINGES.

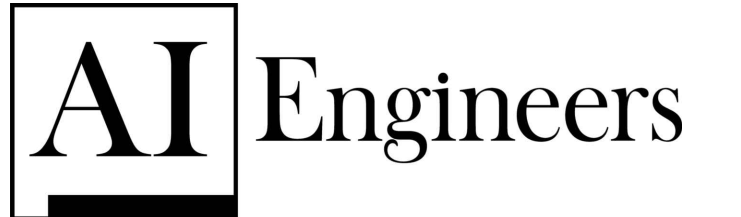
E. BRANCH CIRCUIT PANELBOARDS

1. LIGHTING AND APPLIANCE BRANCH CIRCUIT PANELBOARDS: CIRCUIT BREAKER TYPE WITH BOLT-ON TYPE THERMAL MAGNETIC TRIP CIRCUIT BREAKERS, WITH COMMON TRIP HANDLE FOR ALL POLES. PROVIDE CIRCUIT BREAKERS UL LISTED AS TYPE SWD FOR LIGHTING CIRCUITS. PROVIDE UL CLASS A GROUFI FAULT INTERRUPTER CIRCUIT BREAKERS WHERE SCHEDULED.
2. PROVIDE INSULATED NEUTRAL BUS AND SEPARATE COPPER GROUNDING BUS BONDED TO ENCLOSURE.
3. SEQUENCE PHASE ALL ADJACENT BREAKERS. ALL CIRCUIT BREAKER CONNECTION STRAPS SHALL BE RATED 100 AMPERES MINIMUM.

F. INSTALLATION

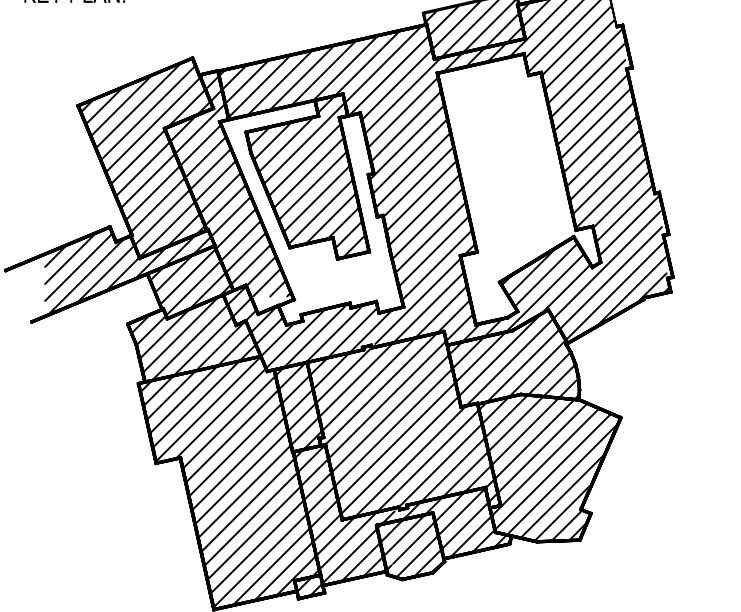
1. INSTALL PANELBOARDS PLUMB AND FLUSH WITH WALL FINISHES. IN ACCORDANCE WITH NEMA PB 1.1, MOUN SECURELY TO WALLS OR STRUCTURAL SPACES. MOUNT FLOOR MOUNTED PANELBOARDS ON 4 INCH HOUSEKEEPING PADS.
2. PROVIDE TYPEWRITTEN CIRCUIT DIRECTORY FOR EACH BRANCH CIRCUIT PANELBOARD MOUNTED IN PERMANENT. CLEAR LEXAN CARD HOLDER LOCATED ON INSIDE OF DOOR. PREPARE DIRECTORIES ONLY AFTER PERMANENT ROOM NUMBERS HAVE BEEN ASSIGNED. DO NOT USE ROOM NUMBERS SHOWN ON CONSTRUCTION DRAWINGS.
3. STUB THREE EMPTY 1-INCH CONDUITS TO ACCESSIBLE LOCATION ABOVE CEILING OUT OF EACH RECESSED PANELBOARD.

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KEY PLAN:



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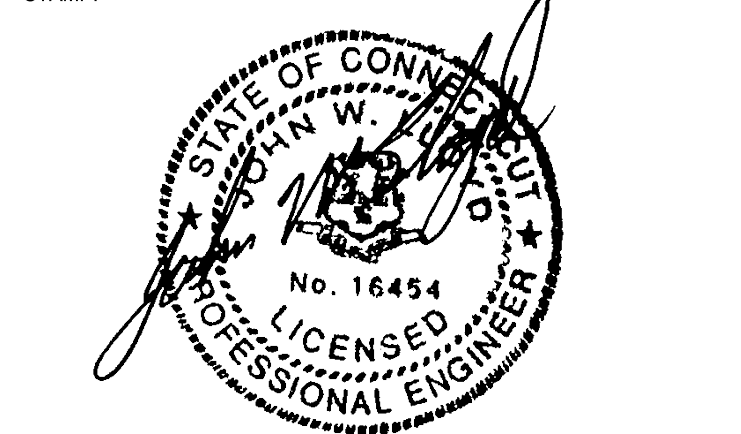
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PROJECT NAME:
**KENNEDY HIGH
SCHOOL EXHAUST FAN
REPLACEMENT**

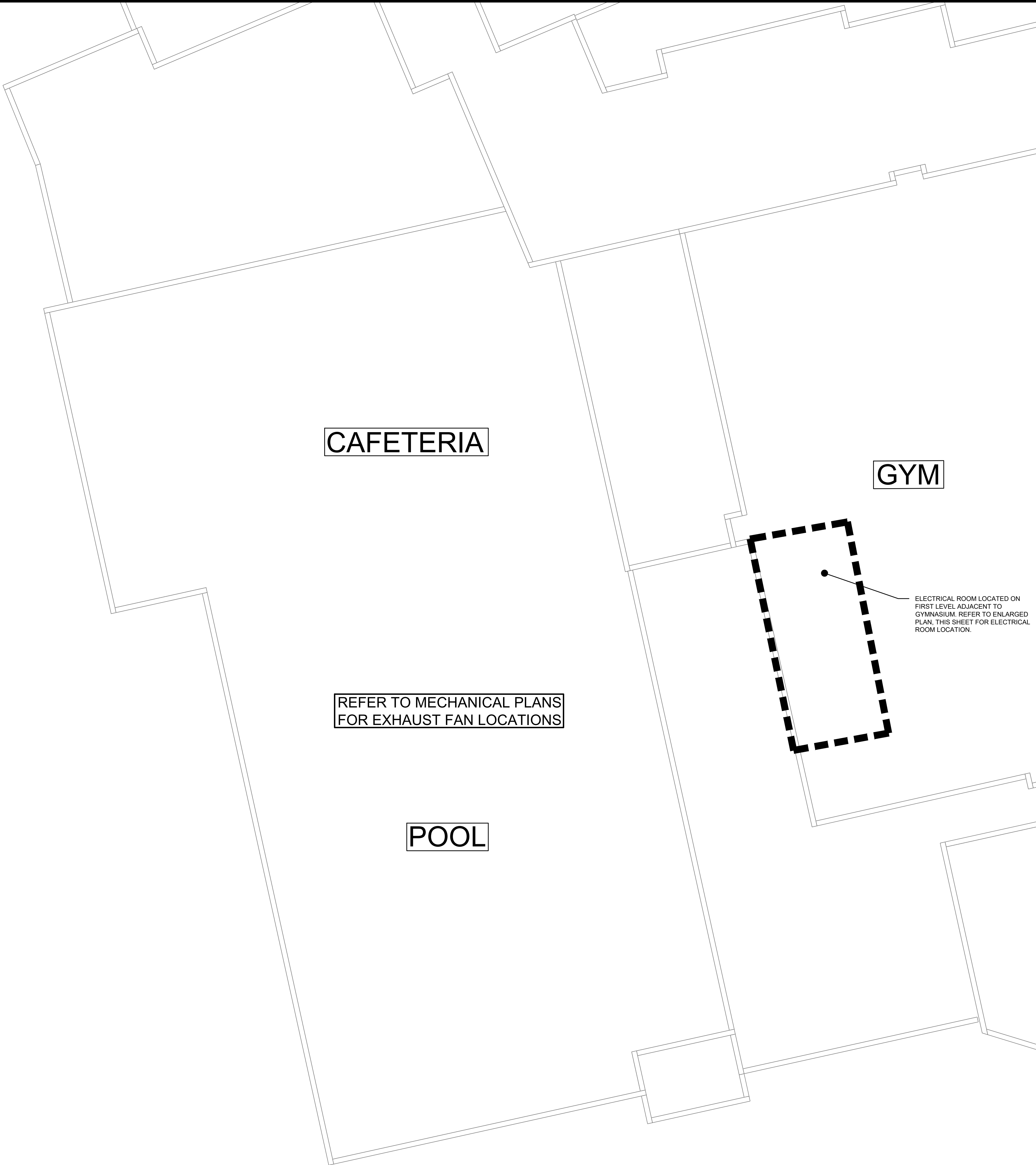
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DRAWING TITLE:
**ELECTRICAL
SPECIFICATIONS**

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DRAWN BY: CSG
CHECKED BY: AFP
PROJ. NO: 32580C-2
DRAWING NO:

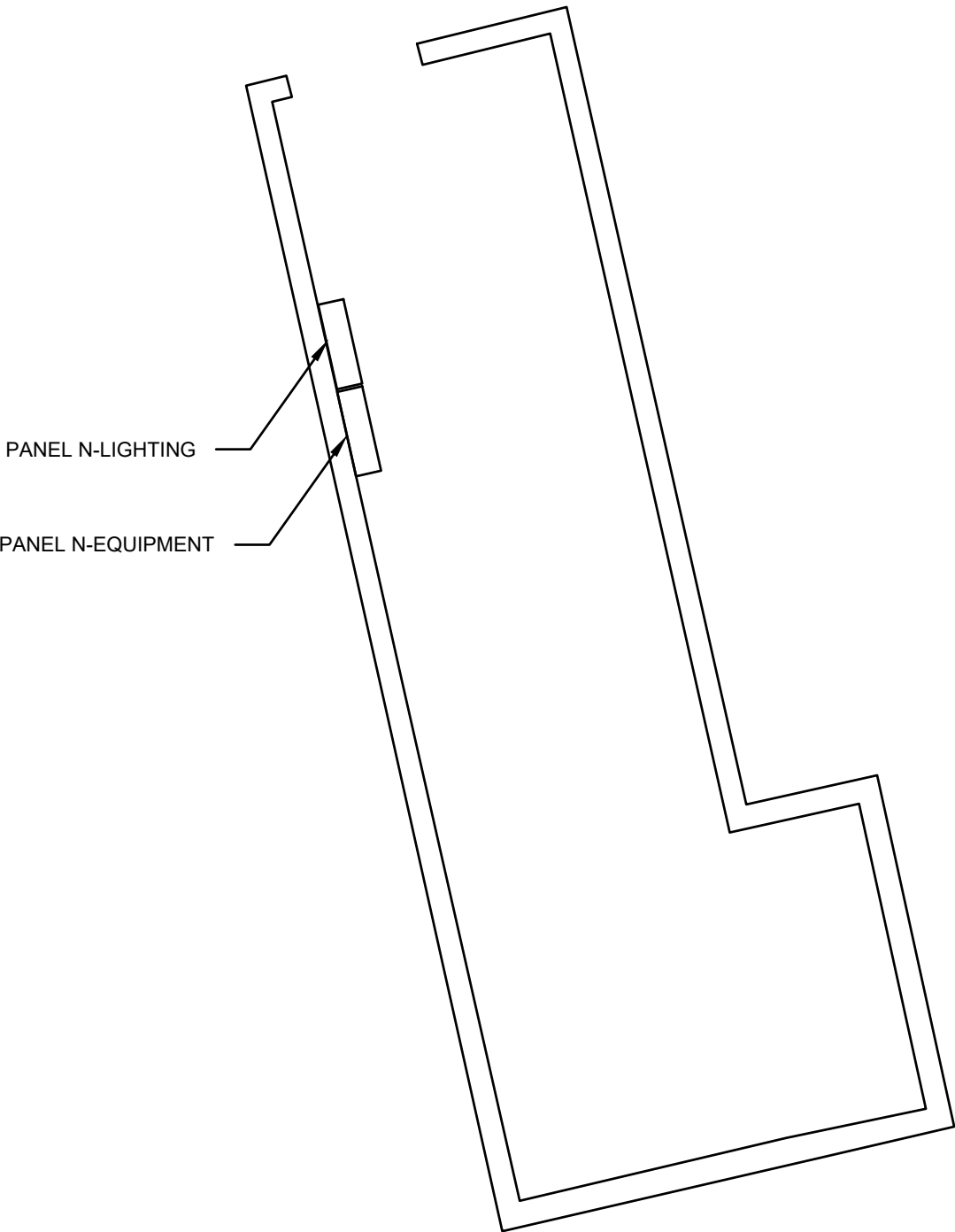
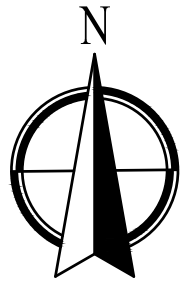
E-002

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NOTES

- COORDINATE ALL WORK WITH MECHANICAL DRAWINGS.
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- DEMOLISH EXISTING EXHAUST FANS AND DISCONNECT SWITCHES BACK TO PANEL. REFER TO E-601 FOR ADDITIONAL DISCONNECT SWITCH LOCATIONS. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.



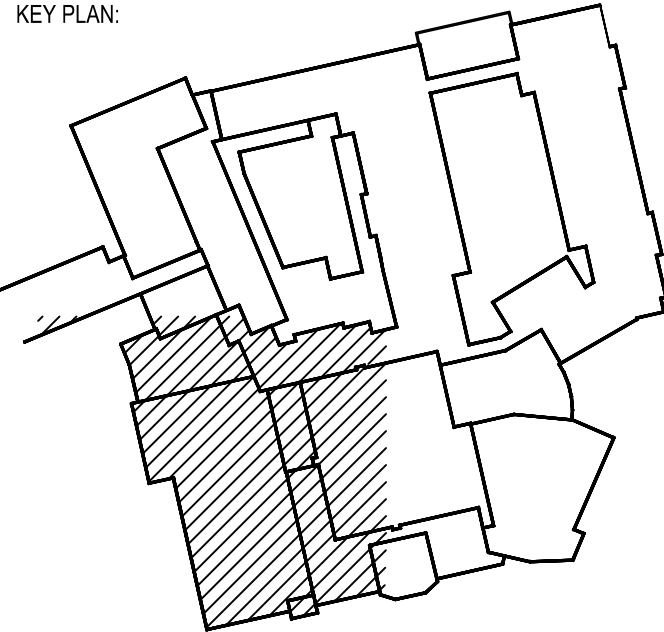
ENLARGED PLAN - ELECTRICAL ROOM

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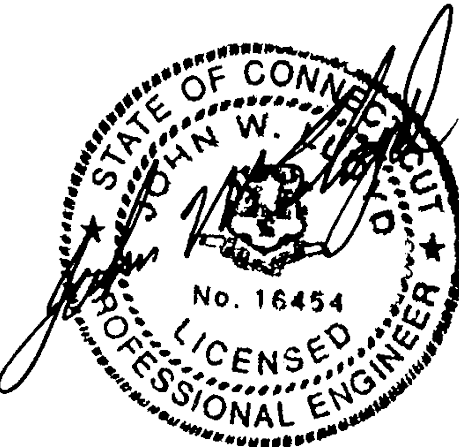
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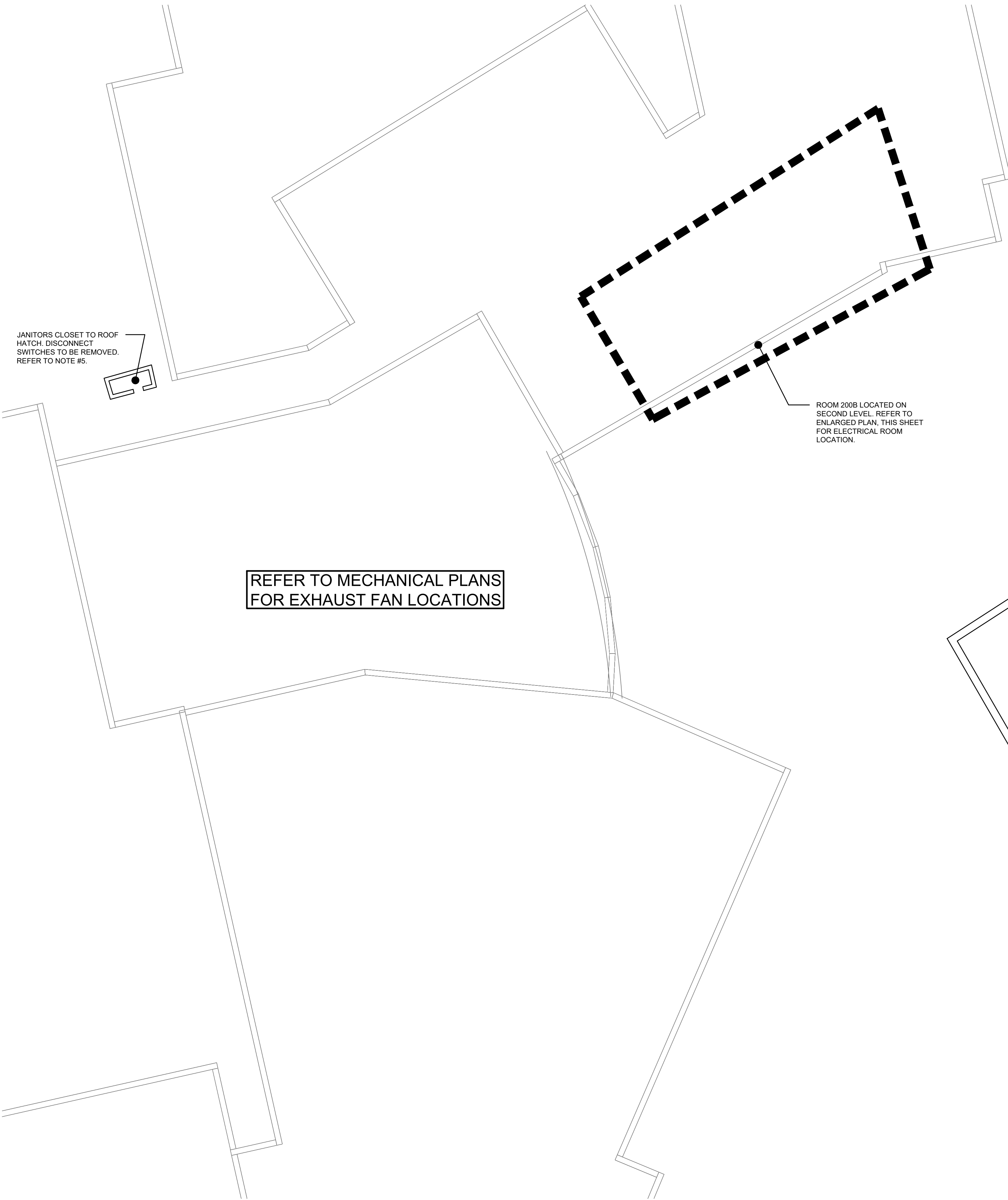
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DRAWING TITLE:
ELECTRICAL WORK
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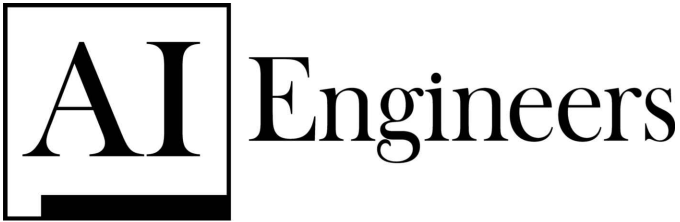
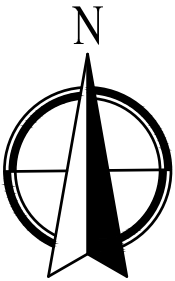
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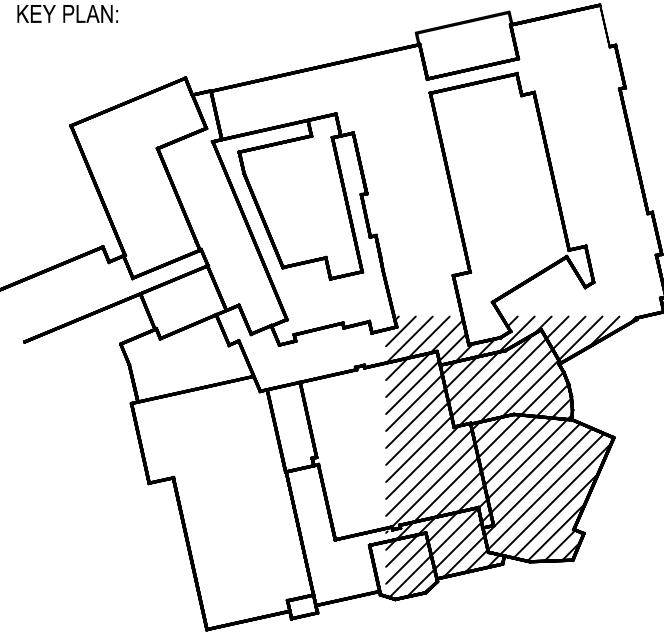
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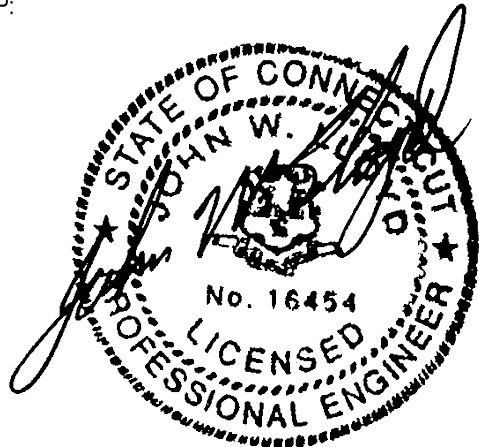
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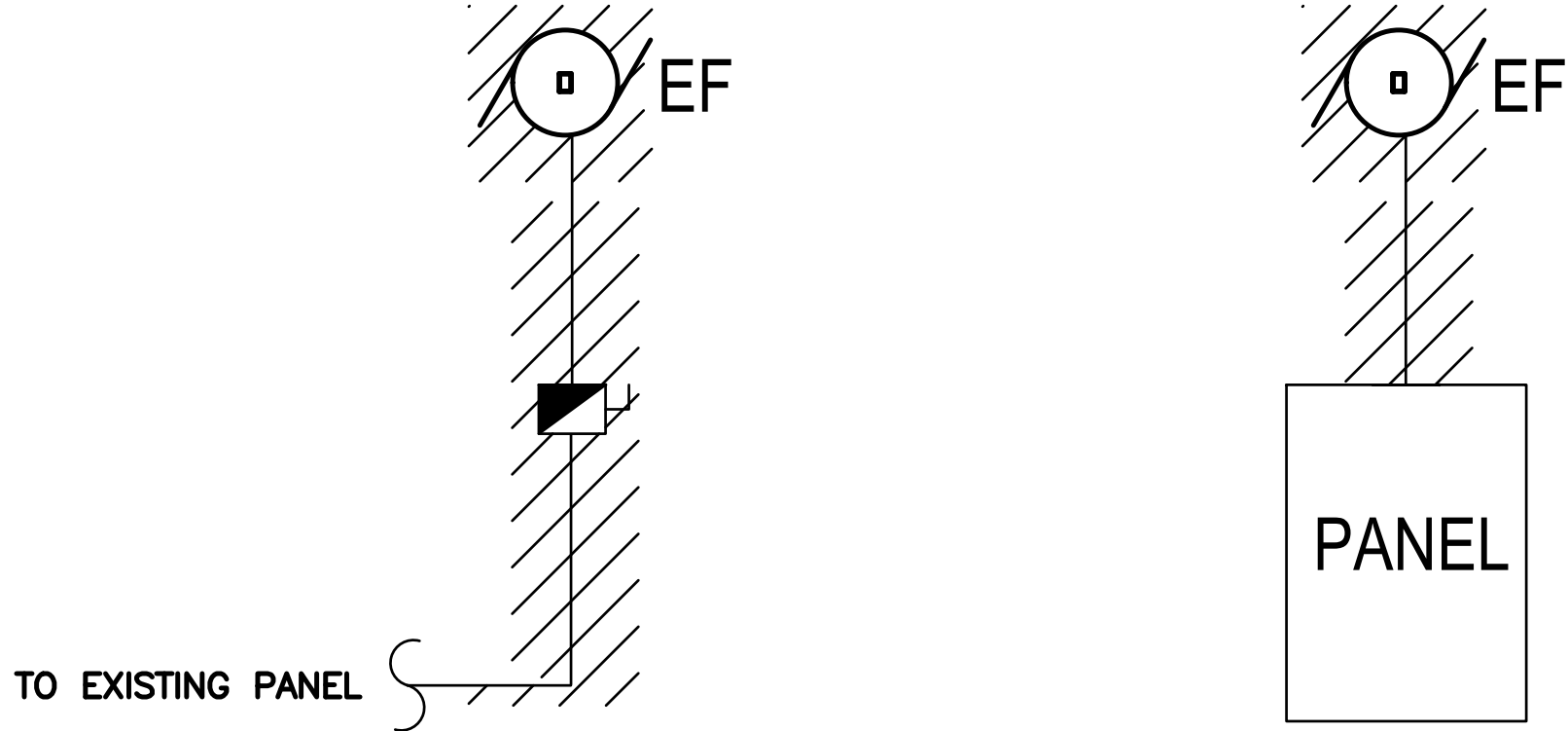
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ELECTRICAL WORK
UPPER LEVEL

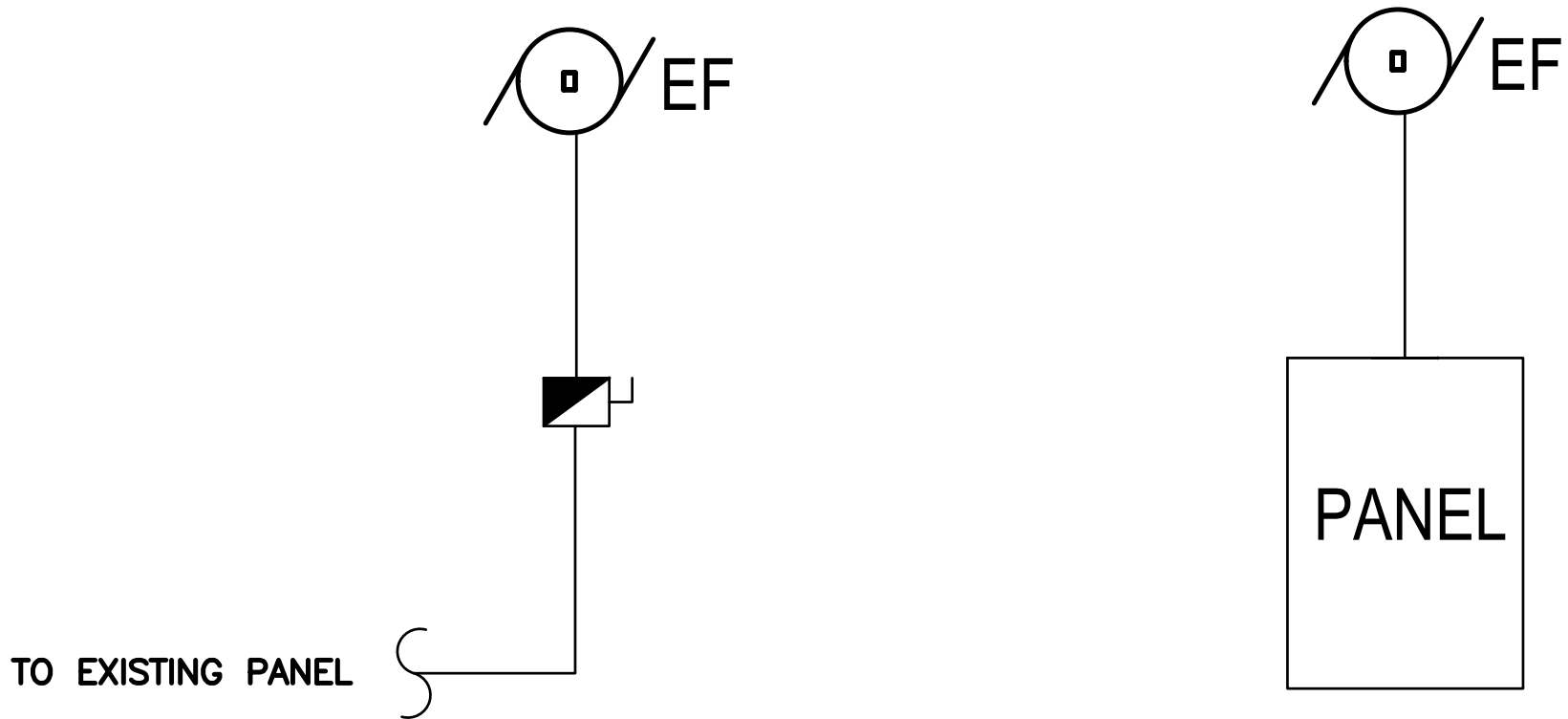
FILE: 2022\32580C-2
DRAWN BY: CSG
CHECKED BY: AFP
PROJ. NO: 32580C-2
DRAWING NO:

W:\2022\2580C-X WATERBURY KENNEDY HIGH SCHOOL EXHAUST FAN REPLACEMENT\DRAWINGS\PLOT FILES\PDF'S



DEMO

1. REMOVE EXISTING CONDUCTORS. CONDUIT TO REMAIN FOR REUSE.
2. RE-USE EXISTING CIRCUIT BREAKER IN PANEL.



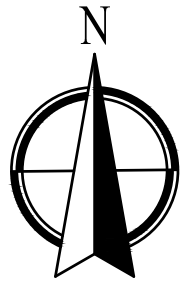
NEW WORK

1. REFER TO MOTOR CIRCUIT SCHEDULE FOR ADDITIONAL INFORMATION.
2. RE-USE EXISTING CIRCUIT BREAKER IN PANEL.

MOTOR CIRCUIT SCHEDULE													
TAG	DISCONNECT SWITCH LOCATION	ELECTRICAL ROOM OCPD	DISCONNECT SWITCH	FEEDER SIZE	MOTOR STARTER			LOAD					REMARKS
					TYPE	SIZE	LOCATION	FLA	HP	KW	VOLTS	Ø	
EF-01	MAIN OFFICE	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-01A	NOT AVAILABLE	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	0.62	1/10	0.07	120	1	SEE NOTES BELOW
EF-02	LIBRARY OFFICE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-03	CUSTODIAN CLOSET NEAR RM 206	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-04	CUSTODIAN CLOSET NEAR RM 206	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-05	CUSTODIAN CLOSET NEAR RM 206	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	0.31	1/10	0.07	240	1	SEE NOTES BELOW
EF-06	CUSTODIAN CLOSET NEAR RM 206	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-07	CUSTODIAN CLOSET NEAR RM 206	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-08	CUSTODIAN CLOSET TO ROOF ACCESS	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-09	CUSTODIAN CLOSET TO ROOF ACCESS	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-10	CUSTODIAN CLOSET TO ROOF ACCESS	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-11	CUSTODIAN CLOSET TO ROOF ACCESS	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-12	CUSTODIAN CLOSET TO ROOF ACCESS	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-13	CUSTODIAN CLOSET NEAR RM 123	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-13A	CUSTODIAN CLOSET NEAR RM 123	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-14	WOOD SHOP	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-15	RM 223	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-16	METAL SHOP	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/4	0.37	240	1	SEE NOTES BELOW
EF-17	MECHANIC SHOP	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	4.48	5	3.7	480	3	SEE NOTES BELOW
EF-18	GRAPHIC ARTS	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-20	GRAPHIC ARTS	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	2.69	3	2.28	480	3	SEE NOTES BELOW
EF-21	CUSTODIAN CLOSET NEAR RM 242	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-22	NOT AVAILABLE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-23	NOT AVAILABLE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-24	ROOM ADJACENT TO KITCHEN	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/4	0.37	240	1	SEE NOTES BELOW
EF-25	KITCHEN	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	4.48	5	3.7	480	3	SEE NOTES BELOW
EF-26	NOT AVAILABLE	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-27	FACULTY DINING ROOM	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-29	ASSISTANT PRINCIPALS AREA	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-30	RM #12 ACROSS AUDITORIUM ENTRANCE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	4.48	5	3.7	480	3	SEE NOTES BELOW
EF-31	POOL OFFICE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-32	POOL OFFICE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-33	POOL OFFICE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-34	GYM STORAGE RM	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-35	GYM STORAGE RM	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	0.31	1/10	0.07	240	1	SEE NOTES BELOW
EF-36	BOYS COACHES OFFICE	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	0.31	1/10	0.07	240	1	SEE NOTES BELOW
EF-37	RIGHT SIDE OF STAGE - AUDITORIUM	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-38	MUSIC ROOM OFFICE	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	0.31	1/10	0.07	240	1	SEE NOTES BELOW
EF-39	BOYS COACHES OFFICE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	1.79	2	1.49	480	3	SEE NOTES BELOW
EF-40	STARTER - BOYS GYM STORAGE, COACHES OFFICE	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-41	COACHES OFFICE	20A-3P	30A-15A	3#10+1#10G-3/4"C	---	---	---	4.48	5	3.7	480	3	SEE NOTES BELOW
EF-42	RIGHT SIDE OF STAGE - AUDITORIUM	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	1.55	1/2	0.37	240	1	SEE NOTES BELOW
EF-43	CUSTODIAN CLOSET NEAR RM 123	20A-1P	30A-15A	2#10+1#10G-3/4"C	---	---	---	0.62	1/10	0.07	120	1	SEE NOTES BELOW

NOTES:

1. INFORMATION IS BASED ON EXISTING CONDITION DOCUMENTS. PANEL LOCATION, DISCONNECT SWITCH LOCATION, AND RACEWAY ROUTE FOR EACH EXHAUST FAN SHALL BE VERIFIED IN FIELD.
2. PROVIDE NEW WIRING AND DISCONNECT SWITCH FOR EACH EXHAUST FAN. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
3. CONTRACTOR SHALL PROVIDE WIRING FOR CONTROLS TO THE BUILDING MANAGEMENT SYSTEM (BMS)

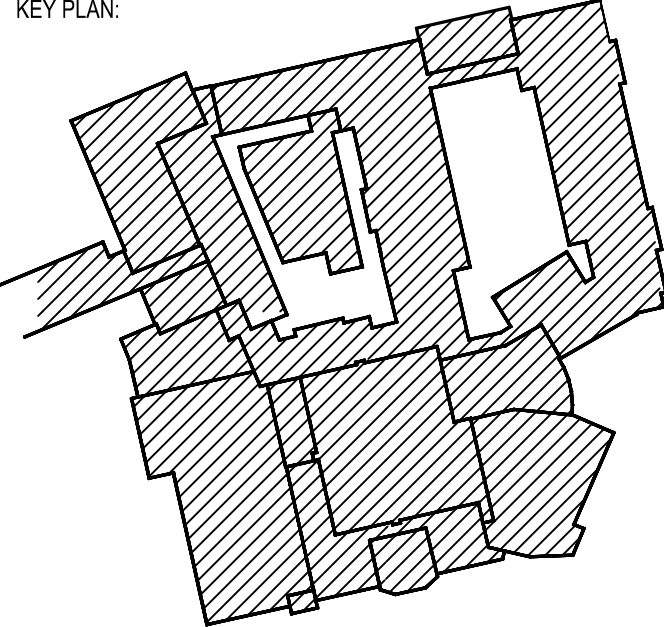


THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO AI ENGINEERS OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF AI ENGINEERS, AND SHALL BE RETURNED UPON REQUEST.



919 MIDDLE STREET
MIDDLETOWN, CT 06457
PHONE: (860) 635-7740
FAX: (860) 635-7312
http://www.aiengineers.com
Middletown, CT New York, NY Elmsford, NY Boston, MA
Cranston, RI Richmond, VA Exton, PA

KEY PLAN:



CLIENT:
CITY OF WATERBURY

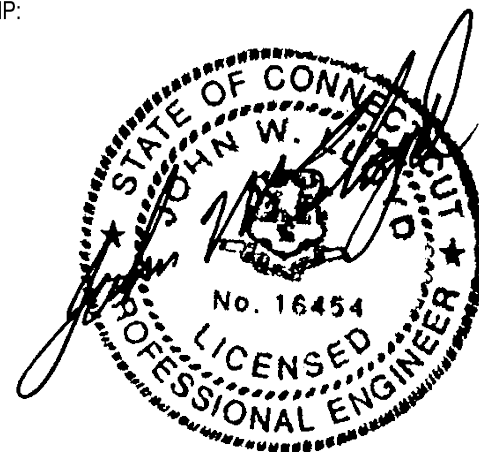
**235 GRAND STREET
WATERBURY, CT 06702**

THIS SQUARE APPEARS 1/2"x1/2"
ON FULL SIZE SHEETS

SCALE: 3/32" = 1'-0"

NO	DATE	RELEASE
	6/29/2022	ISSUED FOR CONSTRUCTION

STAMP:



PROJECT NAME:
**KENNEDY HIGH
SCHOOL EXHAUST FAN
REPLACEMENT**

**422 HIGHLAND AVENUE
WATERBURY, CT 06708**

DRAWING TITLE:
ELECTRICAL SCHEDULES

FILE: 2022\32580C-2
DRAWN BY: CSG
CHECKED BY: AFP
PROJ. NO: 32580C-2
DRAWING NO:

E-601

ORIGINAL

ATTACHMENT A

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

☐

HVAC Upgrade Waterbury Arts Magnet School and Palace Theater

(Service or Commodity Covered by Contract)

January 2024 - December 2024

(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 2023)
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 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



(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

☐

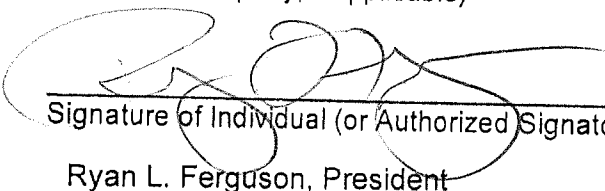
1. I certify that this Annual Statement of Financial Interests is a complete and accurate statement of those matter required to be disclosed by me pursuant to §39.061 of the Code of Ordinances.

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.

Ferguson Mechanical Company, Inc.
(Name of Company, if applicable)


Signature of Individual (or Authorized Signatory)

11/29/2023
Date

Ryan L. Ferguson, President
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:

Ferguson Mechanical Company, Inc.
112 Northwest Drive
Plainville, CT 06062
Ryan L. Ferguson, President

Print Name and Title of Authorized Representative:

Signature of Authorized Representative:

Date: 11/29/2023

**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 Connecticut

SS.: Plainville

County of Hartford

Ryan L. Ferguson, being first duly sworn, deposes and says that:

1. I am the *owner, partner, officer, representative, agent or President* of Ferguson Mechanical Company, Inc. (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

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	Ferguson Electric Co., Inc.	112 Northwest Drive Plainville, CT 06062	Sole Officer
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

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	Ryan L. Ferguson	President	4/02/1980	100%
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	NONE				
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 Ferguson Mechanical Company, Inc.	Connecticut	Plainville, CT 06062
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

By: _____
Name of General Partner/ Sole Proprietor

State of _____)
) SS
County of _____)

Subscribed and sworn to before me this _____ day of _____ 202_.

By: [Signature]
Name of Authorized Corporate Officer
ts: President
Title

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

State of Connecticut)

) SS Plainville

County of Hartford)

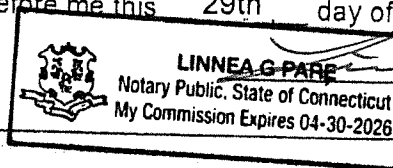
Ryan L. Ferguson

being duly sworn,

deposes and says that he/~~she~~ is President of Ferguson Mechanical Company, Inc.
that he/she answers to the foregoing questions and all statements therein are true and
correct.

Subscribed and sworn to before me this 29th day of November 2023.

My Commission Expires: _____



[Signature]
(Notary Public)

**COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES
CONTRACT COMPLIANCE REGULATIONS
NOTIFICATION TO BIDDERS**

(Revised 09/3/15)

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes.

According to Section 46a-68j-30(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials." "Minority business enterprise" is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4) Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . ." An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's qualifications under the contract compliance requirements;

- (a) the bidder's success in implementing an affirmative action plan;
- (b) the bidder's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive;
- (c) the bidder's promise to develop and implement a successful affirmative action plan;
- (d) the bidder's submission of employment statistics contained in the "Employment Information Form", indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
- (e) the bidder's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

INSTRUCTIONS AND OTHER INFORMATION

The following BIDDER CONTRACT COMPLIANCE MONITORING REPORT must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to Sections 4a-60 and 4a-60a CONN. GEN. STAT., and Sections 46a-68j-23 of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder's good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) Definition of Small Contractor

Section 4a-60g CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision 4a-60g CONN. GEN. STAT.

2) Description of Job Categories (as used in Part IV Bidder Employment Information) (Page 2)

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

MARKETING AND SALES: Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

LEGAL OCCUPATIONS: In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists.

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving of written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category.

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PRODUCTION WORKERS: The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

3) Definition of Racial and Ethnic Terms (as used in Part IV Bidder Employment Information) (Page 3)

<p><u>White</u> (not of Hispanic Origin)- All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East.</p> <p><u>Black</u>(not of Hispanic Origin)- All persons having origins in any of the Black racial groups of Africa.</p> <p><u>Hispanic</u>- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.</p>	<p><u>Asian or Pacific Islander</u>- All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa.</p> <p><u>American Indian or Alaskan Native</u>- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.</p>
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BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART I - Bidder Information

Company Name Ferguson Mechanical Company, Inc. Street Address 112 Northwest Drive City & State Plainville, CT 06062 Chief Executive Ryan L. Ferguson, President	Bidder Federal Employer Identification Number 06-1491108 Or Social Security Number _____
Major Business Activity (brief description) <p style="text-align: center;">Mechanical Contractor</p>	Bidder Identification (response optional/definitions on page 1) -Bidder is a small contractor. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> -Bidder is a minority business enterprise Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, check ownership category) Black <input type="checkbox"/> Hispanic <input type="checkbox"/> Asian American <input type="checkbox"/> American Indian/Alaskan Native <input type="checkbox"/> Mexican Peninsula <input type="checkbox"/> Individual(s) with a Physical Disability <input type="checkbox"/> Female <input type="checkbox"/> - Bidder is certified as above by State of CT Yes <input type="checkbox"/> No <input type="checkbox"/>
Bidder Parent Company (If any) N/A	
Other Locations in Ct. (If any) N/A	

PART II - Bidder Nondiscrimination Policies and Procedures

1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 & 4a-60a Conn. Gen. Stat.? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	9. Does your company have a mandatory retirement age for all employees? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
6. Does your company have a collective bargaining agreement with workers? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 6a. If yes, do the collective bargaining agreements contain non-discrimination clauses covering all workers? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of Ct? Yes <input type="checkbox"/> No <input type="checkbox"/>	12. Does your company have a written affirmative action Plan? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If no, please explain.
	13. Is there a person in your company who is responsible for equal employment opportunity? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, give name and phone number.

Part III - Bidder Subcontracting Practices

(Page 4)

1. Will the work of this contract include subcontractors or suppliers? Yes ☒ No ☐

1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above? To Be Determined Yes ☐ No ☐

PART IV - Bidder Employment Information

Date: 11/29/2023

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Management	12	9	1			1	1				
Business & Financial Ops	2	2									
Marketing & Sales	0										
Legal Occupations	0										
Computer Specialists	2	1	1								
Architecture/Engineering	7	5			1	1					
Office & Admin Support	8	1	5			1			1		
Ridge/ Grounds Cleaning/Maintenance	0										
Construction & Extraction	18	15				3					
Installation, Maintenance & Repair	70	63				7					
Material Moving Workers	0										
Production Occupations	0										
TOTALS ABOVE	119	96	7	0	1	13	1	0	1	0	0
Total One Year Ago	102	88	6	1		6	1	0	0	0	0
FORMAL ON THE JOB TRAINERS (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices **	10	9				1					
Trainees											

*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

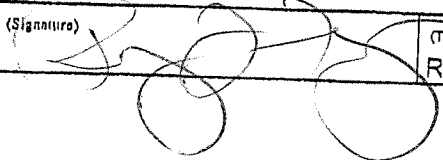
**Included in figures above

PART V - Bidder Hiring and Recruitment Practices

(Page 5)

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)				2. Check (X) any of the below listed requirements that you use as a hiring qualification (X)		3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination
SOURCE	YES	NO	% of applicants provided by source			
State Employment Service		✓		X	Work Experience	<p>When employment opportunities become available, Ferguson will make every effort possible to contact recruitment agencies which are identified in our Affirmative Action Plan which highlights minority agencies to contact.</p>
Private Employment Agencies	✓		10	X	Ability to Speak or Write English	
Schools and Colleges	✓		10	X	Written Tests	
Newspaper Advertisement	✓		50	X	High School Diploma	
Walk Ins		✓			College Degree	
Present Employees	✓		20		Union Membership	
Labor Organizations		✓		X	Personal Recommendation	
Minority/Community Organizations	✓		10		Height or Weight	
Others (please identify)				X	Car Ownership	
				X	Arrest Record	
					Wage Determinations	

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of fact, I am subject to be declared in non-compliance with Section 4e-60, 4e-60a, and related sections of the CONN. GEN. STAT.

(Signature) 	(Title) Ryan L. Ferguson, President	(Date Signed) 11/29/2023	(Telephone) 860-747-4566
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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.

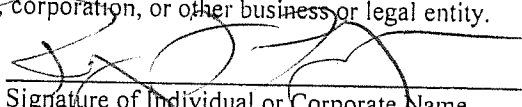
The undersigned acknowledges receipt of addenda numbered: (insert date)

1	<u>10/27/2023</u>	4	<u>11/21/2023</u>
2	<u>10/30/2023</u>	5	<u></u>
3	<u>11/17/2023</u>	6	<u></u>

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.

06-1491108
Social Security Number
or Federal Identification Number



Signature of Individual or Corporate Name
State of Incorporation: Connecticut
Ryan L. Ferguson, President
Corporate Officer
(if applicable)

City notice of acceptance should be mailed, telegraphed or delivered to the undersigned Proposer at the following address:

Name Ferguson Mechanical Company, Inc.
By: Ryan L. Ferguson, President
(Title)
Business Address: 112 Northwest Drive, Plainville, CT 06062
(City, State, Zip Code)

Phone: 860-747-4566
Email: jerdman@ferguson-ct.com
Date: 11/29/2023

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.

ATTACHMENT E

ATTACHMENT E PRICING PROPOSAL

Replace HVAC – Kennedy High School

RFP#7858

1. General Conditions	\$ 137,800
2. Asbestos Abatement	\$ 230,000
3. Demolition	\$ 225,000
4. Metals (including delegated design of support for HVAC equipment and openings)	\$ 212,000
5. Thermal/Moisture Protection	\$ 120,000
6. Fire Stopping / Fire proofing	\$ 20,000
7. Heating, Ventilation and Cooling	\$ 4,417,200
8. Electrical	\$ 430,000
GRAND TOTAL	\$ 5,792,000

Estimated Lead Time for Major Equipment: (how many weeks)

AHU 30 - 40 WEEKS

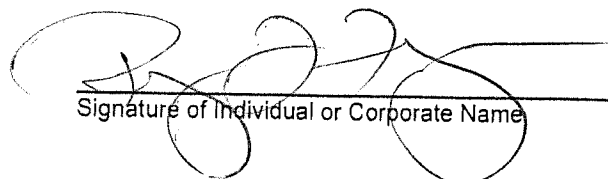
In the event of mathematically incorrect calculations of individual items or totals, the mathematically correct amount as determined by the City shall govern in determining the TOTAL PROPOSAL PRICE.

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.

06-1491108
Social Security Number or Federal Identification Number

Ferguson Mechanical Company, Inc.
Company Name


Signature of Individual or Corporate Name

Ryan L. Ferguson, President
Corporate Officer (if applicable)

State of Connecticut

Department of Administrative Services
Construction Contractor Prequalification Program

This certifies

Ferguson Mechanical Company, Inc,

112 Northwest Drive, Plainville, CT 06062

As a

Prequalification Construction Contractor

February 11, 2023 through February 10, 2024

CONTACT INFORMATION

Name: Joanne Erdman
Phone: (860) 793-5037 ext. 238
Fax: (860) 793-5049
Email: jerdman@ferguson-ct.com

Name: Linnea G. Pare
Phone: 860-517-3237
Fax: 860-793-5050
Email: lpare@ferguson-ct.com

Effective Date	Aggregate Work Capacity (AWC)	Single Limit (SL)	Classifications
2/11/2023	\$225,000,000.00	\$75,000,000.00	FIRE PROTECTION SPRINKLER SYSTEMS, GENERAL TRADES, HVAC, PLUMBING, SHEET METAL WORK

Classification Name	Description
FIRE PROTECTION SPRINKLER SYSTEMS	Installation, renovation, repairs and maintenance of fire protection sprinklers in buildings, including such incidental or related work as is customarily performed by those in the Fire Protection/Sprinkler System trades. To prequalify for Fire Protection Sprinkler Systems you must have a Fire Protection Contractor License through the State of Connecticut Department of Consumer Protection.

This certificate prequalifies the named company to bid. It is not a statement of the Contractor's capacity to perform a specific project. That responsibility lies with the awarding authority.

Company Licenses/Registrations: It is the Contractor's responsibility to update their license information by editing their electronic application. Licenses are confirmed by the Department of Administrative Services (DAS) at the time of initial application and at each renewal.

For information regarding the DAS Contractor Prequalification Program visit <http://portal.ct.gov/dasprequal> or call (860) 713-5280.

GENERAL TRADES

The undertaking of general contracts for the construction and/or supervision of several sub-trades but not the construction of buildings as described in General Building Construction. The contract must include a variety of construction practices and supervision of a minimum of three sub-trades. The work of this category is intended for the interior finishes of a building.

HVAC

Installation, renovation, repair and maintenance of the systems and apparatus required, collectively or individually, to provide comfort heating, ventilation and/or cooling within or associated with a building, including such incidental or related work as is customarily performed by those in the HVAC trade. This category does not include sheet metal work by itself. To prequalify for HVAC you must have a Heating, Piping & Cooling Contractor License through the State of Connecticut Department of Consumer Protection.

PLUMBING

Installation, repair and maintenance of pipes, fixtures and other apparatus in buildings for bringing in and distributing the water supply and removing liquid and water-borne waste, including such incidentals or related work as is customarily performed by those in the plumbing trade. To prequalify for Plumbing you must have a Plumbing Contractor License through the State of Connecticut Department of Consumer Protection.

SHEET METAL WORK

Includes the installation, erection, replacement, repair or alteration of duct-work systems, both ferrous and nonferrous and includes but is not limited to warm and cool air, ventilation, exhaust, pneumatic conveyance and hood exhaust. To prequalify for Sheet Metal Work you must have a Sheet Metal Work Contractor License through the State of Connecticut Department of Consumer Protection.

This certificate prequalifies the named company to bid. It is not a statement of the Contractor's capacity to perform a specific project. That responsibility lies with the awarding authority.

Company Licenses/Registrations: It is the Contractor's responsibility to update their license information by editing their electronic application. Licenses are confirmed by the Department of Administrative Services (DAS) at the time of initial application and at each renewal.
For information regarding the DAS Contractor Prequalification Program visit <http://portal.ct.gov/dasprequal> or call (860) 713-5280.

State of Connecticut
Department of Administrative Services (DAS) Contractor Prequalification
Update (Bid) Statement
(Statement to be included with the bid)

Connecticut General Statute §4a-100 and Connecticut General Statute §4b-91

Each bid submitted for a contract shall include a copy of a prequalification certificate issued by the Commissioner of Administrative Services. The bid shall also be accompanied by an update bid statement in such form as the Commissioner of Administrative Services prescribes. The form for such update bid statement shall provide space for information regarding all projects completed by the bidder since the date the bidder's prequalification certificate was issued or renewed, all projects the bidder currently has under contract, including the percentage of work on such projects completed by the names and qualifications of the personnel who will have supervisory responsibility for the performance of the contract, any significant changes in the bidder's financial position or corporate structure since the date the certificate was issued or renewed, any change in the contractor's qualification status, and such other relevant information as the Commissioner of Administrative Services prescribes. Any bid submitted without a copy of the prequalification certificate and an update bid statement shall be invalid. Any public agency that accepts a bid submitted without a copy of such prequalification certificate and an update bid statement, as required by this section, may become ineligible for the receipt of funds related to such bid.

Name of Project that company is bidding on:		Replace HVAC - Kennedy High School	
Project Number:	RFP#7858		
Name of Company:	Ferguson Mechanical Company, Inc.		
FEIN:	06-1491108		
Company Address:	112 Northwest Drive, Plainville, CT 06062		
Prequalification Contact:	Joanne N. Erdman	Telephone Number:	860-747-4566
Date of Prequalification with the DAS: 2/11/2023	Expires: 2/10/2024	Aggregate Work Capacity (AWC):	\$225,000,000.00
* This amount equals your company's AWC minus the Total \$ Amount of Work Remaining.		* Remaining Aggregate Work Capacity:	\$156,699,429.00

Please list all of your company's BONDED PROJECTS (BOTH PUBLIC AND PRIVATE) WHICH WERE 100% COMPLETED SINCE THE DATE YOUR PREQUALIFICATION WAS ISSUED OR RENEWED: (Please add additional page(s) if required)

Name of Project	Owner of Project	Date Project Completed	Total Contract Amount
SEE ATTACHED			

Please list all of your company's BONDED PROJECTS (BOTH PUBLIC AND PRIVATE) CURRENTLY UNDER CONTRACT:
(Please add additional page(s) if required. Please total the Work Remaining column)

Name of Project	Owner of Project	Total Contract Amount	% Complete	Work Remaining (\$)
SEE ATTACHED				
Total \$ Amount of Work Remaining				\$68,300,571.00

Please list the names and titles of the personnel who will have supervisory responsibility for the performance of the contract being bid on:
(Please add additional page(s) if required)

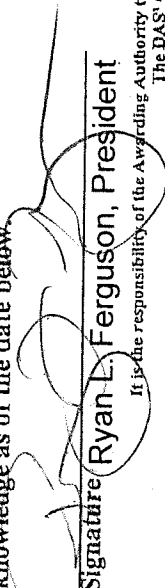
Individual Name	Title of Individual
To be supplied upon notice of contract	

Have there been any changes in your company's financial condition or business organization, which might affect your company's ability to successfully complete this contract?

Yes ☐ No ☒

If yes, please explain: N/A

I certify under penalty of law that all of the information contained in this Update (Bid) Statement is true and accurate to the best of my knowledge as of the date below.

Signature  Ryan L. Ferguson, President

Date 11/29/2023

It is the responsibility of the Awarding Authority to determine if any of the information provided above will impact the contractor's performance on this project.
The DAS' Contractor Prequalification Program can be reached at (860) 713-5280

Ferguson Mechanical Co., Inc.
CURRENT DAS COMPLETED BONDED PROJECTS
Prequalification Renewal (12/16/2022)

PROJECT	OWNER, CM	CONTRACT VALUE	% COMPLETE	START / COMPLETION DATE
Jefferson Elementary School Alterations and Additions 75 Van Buren Avenue Norwalk, CT 06850 TRADE HVAC	Owner: City of Norwalk CM: Newfield Construction 225 Newfield Avenue Hartford, CT 06106 Steve Buccheri 860-953-1477 stevebuccheri@newfieldconstruction.com	3,463,071	100.00%	1-Mar-21 27-Dec-22
UCONN Hockey Arena & I-Lot Improvements 523 Jim Calhoun Way Storrs, CT 06269 Project #300133 & 300173 TRADE HVAC	Owner: Uconn Storrs, CT CM: Turner Construction 50 Waterview Drive Shelton, CT 06484	4,916,164	100.00%	7-Jun-21 28-May-23
Station House Greenwich Project #21030B-01 143 Sound Beach Avenue Old Greenwich, CT SUBCONTRACTOR (MKB223) Plumbing	OWNER: 143 Sound Beach Avenue Assoc. CM: KBE Building Corporation 76 Batterson Park Road Farmington, CT 06032 Ross Mezzanotte, PM 860-284-7110 rmezzanotte@kbebuilding.com	987,063	100.00%	21-Sep-22 15-May-23
UCONN Steam Vault B4 & Line Exigent Project # UCONN Storrs Campurt Storrs, CT SUBCONTRACTOR (FM #MWH221) HVAC	OWNER: UCONN Storrs CM: The Whiting-Turner Contracting Co. 195 Church Street, 10th Floor New Haven, CT 06510 Kevin Seidensticker, PM Office: 203-777-6783 / Cell: 203-668-0211 kevin.seidensticker@whiting-turner.com	2,514,071	100.00%	14-Jul-22 28-Sep-23

Ferguson Mechanical Co., Inc.
Bonded Projects Currently Under Contract
Revised List as of November 6 2023

PROJECT	OWNER, CM	CONTRACT VALUE	% COMPLETE	COMPLETED \$	WORK REMAINING	START / COMPLETION DATE
West Point - Bradley Barracks West Point, NY Project #1905-CN-009 SUBCONTRACTOR (FM #MDI191) PLUMBING	OWNER: US Army Corps of Engineers, NY GC: Dobco Inc. 1 Geoffrey Way Wyane, NJ 07470 Brandon Shuster, PM 973-317-9531 brandons@dobcogroup.com	6,240,965	96.33%	6,011,750	229,215	20-Nov-19 21-Dec-22
Ox Ridge Elementary School 395 Mansfield Avenue Darien, CT 06820 TRADE (FM #MOG211) Plumbing & HVAC	Owner: Town of Darien CM: O&G /AP, A Joint Venture 112 Wall Street Torrington, Ct 06790 Dave Cravanzola 860-489-9261 davidcravanzola@ogind.com	7,277,065	98.98%	7,202,992	74,073	16-Dec-20 25-Apr-23
VA Hudson Valley Health Care System Castle Point Campus Wappingers Falls, NY 12590 PROJECT #620A-14-118 SUBCONTRACTOR (FM #MAN201) Plumbing, HVAC & Electrical	Owner: Veterans Administration CM: Anchor Contracting, LLC 1602 Conchester Hwy. Boothwyn, PA 19061 Scot Dempsey Ph. 610-361-9204 sdempsey@rlmmechanical.com	5,041,383	99.88%	5,035,229	6,154	9-Dec-20 20-Dec-22
New Elementary School at the Huckleberry Hill School Site New PK thru 5 School -Brookfield E.S. Project #018-0056N TRADE (FM# MOG212) Plumbing	Owner: Town of Brookfield CM: O&G Industries, Inc. 112 Wall Street Torrington, Ct 06790 Gus Kotait, PM - 860-625-9349 guskotait@ogind.com	2,721,346	99.96%	2,720,218	1,128	8-Apr-21 29-Dec-22

Ferguson Mechanical Co., Inc.
Bonded Projects Currently Under Contract
Revised List as of November 6 2023

PROJECT	OWNER, CM	CONTRACT VALUE	% COMPLETE	COMPLETED \$	WORK REMAINING	START / COMPLETION DATE
UCONN Boiler Plant & Utility Tunnel UCONN Campus 240 Glenbrook Road Storrs, CT 06269 Project #300151 SUBCONTRACTOR (FM #MBO211) HVAC	Owner: Uconn, Storrs, CT GC: Bond Building Construction, Inc. 10 Cabot Road, Suite 300 Medford, MA 02155 Kyle Ledoux 860-349-8880 kledoux@bond-building.com	7,335,056	98.61%	7,232,852	102,204	14-Apr-21 31-Jan-23
Cyber Engineering Academic Ctr. (CEAC) Parking Structure U.S. Military Academy (USMC) West Point, NY JOB #11422036 SUBCONTRACTOR (FM#MDI211) HVAC, Plumbing, Sheetmetal, Fire Stop	OWNER: United States Army Corp of Engineers GC: Dobco Inc. One Geoffrey Way Wayne, NJ 07470 Terri Fortier 973-317-9000 terrief@dobcogroup.com	23,314,329	18.16%	4,234,049	19,080,280	21-Jul-21 31-Mar-25
New Fairfield High School & Pool Locker Rooms 54 Gillotti Road New Fairfield, CT State Project #091-0044N & 091-0046CV O&G Project #2012800 SUBCONTRACTOR (FM #MOG213) Plumbing & HVAC	Owner: Town of New Fairfield, CT CM: O&G Industries, Inc. 112 Wall Street Torrington, Ct 06790 Jason Travelstead 860-489-9261 jasontravelstead@ogind.com	10,722,261	98.99%	10,614,240	108,021	25-Aug-21 10-Oct-23
Bristol City Hall Additions & Renovations 111 North Main Street Bristol, CT 06010 SUBCONTRACTOR (FM #MDD221) Plumbng & HVAC	Owner: City of Bristol CMR: D'Amato + Downes JV 400 Middle Street Bristol, CT 06010 Frank Tomcak, Executive Manager cell: 203-800-6556 ftomcak@downesco.com	3,886,757	99.09%	3,851,356	35,401	1-May-22 27-Oct-23

Ferguson Mechanical Co., Inc.
Bonded Projects Currently Under Contract
Revised List as of November 6 2023

PROJECT	OWNER, CM	CONTRACT VALUE	% COMPLETE	COMPLETED \$	WORK REMAINING	START / COMPLETION DATE
Eastern Greenwich Civic Center 90 Harding Road Old Greenwich, CT 06870 SUBCONTRACTOR (FM #MMWO221) Electrical, HVAC, Communications & Fire Alarm	Owner: Town of Old Greenwich CM: Wohlsen Construction Company 2321 Whitney Ave., Suite 101 Hamden, CT 06518 Malcolm McPherson 203-826-2192 mmcpherson@wohlsen.com	3,594,000	51.13%	1,837,564	1,756,436	28-May-22 28-May-24
UCONN South Campus Resident and Dining Hall Project #300200 Mansfield & Gilbert Road Storrs, CT 06269 SUBCONTRACTOR (MKB221) HVAC	OWNER: State of CT, DAS CM: KBE Building Corporation 76 Batterson Park Road Farmington, CT 06032 Tony Maselli 860-284-7110 amaselli@kbebuilding.com	25,256,065	66.14%	16,704,643	8,551,422	1-Nov-22 1-Jul-24
UCONN South Campus Resident and Dining Hall Project #300200 Mansfield & Gilbert Road Storrs, CT 06269 SUBCONTRACTOR (MKB222) PLUMBING	OWNER: UCONN Storrs CM: KBE Building Corporation 76 Batterson Park Road Farmington, CT 06032 Tony Maselli 860-284-7110 amaselli@kbebuilding.com	9,337,464	80.63%	7,529,088.23	1,808,376	1-Nov-22 1-Jul-24
Farmington High School / Central Office Project Nos. 052-0076N / 052-0077BE 10 Monteith Drive Farmington, CT 06032 SUBCONTRACTOR (FM #MOG221) HVAC & Plumbing Work	OWNER: Town of Farmington, CT CM: O&G Industries, Inc. 112 Wall Street Torrington, Ct 06790 Nelson Reis, PM 860-489-9261 nelsonreis@ogind.com	17,240,037	77.32%	13,330,655.82	3,909,381	10-Nov-22 8-Aug-24

Ferguson Mechanical Co., Inc.
Bonded Projects Currently Under Contract
Revised List as of November 6 2023

PROJECT	OWNER, CM	CONTRACT VALUE	% COMPLETE	COMPLETED \$	WORK REMAINING	START / COMPLETION DATE
UCONN South Campus Infrastructure - Package 2 Project #300241 31 Ledoyt Road Storrs, CT 06269 SUBCONTRACTOR (MOG231) HVAC	OWNER: UCONN Storrs CM: O&G Industries, Inc. 112 Wall Street Torrington, CT 06790 Nick Pedrolini nickpedrlini@ogind.com	13,519,000	0.00%	0.00	13,519,000	27-Nov-23 15-May-26
Waterbury Arts Magnet School / Palace Theater HVAC Upgrades East Main Street Waterbury, CT TRADE: HVAC	OWNER: City of Waterbury 235 Grand Street Waterbury, CT 06702 Kevin McCaffery, Director of Purchasing 203-574-6749 kmccaffery@waterburynct.org	8,977,480	0.00%	0.00	8,977,480	8-Nov-23 2-Aug-24
Windermere Elementary School Phs. 2 Project No. 048-0060 RNV 2 Abbott Road Ellington, CT 06029 SUBCONTRACTOR: Plumbing & HVAC	OWNER: Town of Ellington CM: O&G Industries, Inc. 112 Wall Street Torrington, CT 06790	10,142,000	0.00%	0.00	10,142,000	1-Dec-23 26-May-26
REMAINING AGGREGATE WORK CAPACITY:					<u>68,300,571</u>	
WORK REMAINING:					<u>156,699,429</u>	

1. Proposer Information. Please provide the following information:

- a. Firm Name; Ferguson Mechanical Company, Inc.
- b. Permanent main office address; 112 Northwest Drive, Plainville, CT 06062
- c. Date firm organized; July 8, 1997
- d. Legal Form of ownership. Incorporated in State of CT
- e. How many years have you been engaged in services you provide under your present name?; 26 Years
- f. Names, titles, reporting relationships, and background and experience of the principal members of your organization, including officers. **SEE ATTACHED RESUMES**

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; **SEE ATTACHED**
- 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: **SEE ATTACHED PROJECTS COMPLETED**
 - 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 City of Waterbury agency;
- 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; and
- 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. **NONE**

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; **(see attachment 1.F, 2.a., 2.b. & DAS Prequalification Certification)**

b. **Work Plan.** Please describe the approach that would be generally followed in undertaking the Scope of Services in Section C above; and: **Ferguson will follow Plans & Specifications**

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. **If applicable, see Plans & Specifications.**

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. Each price should encompass the entire Scope of Services per project as outlined in this RFP. The City reserves the right to negotiate costs, scope of services, and key personnel based on provider proposals.

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? **NO**

b. Have you ever defaulted on a contract? **NO** If so, where and why?; **N/A**

c. Is there any pending litigation which could affect your organization's ability to perform this agreement? **NO** If so, please describe; **N/A**

d. Has your firm ever had a contract terminated for cause within the past five years? **NO** If so, provide details; **N/A**

e. Has your firm been named in a lawsuit related to errors and omissions within the past five years? **NO** If yes, provide details; **N/A**

f. During the past seven years, has your firm ever filed for protection under the Federal Bankruptcy laws? **NO** If yes, provide details; **N/A** 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? **NO**

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.

NONE

1. Proposer Information

f. Names, titles, reporting relationships, and background and experience of the principal members of your organization, including officers.

SEE ATTACHED RESUMES

Ryan L. Ferguson

PROFESSIONAL EXPERIENCE

2004 to Present **Ferguson Electric Co., Inc. / Ferguson Mechanical Company, Inc.**
Plainville, CT

President (2019 – Present)

Vice President (2009 to 2019)

Project Manager (2006 to 2009)

- Wheeler Elementary School
- UCONN Gant Renovations STEM Phs. I, Storrs, CT
- UCONN North West Science Quad Infrastructure Phs. 1A, Storrs, CT
- Enfield High School, Enfield, CT
- UCONN STEM, Storrs, CT
- 450 Columbus Blvd.-Tenant Fit Out, Hartford, CT
- CREC Discovery Academy, Wethersfield, CT
- Berlin High School, Berlin, CT
- Eli Whitney CT Tech High School, Hamden, CT
- OGS, Provide Food Lab & Weights & Measures Lab, Albany, NY
- Winthrop & Nathan Hale Elementary Schools, New London, CT
- UCONN Health Center Research Tower, Farmington, CT
- A.I. Prince Regional Technical School, Hartford, CT
- Naugatuck Valley Community College, Waterbury, CT
- Glastonbury Elementary School, Glastonbury, CT
- Vernon Cleaves VOAG School, Wallingford, CT

Assistant PM / Project Engineer (2004 to 2006)

- Linden Street Elementary School, Plainville, CT
- UCONN Hilltop Apartments, Storrs, CT

EDUCATION

Bentley University, Waltham, MA (1999 – 2004) Degree in Business Management

Milford Academy (1998 – 1999)

Plainville, High School – Graduated 1998

Jason C. Hahn

14 Janet Lane, Vernon, CT 06066
Email: jasonhahn17@gmail.com cell# (860) 982-6783

WORK EXPERIENCE

Ferguson Mechanical – Plainville, CT

Project Manager & Health and Safety Officer

September 2016 – Present

- Schedule manpower and equipment on projects to ensure completion in a timely manner.
- Implemented a company-wide health and safety program.
- Coordinate and collaborate with architects, engineers and construction managers.

Performance Plumbing and Heating, LLC- Torrington, CT

Project Foreman

November 2014 – September 2016

- Responsible for all aspects of on-site production.
- Ordered all materials, plan daily tasks, attend meeting and completed all necessary paperwork for each project.
- Managed labor on prevailing wage commercial construction projects.

The Hartford Mechanical Co. – Glastonbury, CT

Project Manager, Affirmative Action Officer, Safety Officer

June 1994 – Nov. 2014

- Responsible for ordering materials, scheduling labor, daily jobsite paperwork as well as submittals, close-out items and job bidding.
- In charge of on-site installations and coordination with other trades.
- Accountable for filing the necessary compliance paperwork with the State of Connecticut.

EDUCATION

Central Connecticut State University – New Britain, CT

Graduated May 1997

- Graduated with a Bachelor of Science degree in Industrial Technology

LICENSING CLASSIFICATIONS

- P-1 Unlimited Contractor #0284718-P1
- F-1 Unlimited Contractor #0040706-F1
- Massachusetts Master Plumber #PL 16497-M
- OSHA Authorized Construction Trainer #11-105507
- Emergency Medical Technician #001914

SOFTWARE/SYSTEM SKILLS

Microsoft Office

Doug Blanchflower
88 Church Street
Newington, CT 06111

Experience:

2014 to Present: Ferguson Mechanical Co., Inc. – Plainville, CT - Project Manager

Responsible for overseeing all types of Mechanical Projects from inception to project close-out. Duties include supervising Foremen and Subcontractors, buying of materials and major equipment, coordination with Owners, Architects, etc.

- UCONN Steam Vault, Storrs, CT
- UCONN Putnam Refectory, Storrs, CT
- Naugatuck Valley Community College, Waterbury, CT
- UCONN Gant Renovations STEM Phs. I & II, Storrs, CT
- UCONN Northwest Science Quad, Storrs, CT
- UCONN 2000 Code Remediation, Mansfield Apts.
- CREC Museum Academy, Bloomfield, CT
- Enfield High School, Enfield, CT

2003 – 2014 Base Mechanical, East Lyme, CT – Project Manager

2001 – 2003 Ferguson Mechanical Company, Inc. – Plainville, CT – Project Manager

1991 - 2001 All Pro Mechanical Inc.

Berlin Community Center	Plumbing/HVAC
Bolton Senior Center	Plumbing/HVAC
Greenwich Country Club	Plumbing/HVAC
Stanwich Country Club	Plumbing/HVAC
Wilton Country Club	Plumbing/HVAC
Burlington Town Garage	Plumbing
Bristol Municipal Facility	Plumbing/HVAC
Bristol Hospital	HVAC

1986 – 1991 Janazzo Heating and Air Conditioning

Worked towards acquiring a P2, S2 license in the field for plumbing, heating and air conditioning.

EDUCATION:

1984 – 1986 EC Goodwin Satellite School (Heating and Air Conditioning)

1982 – 1986 Bristol Eastern High School

PROFESSIONAL

REGISTRATION: Licensed P-1, S-1, SM-1 Connecticut

JAMES S. BATTISTA

PROFESSIONAL EXPERIENCE

1986 – Present: Ferguson Mechanical Co., Inc.
 Ferguson Electric Co., Inc.

Thirty (30+) years of experience in all aspects of MEP and general construction trades. This includes practical working knowledge of electrical, mechanical, plumbing, as well as, site excavation work.

PROJECT NAME: Castle Point VAMC Chiller Plant Upgrade
 Contract Value: \$5,041,382.52

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 30 Field/Foreman trade personnel, along with the overall construction of HVAC and Plumbing systems, specific excavation applications.

PROJECT NAME: Naugatuck Valley Community College
 Contract Value: \$8,627,719.75

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 30 Field/Foreman trade personnel, along with the overall construction of HVAC and Plumbing systems, specific excavation applications.

PROJECT NAME: 450 Columbus Blvd. – Tenant Fit-Out
 Contract Value: \$23,466,761

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 30 Field/Foreman trade personnel, along with the overall construction of HVAC and Plumbing systems, specific excavation applications.

PROJECT NAME: Rocky Hill High School
 Contract Value: \$12,821,000

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 30 Field/Foreman trade personnel, along with the overall construction of HVAC and Plumbing systems, specific excavation applications.

JAMES S. BATTISTA (continued)

PROJECT NAME: W.C.S.U. Visual and Performing Arts Center
Contract Value: \$8,827,260

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 30 Field/Foreman trade personnel, along with the overall construction of HVAC and Plumbing systems, specific excavation applications.

PROJECT NAME: Catherine McGee Middle School, Berlin, CT
Contract Value: \$3,220,342

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 20 Field/Foreman trade personnel, along with the overall construction of HVAC and Plumbing systems, specific excavation applications.

PROJECT NAME: University of CT Health Center, Research Tower, Farmington, CT
Contract Value: \$9,366,856

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 15 Field/Foreman trade personnel, along with the overall construction of HVAC and Plumbing systems, specific excavation applications.

PROJECT NAME: Walgreens Distribution Center, 80 International Drive, Windsor, CT
Contract Value: \$19,000,000

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 60 Field/Foreman trade personnel, along with the overall construction of electrical systems, specific excavation applications and general plumbing finishes.

PROJECT NAME: Pfizer Global Development Facility, New London, CT
Contract Value: \$13,459,520

POSITION: Project Field Coordinator

RESPONSIBILITIES: Coordination of approximately 45 Field/Foreman trade personnel, along with the overall construction of electrical systems, specific concrete and excavation applications.

JAMES S. BATTISTA (continued)

PROJECT NAME: Barnard Hall, CCSU, New Britain, CT
Contract Value: \$1,325,061

POSITION: Coordinator (MEP)

RESPONSIBILITIES: Coordination of approximately 10 Field/Foreman trade personnel, in all aspects of tenant fit-out and general building construction.

EDUCATION:

- Currently Hold E2 License
- 10 Hour OSHA Certification
- Continuing Education in Electrical Code
- Various Training Classes in General Construction Technology

David L. Soucy

EXPERIENCE:

March 2005 - Present Ferguson Electric Company, Inc. – Plainville, CT
Ferguson Mechanical Company, Inc. – Plainville, CT
General Foreman: Responsible for running projects in areas of layout, coordination, manpower and material requisition.

CURRENT PROJECTS: John F. Kennedy Middle School, Enfield, CT

COMPLETED PROJECTS: UCONN Gant Renovations STEM Phs. 1, Storrs, CT
Enfield High School, Enfield, CT
450 Columbus Blvd.-Tenant Fit Out, Hartford, CT
Berlin High School, Berlin, CT
H.C. Wilcox Tech School, Meriden, CT
OGS Food Labs, Albany, NY
Central Place, Plainville, CT
Central CT State University, New Britain, CT
W. F. Kaynor RVT School, Waterbury, CT
Lyman Hall High School, Wallingford, CT
ESPN, Bristol, CT
Waterford Elementary School, Waterford, CT

1993 – March 2005 PJ Lodola Electrical Contractors – Windsor Locks, CT
General Foreman: Responsible for running projects in areas of layout, coordination, manpower and material requisition.

COMPLETED PROJECTS: Big Y, Waterford, CT
Big Y, North Haven, CT
Unisource, Bloomfield, CT
Lego Dinning Facility, Windsor, CT
Big Y, Avon, CT
Travelers Insurance Company, Hartford, CT
Lego Distribution Center, Windsor, CT
The Phoenix, Hartford, CT
Mt. Sinai Hospital Child Psychology Ward, Hartford, CT
Mt. Sinai Alcohol and Drug Rehabilitation Center, Hartford, CT

EDUCATION: New England Tech – 1992
Tolland High School – 1990

LICENSE: OSHA-10
State of CT – ELC.0191565-E1
Ives Mobile Equipment Operator Certificate
Lead Awareness

RESUME

Christopher Nuñez

Relevant Experience

Project Manager | *August 2022 – Present*
FERGUSON | Plainville, CT

Project Manager | *August 2018 – August 2022*
Main Enterprises, Inc. | Stratford, CT

- Manage various commercial, residential, university & assisted living HVAC/Plumbing projects.
- Coordinate equipment, vendor & subcontractor buyouts within a given budget.
- Track project financials, manage profit & losses, oversee allotted project man-days.
- Track project progress, including producing bi-weekly reports and punch list items.
- Coordinate with vendors for equipment submittals and releases.
- Track long lead items & ensure they are released in a timely manner to meet project schedule.
- Oversee shop drawing procurement with drafting team and submit to design team for approval.
- Attend weekly project management meetings with trades & contractors to review progress.
- Attend trade coordination meetings to ensure seamless installation amongst other subcontractors.

Assistant Project Manager | *January 2017 – August 2018*
L&M Air Inc. | Long Island City, NY

- Assist the Project Managers in their day-to-day duties.
- Track, submit & log submittals, RFI's & shop drawings, including any necessary revisions.
- Coordinate with vendors for releases and deliveries of material and equipment.
- Review shop drawings for consistency & ensure that design teams mark-ups are addressed.
- Coordinate with other trades during job scheduling; deliveries, installation, start-ups etc.
- Maintain a healthy relationship with contractors and ownership.
- Manage subcontractors and ensure they are meeting the job schedule.
- Assist with job closeout; gather and submit closeout package, execute punch-list items, coordinate with commissioning process.

Education

New York Institute of Technology - Bachelor of Science in Mechanical Engineering
Received in May 2016

Relevant Projects

- 885 Washington Boulevard, Stamford CT (HVAC), The Whiting-Turner Contracting Company, \$9.8mil.
- Suffield Academy, Suffield CT (HVAC/PL), FIP Construction, Inc., \$1mil.
- Gristmill Building B ("The Curb"), Norwalk CT (HVAC), Building & Land Technology, \$3mil.
- Sunrise of Wilton, Wilton CT (PL), Wohlsen Construction Company, \$1.3mil.
- The Residence at Selleck's Woods, Wohlsen Construction Company, \$1.9mil.

Brian D. Whalen

Education

Bentley College, Waltham, MA
Bachelor of Science Degree, Finance, May 2003

Employment Experience

Ferguson Mechanical Company, Inc. Plainville, CT 12/06-present
Project Manager

- Manage all aspects of mechanical (HVAC, plumbing and fire protection) trades on the following projects:
 - North Branford High Phase 2, North Branford, CT
 - Jefferson Elementary, Norwalk, CT 2021 – 2022
 - Ponus Ridge Elementary, Norwalk, CT 2019 - 2021
 - Smalley Elementary School, New Britain, CT 2018 - 2019
 - North Haven Police Department, North Haven, CT 2018-2019
 - E.C.S.U. Goddard Hall, Willimantic, CT 2018-2019
 - Eastern Correctional Facility, Napanoch, NY 2017-2018
 - Deans Mill Elementary School, Stonington, CT 2017-2018
 - West Vine Elementary School, Stonington, CT 2017-2018
 - 450 Columbus Blvd, Hartford, CT 2015-2017
 - East Hampton High School, East Hampton, CT 2014-2017
 - SCSU New Academic Lab, New Haven, CT, 2013-2017
 - New Haven Rail Yard, 2010-2015
 - Winthrop & Nathan Hale Elementary Schools, 2010-2014
 - UCONN Research Tower, 2009-2010
 - Glenville Elementary School, 2009
 - Brookfield High School, 2008-2009
 - Buley Library, 2008-2009
 - Naugatuck Valley Community College, 2007-2009
 - Glastonbury Elementary School, 2007-2009
 - A.I. Prince Technical High School, 2006-2010
- Oversee all onsite project activity to ensure projects are completed on schedule, within budget and in accordance with the contract documents.
- Coordinate & communicate between field personnel, sub-contractors, general contractors and design team.
- Management of special projects which includes complete renovations of commercial buildings including plumbing, HVAC, site work and all aspects of carpentry work.
 - Central Place Apartments Renovations, 2007-2009
 - Additions/Renovations to Ferguson Realty, 2008-2009

Whalen Bros. Construction, LLC Wallingford, CT 11/05 - 12/06
Owner

- Coordinate all business functions for a home improvement contracting business.
- Responsible for selling, coordinating and successfully completing residential and commercial renovations.
- Coordinate work with sub-contractors.
- Perform all aspects of carpentry work including but not limited to framing, siding, roofing, windows, sheetrock, finishes, etc.

Richard Bush Construction, LLC Cheshire, CT 9/04-11/05
Foreman

- Oversaw the construction of residential homes.
- Performed all aspects of construction including but not limited to framing, siding, windows plumbing and finish work.
- Monitored the work of all sub-contractors.

Viplex Inc. San Diego, CA 9/03-9/04
Foreman

- Managed a siding crew installing vinyl siding and replacement windows on residential homes.
- Provided customer service to homeowner's on the job site.

2. Experience, Expertise and Capabilities

a. Philosophy Statement and Business Focus

One of the Northeast's most respected businesses, Ferguson Electric Co., Inc. and Ferguson Mechanical Co., Inc. are diversified specialty contractors supplying fully integrated electrical and mechanical systems for new and renovated construction projects.

Combined, the companies employ more than 200 full-time skilled professionals using state-of-the-art equipment and technology. Ferguson is particularly well-known for its ability to work in harmony with all merit and organized trades on a wide range of projects throughout the Northeast Region.

Ferguson Electric has been in business since 1925 starting with a small electrical department employing less than 30 employees with gross revenue of \$500,000 per year. As Ferguson Electric grew, the company was incorporated in 1967 and has grown from \$500,000 per year in gross revenue to approximately \$30,000,000 per year in gross revenue and incorporated a mechanical company, Ferguson Mechanical Company, Inc. in 1997.

A commercial construction leader, Ferguson has the proven experience, talent and technology to skillfully and successfully complete any project no matter the size or scope. Ferguson works closely with each customer to tailor smart, cost-effective plans. From site evaluation to proposal, schedule to completion, every project is a priority.

At the core of Ferguson's work philosophy is a strong, long-standing belief that every employee should have a safe and healthy work environment, and every customer should be left with the same. They know a safe workplace not only increases overall productivity and workmanship quality, it drives project completion and cost control. Ferguson's proprietary Safety, Productivity and Quality Program includes ongoing education, pre-project evaluations, and random site audits. It's a formula that adds up to peace of mind.

Experienced working within highly detailed specifications and requirements, every Ferguson project is completed in a professional and timely manner, demonstrating expert craftsmanship and adhering to strict quality control.

Ferguson has continued to drive innovation while maintaining the highest standard of quality, performance, and safety, which has earned the company its reputation for excellence in all phases of electrical and mechanical construction.

HVAC, Plumbing, Fire Protection and Process Piping are just some of the fundamental, business critical systems that customers have been relying on Ferguson to design, install, manage and maintain.

HVAC

- High-tech energy management systems, boilers, and steam systems
- Stainless steel, black iron and welded materials.

Plumbing

- Complete plumbing resources, including gas piping, and installation and maintenance of pumps and plumbing fixtures in all industrial, commercial and special project applications.

Process Piping

- Special piping systems used for chemicals and other elements that must be isolated from a central output system.

Building Information Modeling

- Our design teams uses Building Information Modeling (BIM) to increase productivity in building design and construction.

Ferguson's key to success is an appreciation for the work environment and customers' ongoing business commitments. By relying on cutting-edge technology and hands-on experience to complete new installations, renovations and retrofits, Ferguson has earned the trust and respect of their customers.

Whether it's a school renovation or a new expansive corporate or industrial facility, businesses count on the Ferguson team to provide innovative solutions that drive cost and performance efficiency.

2. Experience, Expertise and Capabilities

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:

SEE ATTACHED PROJECTS COMPLETED

COMPLETED PROJECT (Last 5 Years)

2. b. Experience, Expertise Capabilities

Project Title & Location	Describe the Scope of Work your Firm performed	Construction Start Date	Construction Finish Date	Original Contract Amount	Final Contract Amount	Original Contract Duration (cal.days)	Final Contract Duration (cal.days)	Owner	Owner's Representative	Design Firm
Enfield High School Expansion & Renovate as New Phase II 1264 Enfield Street Enfield, CT 06082	Subcontractor HVAC & Plumbing	11/10/2014	8/31/2017	19,710,500	20,958,144	797	1,025	State of CT	CM: Gilbane Building Co. Patrick Delany 860-368-5100 ext. 5120 pdelany@gilbaneco.com	Silver/Petrucci + Assoc. 3190 Whitney Avenue Hamden, CT 06518 Robert Washburn 203-230-9007
U.C.H.C. Main Bldg. Renovation Project 2 263 Farmington Avenue Farmington, CT 06032	SUBCONTRACTOR HVAC Mechanical Piping & Plumbing	2/12/2016	9/30/2017	5,136,620	6,010,809	383	596	University of CT	CM: Whiting-Turner Contracting Co. 2 Enterprise Drive, Suite 504 Shelton, CT 06484 Todd Werner Ph: 203-789-8700 todd.werner@whiting-turner.com	Startect 400 Morgan Center 101 East Diamond Street Butler, PA 16001 Scott Sukits 724-285-4761
Housatonic Community College Lafayette Hall Renovations & New Addition 900 Lafayette Blvd. Bridgeport, CT 06604	SUBCONTRACTOR HVAC	11/2/2015	4/30/2018	5,177,000	5,928,101	732	910	State of CT, DCS	CM: Newfield Construction, Inc. 225 Newfield Avenue Hartford, CT 06106 Steve Buccieri - 860-953-1477 stevebuccieri@newfieldconstruction.com	Amenta Emma Architects 242 Trumbull Street Hartford, CT 06103 Christopher Legiadre 860-549-4725
Ell Whitney CT Technical High School 71 Jones Road Hamden, CT	PRIME HVAC & Plumbing	10/3/2012	5/7/2018	14,347,000	15,439,479	1,349	2,011	State of CT, DCS	CM: Fusco Corporation Long Wharf Maritime Center 555 Long Wharf Drive, Suite 14 New Haven, CT 06511-5864 Gene Festa - 203-777-7451 gffesta@fusco.com	Antiozzi Associates P.C. 271 Fairfield Ave. Bridgeport, CT Joel Smith 203-377-1300 x2426
S.C.S.U. New Academic Lab Bldg. Project#BL-RS-283-CMR 485 Fitch Street New Haven, CT	SUBCONTRACTOR HVAC	5/7/2013	5/20/2018	8,572,000	9,728,502	1,689	1,839	State of CT, D.C.S.	CMR: FIP Construction Co., Inc. Mark E. Culligan, Sr. PM Ph: 203-271-0356 culliganm@fipconstruction.com	Centerbrook Architects & Planners, LLP 67 Main Street Centerbrook, CT Reno Migani 860-767-0775
Berlin High School Phase 2 Contract No. 21893 Project #007-0065 E&P/R 139 Patterson Way Berlin, CT 06037	SUBCONTRACTOR HVAC & Temperature Controls	6/26/2013	5/26/2018	12,970,000	13,555,844	1,204	1,795	State of CT, DOE	CM: FIP Construction Co., Inc. Allan Cox, Jr. coxajr@fipconstruction.com 203-271-0356	Silver/Petrucci + Assoc. 3190 Whitney Avenue Hamden, CT 06518 Jim Peckingham 203-230-9007
Rocky Hill High School 50 Chapin Avenue Rocky Hill, CT	TRADE HVAC & PLUMBING	10/9/2014	5/26/2018	12,821,000	12,831,858	1,395	1,325	Town of Rocky Hill, CT	CM: O&G Industries, Inc. Mark Carroll 860-496-4233 mcarroll@ogind.com	Friar & Associates, Inc. 281 Farmington Ave. Farmington, CT 06032 Adam Palmer 860-678-1291
East Hampton High School Additions & Renovations 15 North Maple Street East Hampton, CT 06424	PRIME HVAC System	12/29/2014	5/26/2018	7,367,000	7,067,556	925	1,244	Town of East Hampton	CM: Downes Construction Co. 200 Stanley Street New Britain, CT 06050 Jeff Anderson 860-229-3755 janderson@downesco.com	SLJ/M Collaborative 80 Glastonbury Blvd. Glastonbury, CT 06033 Jeff LaMothe 860-657-8077
Uconn North West Science Quad Infrastructure Phase 1A - Tunnels & Utilities Project #902115 UConn Storrs, CT	SUBCONTRACTOR Site Mechanical	6/2/2017	8/31/2018	2,536,000	2,765,615	214	456	University of CT	CM: Whiting-Turner Contracting Todd Werner Ph: 203-789-8700 todd.werner@whiting-turner.com	BVH Integrated Services 50 Griffin Road South Bloomfield, CT 860-286-9171
Waterbury Consolidated Public Works Facility 526 Huntington Avenue D-P-W Project #16043B-01 Waterbury, CT	SUBCONTRACTOR HVAC	5/10/2017	12/28/2018	2,418,816	2,435,407	575	598	City of Waterbury, CT	CM: KBE Building Corporation Dave Heavener, PM 860-250-3761 Cell dheavener@kbebuilding.com	Weston & Sampson Engineers, Inc. 100 Foxborough Blvd. Foxborough, MA 02035 508-696-3034

COMPLETED PROJECT (Last 5 Years)

2. b. Experience, Expertise Capabilities

Project Title & Location	Describe the Scope of Work your Firm performed	Construction Start Date	Construction Finish Date	Original Contract Amount	Final Contract Amount	Original Contract Duration (cal.days)	Final Contract Duration (cal.days)	Owner	Owner's Representative	Design Firm
West Vine Elementary School Renovations and New Addition Project #137-0048 RNV/EA Stonington, CT	TRADE Plumbing and HVAC & Controls	5/24/2017	3/31/2019	4,149,262	4,167,517	678	677	Town of Stonington, CT	CM: Gilbane Building Company 208 New London Tpke. Glastonbury, CT 06033 Katie Kratz 860-368-5100 kratz@gilbanco.com	Drumney Rosane Anderson, Inc. Studio 205 225 Oakland Road South Windsor, CT 860-644-8300
Deans Mill Elementary School Renovations and New Addition Project #137-0048 RNV/EA Stonington, CT	TRADE Plumbing and HVAC & Controls	5/24/2017	3/31/2019	4,642,847	4,696,581	678	677	Town of Stonington, CT	CM: Gilbane Building Company 208 New London Tpke. Glastonbury, CT 06033 Katie Kratz 860-368-5100 kratz@gilbanco.com	Drumney Rosane Anderson, Inc. Studio 205 225 Oakland Road South Windsor, CT 860-644-8300
Town of East Haddam New Municipal Facility 1 Plains Road Moodus, CT	SUBCONTRACTOR HVAC	6/20/17	2/23/18	1,358,214	1,389,508	249	249	Town of East Haddam	CM: Downes Construction Company 200 Stanley Street New Britain, CT 06050 Scott Scholl, PM Office: 860-229-3755 / Cell: 203-509-2128 sscholl@downesco.com	Silver Petrucci + Assoc. 3190 Whitney Avenue Hamden, CT 06518 203-230-9007
UConn Gant Renovations STEM Phase 1 - Project #901803 Storrs Campus, Bldg. #0331 Storrs, CT	SUBCONTRACTOR HVAC	8/8/2017	5/20/2019	10,427,000	11,131,325	651	651	UConn Storrs, CT	CM: The Whiting-Turner Contracting Co. 195 Church Street, 10th Floor New Haven, CT 06510 Kevin Seidensticker, PM Office: 203-777-6783 / Cell: 203-668-0211 kevin.seidensticker@whiting-turner.com	BVH Integrated Services 50 Griffin Road South Bloomfield, CT 860-286-9171
Goddard Hall - Communication Renovation - Phases 1 & 2 Eastern CT State University 14 Eastern Road DAS Project No. BI-RW-329 Williamantic, CT	SUBCONTRACTOR HVAC & Controls	11/27/17	8/29/19	5,761,627	5,943,139	641	641	Town of North Stonington	CMR: PDS Engineering & Construction 107 Old Windsor Road Bloomfield, CT 06002 Randy J. Becker 860-978-6316 (cell) randyb@pdsac.com	MDS National 99 Chauncy Street 8th Floor Boston, MA 02111 617-338-5350
New Lebanon Elementary School 25 Mead Avenue State Project #057-0112-DV/N Gilbane Job No. J07168-000 Greenwich, CT 06630	SUBCONTRACTOR Plumbing	7/31/17	3/12/20	1,562,717	1,666,284	959	1,078	Town of Greenwich, CT	CM: Gilbane Building Company 208 New London Tpke. Glastonbury, CT 06033 Daniel Phillips, PM 860-368-5100 DPhillips@gilbanco.com	Tai Soo Kim Partners 146 Wyllys Street Hartford, CT 860-547-1970
North Stonington Schools Modernization North Stonington School Wheeler High/Middle School Project #102-0024 EA/R North Stonington Elementary School Project #102-0025 EA/R North Stonington, CT	SUBCONTRACTOR Plumbing & HVAC	2/21/2018	4/8/2020	1,584,000	1,562,717	778	778	Town of N Stonington, CT	GC: Downes Construction Co. 200 Stanley Street New Britain, CT Steven Smith 860-229-3755 ssmith@downesco.com	Quisenberry Arcan Arch. 318 Main Street Farmington, CT 06032 860-677-4594
Fairfield Holland Hill Elementary School 105 Meadowcroft Road Project #051-0146 EA Fairfield, CT	TRADE Plumbing & HVAC	4/30/18	8/21/19	3,467,000	3,730,577	479	479	Town of Fairfield, CT	CM: Gilbane Building Company 208 New London Tpke. Glastonbury, CT 06033 Katie Kratz 860-368-5100 kratz@gilbanco.com	Kenneth Boroson Archs. 315 Peck Street New Haven, CT 06513 203-624-0662
Rocky Hill Intermediate School Phase 2 10 School Street Project #119-0052 Rocky Hill, CT	TRADE HVAC	4/24/18	8/23/19	3,402,000	3,454,634	487	487	Town of Rocky Hill, CT	CM: Newfield Construction 225 Newfield Avenue Hartford, CT 06106 Tom DiMauro 860-944-6744 (cell) tomdi Mauro@newfieldconstruction.com	Kaestle Boos Architects 416 Slater Road New Britain, CT 06053 860-229-0361

COMPLETED PROJECT (Last 5 Years)

2. b. Experience, Expertise Capabilities

Project Title & Location	Describe the Scope of Work your Firm performed	Construction Start Date	Construction Finish Date	Original Contract Amount	Final Contract Amount	Original Contract Duration (cal.days)	Final Contract Duration (cal.days)	Owner	Owner's Representative	Design Firm
UConn Athletic District Development Project #201696 Jim Calhoun Way Storrs Campus Storrs, CT	SUBCONTRACTOR HVAC	4/19/19	12/16/2020	2,946,000	2,964,798	657	608	University of CT	CM: Daniel O'Connell's Sons, Inc. 800 Kelly Way Holyoke, MA 01040 Kevin Burns, PM 413-246-5959 (cell) kburns@oconnells.com	Newman Architects, PC 300 York Street New Haven, CT 06511 203-772-1990
Ponus Ridge Middle School Alterations and Addition 21 Hunters Lane Norwalk, CT	SUBCONTRACTOR HVAC & Plumbing	3/10/2019	5/21/2021	9,137,000	9,709,345	608	804	City of Norwalk, CT	CM: Newfield Construction 225 Newfield Avenue Hartford, CT 06106 Stephen Buchen 860-953-1477 stephenbuchen@newfieldconstruction.co	Perkins Eastman Archs. 115 Fifth Avenue New York, NY 10003 Tim Greco 212-353-7200 T.greco@perkineastman.com
UConn Gant Renovations STEM Phase 2 - Project #901803 Storrs, CT	SUBCONTRACTOR Plumbing & HVAC	10/4/2019	7/28/2021	10,484,000	10,755,215	520	664	University of CT	CM: The Whiting-Turner 195 Church Street, 10th Floor New Haven, CT 06510 Kevin Seidensicker, PM Office: 203-777-6783 / Cell: 203-668-0211 kevin.seidensicker@whiting-turner.com	Goody Clancy Arch. 33 Moulton Street Cambridge, MA 02138 617-262-2760
Anna H. Rockwell Elementary School Additions and Renovations 400 Whiteley Drive State Project #009 0058 RNV Bethel, CT	TRADE CONTRACTOR PLUMBING	5/14/2019	7/28/2021	1,871,000	2,068,022	670	807	Town of Bethel, CT	CM: Rizzo Corporation 84 Triangle Street Danbury, CT 06810 Kenneth Hunt 203-731-3131 khunt@rizzocorporation.com	Perkins Eastman 115 Fifth Avenue New York, NY 10003 212-353-7200
Ansonia Police Department 65 Main Street Ansonia, CT	SUB-SUBCONTRACTOR SCOPE: Plumbing & HVAC	9/30/2019	10/1/2021	622,250	622,250	610	733	City of Ansonia, CT	CM: Barton Construction Company 319 Washington Avenue North Haven, CT 06473 John Andrin, PM 860-376-5074 jandrin@bartonconstruction.com	Jacuriski Humes Arch. 15 Massino Dr., Suite 101 Berlin, CT 06037 860-828-9221
Wendell Cross Elementary School 1255 Hamilton Avenue Waterbury, CT	SUBCONTRACTOR Plumbing & HVAC	6/5/2019	9/30/2021	3,131,239	3,131,239	750	849	City of Waterbury, CT	CM: Newfield Construction, Inc. 225 Newfield Avenue Hartford, CT 06106 Brian Grant, PM 860-716-1439 briangrant@newfieldconstruction.com	Frar Architecture, Inc. 21 Talcott Notch Road Farmington, CT 06032 860-678-1291
SCSU Health & Human Services Bldg 501 Crescent Street Project #BI-RS-329 New Haven, CT	SUBCONTRACTOR HVAC	1/28/2020	9/30/2021	419,252	615,684	585	612	State of CT, DAS	Sullivan Benson, LLC 112 Northwest Drive (Rear) Plainville, CT 06062 Doug Blanchflower, PM dblanchflower@sullivanbenenson.com	Stigals & Partners 84 Orange St New Haven, CT 06510 203-786-5110
Wheeler Elementary School 15 Cleveland Memorial Drive Plainville, CT	TRADE Plumbing	8/31/2018	10/31/2021	1,192,000	1,231,733	880	1,158	Town of Plainville, CT	CM: O&G Industries, Inc. 112 Wall Street Torrington, CT 06790 Jason Travelstead, PM 860-489-9261 jasontravelstead@ogind.com	Kaestle Boos Architects 416 Slater Road New Britain, CT 06053 860-229-0361
North Haven Police Department 8 Linsley Street North Haven, CT 06473	Subcontractor HVAC	8/1/18	1/31/19	1,347,000	1,429,383	262	184	Town of North Haven	CM: Downes Construction Co 200 Stanley Street New Britain, CT 06050 Brad Percival 860-982-6630 bpercival@downesco.com	Jacuriski Humes Architects, LLC 15 Massino Drive, St.101 Berlin, CT 860-828-9221
CREC Academy of Aerospace & Engineering Elementary School 525 Brook Street Project #241-0105 MAGNIPS Rocky, Hill, CT 06067	TRADE Plumbing & HVAC	8/31/18	12/24/19	7,124,000	7,448,006	481	481	CREC	CM: Downes Construction Co., LLC 200 Stanley Street New Britain, CT 06050 Stephen Savino, PM 860-229-3755 ssavino@downesco.com	Frar Architecture Inc. 21 Talcott Notch Road Farmington, CT 06032 860-678-1291
UConn Babbidge Library Phase 1 Stair Tower PROJECT #300008 UConn Campus Storrs, CT 06269	SUBCONTRACTOR HVAC & Plumbing	3/3/2020	6/30/2020	31,969	31,969	120	120	UConn Storrs	CM: Downes Construction Co. 200 Stanley Street New Britain, CT 06050 Travis Burton, PM 860-229-3755 tburnton@downesco.com	designLAB architects, Inc. 35 Channel Center Street Suite 103 Boston, MA 02210 617-350-3005

COMPLETED PROJECT (Last 5 Years)

2. b. Experience, Expertise Capabilities

Project Title & Location	Describe the Scope of Work your Firm performed	Construction Start Date	Construction Finish Date	Original Contract Amount	Final Contract Amount	Original Contract Duration (cal.days)	Final Contract Duration (cal.days)	Owner	Owner's Representative	Design Firm
Bulkeley High School - Phase 2 BOE Office Relocation 300 Weathersfield Avenue Project #064-0314 RNV/BE Hartford, CT	Subcontractor HVAC	3/17/2020	11/30/2020	619,612	619,612	259	259	Hartford School Systems	Arcadis/O&G/C&R Program Mng 207 Main Street, Suite Hartford, CT 06106 Sal Salafia, PM 860-906-1577 salsalafia@arcadis-ogind.com	SLAM Collaborative 80 Glastonbury Blvd. Glastonbury, CT 06033 860-657-8077
Goodwin College CT River Academy 1 Pent Road East Hartford, CT	SUBCONTRACTOR HVAC & Plumbing	11/9/18	8/15/19	1,404,000	1,473,755	240	280	Goodwin College	CM: Downes Construction Co., LLC 200 Stanley Street New Britain, CT 06050 Ryan Patrick, PM 860-229-3755 rpatrik@downesco.com	JCI Architecture PC 120 Hayslope Ave., Ste 400 Hartford, CT 06106 860-247-9226
Mattaluck Museum Renovation and Addition 144 West Main Street Waterbury, CT	SUBCONTRACTOR Plumbing	9/10/2019	12/16/2021	404,750	434,130	750	829	Mattaluck Historical Society	CM: Downes Construction Co., LLC 200 Stanley Street New Britain, CT 06050 860-229-3755	Ann Beha Architects, Inc. 33 Kingston Street Boston, MA 02111 617-338-3000
Naugatuck Valley Community College Renovations to Physical Plant 750 Chase Parkway Project #BI-CTC-500 Waterbury, CT	SUBCONTRACTOR HVAC & Plumbing	3/7/2019	8/13/2021	5,857,000	6,285,373	690	891	State of CT, DAS/CS	Office of Legal Affairs, Policy and Procurement 450 Columbus Blvd., Suite 1302 Hartford, CT 06106-1835 Joel Baranowski 860-713-5612 joel.baranowski@ct.gov	BVH Integrated Services 50 Griffin Road South Bloomfield, CT 860-286-9171
UCONN Athletic District Development Project #201696 Jim Calhoun Way Storrs Campus, Storrs, CT	SUBCONTRACTOR Plumbing & HVAC	4/19/2019	12/16/2020	4,217,000	4,471,006	367	367	UConn Storrs	CM: Gilbane Building Company 208 New London Tpke. Glastonbury, CT 06033 Robert Kowal, Project Manager 860-368-5100 rkowal@gilbaneCo.com	Silver/Petrucelli & Associates 3190 Whitney Avenue Hamden, CT 06518 203-230-9007
Mill Hill Elementary School Addition & Renovations 635 Mill Hill Terrace Project #051-0149 EA Southport, CT 06890	SUBCONTRACTOR Plumbing & HVAC	7/7/2020	6/29/2022	4,217,000	4,471,006	670	723	Town of New Fairfield	CM: Gilbane Building Company 208 New London Tpke. Glastonbury, CT 06033 Robert Kowal, Project Manager 860-368-5100 rkowal@gilbaneCo.com	Silver/Petrucelli & Associates 3190 Whitney Avenue Hamden, CT 06518 203-230-9007
Jefferson Elementary School Renovations and Additions 75 Van Buren Avenue Project #103-0251 RNV Norwalk, CT	PRIME HVAC	2/25/2021	6/27/2022	3,427,000	3,459,014	492	488	City of Norwalk	Newfield Construction Group, LLC 225 Newfield Avenue Hartford, CT 06106 Michael D'Angelo, PM 860-819-1909 Mikedangelo@newfieldconstruction.com	Antinozzi Associates 271 Fairfield Avenue Bridgeport, CT 06604 Lisa Yates 203-551-2446 Lyates@Antinozzi.com
John F. Kennedy Middle School Additions and Renovations Project #049-0140 RNV 155 Raliffa Road Enfield, CT	SUBCONTRACTOR PLUMBING & HVAC	5/21/2020	8/19/2022	9,899,000	10,680,068	831	821	Town of Enfield	CM: Gilbane Building Company 208 New London Tpke. Glastonbury, CT 06033 Robert Kowal 860-368-5100 rkowal@gilbaneCo.com	JCJ Architecture 120 Hayslope Avenue Suite 400 Hartford, CT 06106
UConn Hockey Arena & 523 Jim Calhoun Way Storrs, CT 06269 Project #300133	TRADE HVAC	12/29/2021	5/28/2023	4,542,000	4,916,164	509	516	Uconn Storrs	CM: Turner Construction 50 Waterview Drive Shelton, CT 06484 David Christoforo 203-712-6070 dchristoforo@tcco.com	JCJ Architecture 120 Hayslope Avenue Suite 400 Hartford, CT 06106
UConn Steam Vault B4 & Line Exigent Project #300247 UConn Storrs Campus Storrs, CT	SUBCONTRACTOR HVAC	7/19/2022	9/28/2023	1,648,824	2,514,071	347	437	Uconn Storrs	CM: The Whiting-Turner 195 Church Street, 10th Floor New Haven, CT 06510 Kevin Saldensticker, PM Office: 203-777-6783 / Cell: 203-688-0211 Kevin.saldensticker@whiting-turner.com	BVH Integrated Services 206 West Newberry Road Bloomfield, CT 06002 Ph: 860-286-9171

Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

Bid Bond

CONTRACTOR:

(Name, legal status and address)

Ferguson Mechanical Company, Inc.
112 Northwest Drive
Plainville, CT 06062

SURETY:

(Name, legal status and principal place of business)

Nationwide Mutual Insurance Company
1100 Locust Street, Dept. 2006
Des Moines, IA 50391-2006
Mailing Address for Notices

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:

(Name, legal status and address)

City of Waterbury
235 Grand Street
Waterbury, CT 06702

BOND AMOUNT: 10% Ten Percent of Amount Bid

PROJECT:

(Name, location or address, and Project number, if any)


Kennedy High School AHU Replacement, Project No 3258OC-9 (RFP #7858)

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 29th day of November, 2023.


(Witness)


(Witness)

Ferguson Mechanical Company, Inc.

(Principal)

(Seal)

By: 

(Title) Ryan L. Ferguson President

Nationwide Mutual Insurance Company

(Surety)

(Seal)

By: 

(Title) Aiza Anderson, Attorney-in-Fact



Power of Attorney

KNOW ALL MEN BY THESE PRESENTS THAT:

Nationwide Mutual Insurance Company, an Ohio corporation

hereinafter referred to severally as the "Company" and collectively as "the Companies" does hereby make, constitute and appoint:

Aiza Anderson

each in their individual capacity, its true and lawful attorney-in-fact, with full power and authority to sign, seal, and execute on its behalf any and all bonds and undertakings, and other obligatory instruments of similar nature, in penalties not exceeding the sum of: **Unlimited**

Surety Bond Number: Bid Bond
Principal: Ferguson Mechanical Company, Inc.
Obligee: City of Waterbury

and to bind the Company thereby, as fully and to the same extent as if such instruments were signed by the duly authorized officers of the Company; and all acts of said Attorney pursuant to the authority given are hereby ratified and confirmed.

This power of attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the board of directors of the Company:

"RESOLVED, that the president, or any vice president be, and each hereby is, authorized and empowered to appoint attorneys-in-fact of the Company, and to authorize them to execute and deliver on behalf of the Company any and all bonds, forms, applications, memorandums, undertakings, recognizances, transfers, contracts of indemnity, policies, contracts guaranteeing the fidelity of persons holding positions of public or private trust, and other writings obligatory in nature that the business of the Company may require; and to modify or revoke, with or without cause, any such appointment or authority; provided, however, that the authority granted hereby shall in no way limit the authority of other duly authorized agents to sign and countersign any of said documents on behalf of the Company."

"RESOLVED FURTHER, that such attorneys-in-fact shall have full power and authority to execute and deliver any and all such documents and to bind the Company subject to the terms and limitations of the power of attorney issued to them, and to affix the seal of the Company thereto; provided, however, that said seal shall not be necessary for the validity of any such documents."

This power of attorney is signed and sealed under and by the following bylaws duly adopted by the board of directors of the Company.

Execution of Instruments. Any vice president, any assistant secretary or any assistant treasurer shall have the power and authority to sign or attest all approved documents, instruments, contracts, or other papers in connection with the operation of the business of the company in addition to the chairman of the board, the chief executive officer, president, treasurer or secretary; provided, however, the signature of any of them may be printed, engraved, or stamped on any approved document, contract, instrument, or other papers of the Company.

IN WITNESS WHEREOF, the Company has caused this instrument to be sealed and duly attested by the signature of its officer the 20th day of August, 2021.

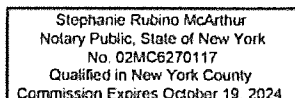


Antonio C. Albanese, Vice President of Nationwide Mutual Insurance Company

ACKNOWLEDGMENT

STATE OF NEW YORK COUNTY OF NEW YORK: ss

On this 20th day of August, 2021, before me came the above-named officer for the Company aforesaid, to me personally known to be the officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, deposes and says, that he is the officer of the Company aforesaid, that the seal affixed hereto is the corporate seal of said Company, and the said corporate seal and his signature were duly affixed and subscribed to said instrument by the authority and direction of said Company.



Notary Public
My Commission Expires
October 19, 2024

CERTIFICATE

I, Laura B. Guy, Assistant Secretary of the Company, do hereby certify that the foregoing is a full, true and correct copy of the original power of attorney issued by the Company; that the resolution included therein is a true and correct transcript from the minutes of the meetings of the boards of directors and the same has not been revoked or amended in any manner; that said Antonio C. Albanese was on the date of the execution of the foregoing power of attorney the duly elected officer of the Company, and the corporate seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority of said board of directors; and the foregoing power of attorney is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of said Company this 29th day of November, 2023.



Assistant Secretary

12/15/2013

ATTACHMENT E PRICING PROPOSAL

Revised:

Replace HVAC – Kennedy High School

RFP#7858

1. General Conditions	\$ 131,800.
2. Asbestos Abatement	\$ 230,000.
3. Demolition	\$ 225,000.
4. Metals (including delegated design of support for HVAC equipment and openings)	\$ 212,000.
5. Thermal/Moisture Protection	\$ 120,000.
6. Fire Stopping / Fire proofing	\$ 20,000.
7. Heating, Ventilation and Cooling	\$ 437,200.
8. Electrical	\$ 430,000.
GRAND TOTAL	\$ 5,747,000.

Estimated Lead Time for Major Equipment: (how many weeks)

AHU 30-40 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.

06-1491108

Social Security Number or Federal Identification Number

Ferguson Mechanical Company, Inc.

Company Name


 Signature of Individual or Corporate Name

Ryan L. Ferguson, President

Corporate Officer (if applicable)



#6

Waterbury Public Schools

Office of Competitive Grants

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

December 27, 2023

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

Re: FIRST Robotics Grant 2023-2025 (CSDE)

Dear President Hernandez and Board of Education Commissioners:

The Connecticut State Department of Education has announced that it is holding a new round of competition for State funded mini-grants to support participation by high school FIRST Robotics Teams in competition activities. The new mini-grants will be awarded for a two-year grant period, 2023-2025.

The Waterbury CTE Supervisor (Michael Merati) has confirmed that Crosby, Kennedy, and Wilby could each benefit from a \$5,000 per team, per year grant. For that reason, I have been working with Mike Merati and the high school robotics coaches, to develop projects to support those three Waterbury FIRST Robotics teams. I will continue to work with Mike to craft a competitive proposal that meets the requirements of the grant.

"Funds may be used for:

- o Materials and supplies;
- o Transportation (limited to cover the expenses for traveling from the school or CBO site to and from competition site(s));
- o Program and competition event registration fees; and
- o Related expenses associated with student participation in the competition."

[Grant Announcement, Punctuation added.]

The grant application must be submitted through eGMS; and the application deadline for submission is January 19, 2024. No City funds are required for these grants. Total grant funds requested will be \$30,000. I respectfully request your permission to apply.

Very truly yours,

Louise Allen Brown

Louise Allen Brown, Grant Writer

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

FIRST Robotics Grant Program
CT State Department of Education
December 27, 2023
Louise Allen Brown

Grant Highlights

Program Purpose:

The purpose of this grant program is “to fund after-school FIRST Robotics Competition programs in Connecticut.” [Grant Guidance Document]

Eligible Applicants:

Eligible applicants must be a school or Community-Based Organization (CBO) Robotics Team.

Grant Period: 7/1/2023-6/30/2025 (two-year grant)

Grant Amount: \$3,000-5,000. per year, per Robotics Team

Matching Funds: None required.

Application Deadline: January 19, 2024 (in eGMS)

Program Description:

This is a competitive grant program. “Funds may be used for:

- o Materials and supplies;
- o Transportation (limited to cover the expenses for traveling from the school or CBO site to and from competition site(s));
- o Program and competition event registration fees; and
- o Related expenses associated with student participation in the competition.”

“Funds cannot be used to supplant existing funding for programming or salaries or to pay student stipends, additionally; funds cannot be used to support a one time, stand-alone event or celebration....”

[Grant Announcement, Punctuation added.]

Waterbury Proposals:

Waterbury will submit three separate grant applications through eGMS: one for each FIRST Robotics Team at Crosby, Kennedy, and Wilby High Schools. If funded, this grant will be used by each team 1) to provide transportation for the FIRST Robotics Competition teams to attend two Connecticut based competitions; 2) to purchase robotics parts and supplies in order to make an effectively working robot; and 3) to purchase other necessary supplies to meet all FIRST Robotics requirements each year.

Budget:

The budget request for each school will be \$5,000 per year for two years –a total of \$10,000 per school (\$30,000 in all). The funds requested will cover costs associated with student travel to FIRST Robotics competition(s), and supplies needed by the teams to comply with each year’s team build and other requirements from FIRST Robotics. No matching funds are required.



#7a

ESSER/ARP Monthly Expenditure Report
Board of Education Workshop
January 4, 2024

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

\$42,569,088 YTD Exp/Enc
\$47,122,088 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



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; Mechanical 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



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
- HVAC construction fees at Wilby and NEMS
- Kitchen construction fees at Crosby and Wilby
- Lightspeed Audio solution

Waterbury Board of Education

FY2023-2024

**November
Expenditure Report**

ACCOUNT	CLASSIFICATION	FY 23 ORIGINAL BUDGET	FY 23 ADJUSTED BUDGET	NOVEMBER EXPENDITURE	NOVEMBER ENCUMBRANCE	CURRENT BALANCE	PROJECTED EXP.	PROJECTED DIFFERENCE
Salaries								
511101	Administrators	\$9,717,780	\$9,717,780	\$3,662,690	\$0	\$6,055,090	\$9,579,074	\$138,706
511102	Teachers	\$51,253,563	\$51,253,563	\$14,151,046	\$0	\$37,102,517	\$51,122,368	\$131,195
511104	Superintendent	\$444,926	\$444,926	\$174,780	\$0	\$270,146	\$454,426	(\$9,500)
511106	Early Incentive Certified	\$912,614	\$912,614	\$943,880	\$0	(\$31,266)	\$943,880	(\$31,266)
511107	Certified Coaches	\$770,000	\$770,000	\$228,084	\$0	\$541,916	\$770,000	\$0
511108	School Psychologists	\$1,244,266	\$1,244,266	\$141,149	\$0	\$1,103,117	\$605,000	\$639,266
511109	School Social Workers	\$2,188,529	\$2,188,529	\$558,293	\$0	\$1,630,236	\$2,088,952	\$99,577
511110	Speech Pathologists	\$2,375,493	\$2,375,493	\$700,398	\$0	\$1,675,095	\$2,171,071	\$204,422
511111	Assistant Superintendent	\$165,000	\$165,000	\$66,635	\$0	\$98,365	\$173,250	(\$8,250)
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	\$546,448	\$0	\$2,158,318	\$2,704,766	\$0
511202	Clerical Wages	\$1,205,011	\$1,205,011	\$400,735	\$0	\$804,276	\$1,014,156	\$190,855
511204	Crossing Guards	\$361,867	\$361,867	\$132,139	\$0	\$229,728	\$361,867	\$0
511206	Educational	\$450,000	\$450,000	\$104,188	\$0	\$345,812	\$450,000	\$0
511212	Substitute Teachers	\$150,000	\$150,000	\$258,212	\$68,255	(\$176,468)	\$326,468	(\$176,468)
511215	Cafeteria Aides	\$80,000	\$80,000	(\$11,073)	\$0	\$91,073	\$0	\$80,000
511217	Library Aides	\$191,191	\$191,191	\$51,348	\$0	\$139,843	\$191,191	\$0
511219	School Clerical	\$2,311,182	\$2,311,182	\$747,236	\$0	\$1,563,946	\$2,213,960	\$97,222
511220	Fiscal Administration	\$693,869	\$693,869	\$212,069	\$0	\$481,800	\$595,000	\$98,869
511222	Transportation Coordinator	\$204,822	\$204,822	\$81,141	\$0	\$123,681	\$203,562	\$1,260
511223	Office Aides	\$180,000	\$180,000	\$56,369	\$0	\$123,631	\$179,248	\$752
511225	School Maintenance Non-Certified	\$2,821,584	\$2,821,584	\$891,822	\$0	\$1,929,762	\$2,583,660	\$237,924
511226	Custodians Non-Certified	\$5,858,425	\$5,858,425	\$1,858,275	\$0	\$4,000,150	\$5,614,712	\$243,713
511227	Overtime - Outside Activities	\$200,000	\$200,000	\$87,729	\$0	\$112,271	\$200,000	\$0
511228	Paraprofessionals	\$10,633,662	\$10,633,662	\$3,215,712	\$0	\$7,417,950	\$10,350,777	\$282,885
511229	Bus Duty	\$265,000	\$265,000	\$1,250	\$0	\$263,750	\$265,000	\$0
511232	Attendance Counselors	\$127,965	\$127,965	\$37,833	\$0	\$90,132	\$128,298	(\$333)
511233	ABA Behavioral Therapist	\$1,755,992	\$1,755,992	\$386,638	\$0	\$1,369,354	\$1,478,008	\$277,984
511234	Interpreters	\$199,353	\$199,353	\$46,345	\$0	\$153,008	\$154,853	\$44,500
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	\$530,517	\$0	\$109,483	\$725,000	(\$85,000)
511653	Longevity	\$7,990	\$7,990	\$300	\$0	\$7,690	\$7,990	\$0
511700	Extra Police Protection	\$686,607	\$686,607	\$72,070	\$0	\$614,537	\$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	\$38,094	\$0	\$31,906	\$70,000	\$0
529003	Meal Allowances	\$24,800	\$24,800	\$19,896	\$2,445	\$2,459	\$24,800	\$0
Subtotal Salaries		\$110,121,312	\$110,121,312	\$30,434,202	\$70,700	\$79,616,410	\$107,664,601	\$2,456,712

ACCOUNT	CLASSIFICATION	FY 23 ORIGINAL BUDGET	FY 23 ADJUSTED BUDGET	NOVEMBER EXPENDITURE	NOVEMBER ENCUMBRANCE	CURRENT BALANCE	PROJECTED EXP.	PROJECTED DIFFERENCE
Purchased Services								
533000	Professional Services	\$2,000,000	\$2,000,000	\$1,314,516	\$685,484	\$0	\$2,800,000	(\$800,000)
533009	Evaluation	\$5,000	\$2,000	\$0	\$0	\$2,000	\$2,000	\$0
533020	Consulting Services	\$325,000	\$322,000	\$226,170	\$95,414	\$417	\$400,000	(\$78,000)
533100	Auditing	\$59,500	\$59,500	\$40,000	\$1,500	\$18,000	\$59,500	\$0
539005	Sporting Officials	\$25,000	\$25,000	\$801	\$0	\$24,199	\$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	\$545,607	\$425,675	\$416,718	\$1,388,000	\$0
543011	Maintenance - Service Contracts	\$800,000	\$800,000	\$251,365	\$526,737	\$21,898	\$800,000	\$0
544002	Building Rental	\$568,956	\$568,956	\$220,728	\$336,228	\$12,000	\$568,956	\$0
545002	Water	\$250,000	\$250,000	\$64,177	\$0	\$185,823	\$250,000	\$0
545006	Electricity	\$3,129,855	\$3,129,855	\$961,051	\$0	\$2,168,804	\$3,129,855	\$0
545013	Security/Safety	\$125,000	\$125,000	\$65,920	\$38,825	\$20,255	\$125,000	\$0
551000	Pupil Transportation	\$17,993,591	\$17,993,591	\$5,404,998	\$12,588,589	\$4	\$18,715,000	(\$721,409)
553001	Postage	\$45,000	\$45,000	\$13,439	\$1,934	\$29,628	\$45,000	\$0
553002	Telephone	\$175,000	\$175,000	\$112,939	\$23,134	\$38,927	\$175,000	\$0
553005	Wide-area Network (SBC)	\$93,600	\$93,600	\$843	\$63,504	\$29,253	\$93,600	\$0
556055	Tuition - Outside	\$12,100,000	\$12,100,000	\$3,075,172	\$8,885,682	\$139,146	\$12,951,781	(\$851,781)
556056	Purchased Service - Outside	\$3,000,000	\$3,000,000	\$709,116	\$2,267,734	\$23,150	\$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	\$152	\$0	\$4,848	\$5,000	\$0
559001	Advertising	\$32,500	\$32,500	\$1,541	\$1,042	\$29,917	\$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	\$13,040,051	\$25,943,475	\$3,208,476	\$44,648,714	(\$2,456,712)
Supplies/Materials								
561100	Instructional Supplies	\$1,620,000	\$1,620,000	\$689,370	\$160,990	\$769,640	\$1,620,000	\$0
561200	Office Supplies	\$75,590	\$75,590	\$26,623	\$13,057	\$35,909	\$75,590	\$0
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	\$21,164	\$8,849	\$19,988	\$50,000	\$0
561212	Medicaid Supplies	\$8,000	\$8,000	\$2,147	\$542	\$5,310	\$8,000	\$0
561501	Diesel	\$185,092	\$185,092	\$36,841	\$129,831	\$18,420	\$185,092	\$0
561503	Gasoline	\$249,360	\$249,360	\$61,693	\$123,166	\$64,500	\$249,360	\$0
561504	Heating Oil	\$0	\$0	\$0	\$0	\$0	\$0	\$0
561505	Natural Gas	\$1,666,000	\$1,666,000	\$319,662	\$0	\$1,346,338	\$1,666,000	\$0
561507	Janitorial Supplies	\$275,000	\$275,000	\$171,189	\$101,271	\$2,540	\$275,000	\$0
561508	Electrical Supplies	\$50,000	\$50,000	\$28,346	\$21,116	\$539	\$50,000	\$0
561509	Plumbing Supplies	\$100,000	\$100,000	\$49,941	\$42,451	\$7,608	\$100,000	\$0
561510	Building & Ground Supplies	\$220,000	\$220,000	\$115,425	\$75,317	\$29,258	\$220,000	\$0
561511	Propane	\$406,094	\$406,094	\$216,237	\$189,857	\$0	\$406,094	\$0
567000	Clothing Supplies	\$40,000	\$40,000	\$9,742	\$23,120	\$7,138	\$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	\$3,665	\$2,653	\$8,682	\$15,000	\$0
569029	Athletic Supplies	\$130,000	\$137,896	\$74,461	\$42,549	\$20,886	\$137,896	\$0
Subtotal Supplies/Materials		\$5,097,636	\$5,105,532	\$1,831,154	\$935,292	\$2,339,086	\$5,105,532	\$0

ACCOUNT	CLASSIFICATION	FY 23 ORIGINAL BUDGET	FY 23 ADJUSTED BUDGET	NOVEMBER EXPENDITURE	NOVEMBER 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	\$18,542	\$1,500	\$129,958	\$150,000	\$0
575408	Plant Equipment	\$40,000	\$40,000	\$0	\$35,569	\$4,431	\$40,000	\$0
Subtotal Property		\$205,000	\$205,000	\$19,642	\$37,069	\$148,289	\$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	\$8,725	\$0	\$11,975	\$20,700	\$0
589036	Emergency Fund	\$9,350	\$9,350	\$9,299	\$0	\$52	\$9,350	\$0
589056	Waterbury Promise	\$500,000	\$500,000	\$500,000	\$0	\$0	\$500,000	\$0
589201	Mileage	\$10,000	\$10,000	\$1,977	\$0	\$8,023	\$10,000	\$0
589205	Coaches Reimbursements	\$5,000	\$5,000	\$396	\$0	\$4,604	\$5,000	\$0
589900	Dues & Publications	\$60,000	\$66,000	\$63,571	\$439	\$1,991	\$66,000	\$0
591002	Transfer to Sinking Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0
591004	Athletic Revolving Fund	\$135,000	\$127,104	\$4,958	\$60,977	\$61,170	\$127,104	\$0
Total Other/Miscellaneous		\$753,050	\$751,154	\$588,924	\$74,416	\$87,814	\$751,154	\$0
GRAND TOTAL OPERATING BUDGET		\$158,375,000	\$158,375,000	\$45,913,973	\$27,060,952	\$85,400,075	\$158,375,000	\$0
Other Additional Funding								
	Alliance Non-Reform/Reform	\$41,216,739	\$41,216,739	\$10,517,738	\$0	\$30,699,001	\$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	\$10,517,738	\$0	\$34,324,001	\$44,841,739	\$0
GRAND TOTAL ALL FUNDING		\$203,216,739	\$203,216,739	\$56,431,711	\$27,060,952	\$119,724,076	\$203,216,739	\$0

COMMITTEE ON BUILDINGS AND SCHOOL FACILITIES**WORKSHOP: Thursday, January 4, 2024****BOARD MEETING: Thursday, January 18, 2024**

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
D. Bakewell	Maloney café: Thurs., March 14 th 5:00 – 6:45 pm (Family Math Night)
S. Smyth	Crosby aud.: Rehearsals Jan. 29 th , 31 st , Feb. 1 st 2:30-5:00 pm Performances of Shrek,JR. Feb. 2 nd & 3 rd 3:00 – 8:00 pm

Book

SCHOOL PERSONNEL USE ONLY

DATE: 12-22-23

TO: SCHOOL BUSINESS OFFICE

FROM: Diane Bakewell

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: Thursday, March 14, 2024

FROM: 5:00 am/pm TO: 6:45 am/pm

FOR THE FOLLOWING PURPOSES:

Family Mata Night

Kimi Butwell
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.

SCHOOL PERSONNEL USE ONLY

DATE:

12/7/23

TO: SCHOOL BUSINESS OFFICE

FROM: Susan Smyth

The undersigned hereby makes application for use of school facilities (after regular school hours) as follows:

NAME OF SCHOOL REQUESTED: Crosby
Auditorium

☒ Auditorium ☐ Gymnasium ☐ Swimming Pool ☐ Café/Rooms

DATES REQUESTED: February 2, 2024 and February 3, 2024

FROM: 2:30 3:00PM pm TO: 5 8:00PM
am/pm

FOR THE FOLLOWING PURPOSES:

"Shrek, JR" performance

Rehearsals - Monday - Wed, Thurs
Shows - Feb. 2nd & 3rd

2:30-5pm
Rehearsals

Shows
3-8pm

Susan Smyth, Wallace
MS

APPLICANT

Please note the following provisions:

COMMITTEE ON BUILDINGS AND SCHOOL FACILITIES

WORKSHOP: Thursday, January 4, 2024
BOARD MEETING: Thursday, January 18, 2024

**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:

Wtby. Islamic Cultural Ctr. Fahd Syed	Crosby gym: Tues., April 9 th 9pm-11pm (set-up) and Wed., April 10 th 6:00am – 12:00 pm (Prayer Service) (\$1,008.)
--	--

GROUPS NOT SUBJECT TO FEES OR WAIVER DUE TO TIME OF USE OR PREVIOUS WAIVER:

MONIES COLLECTED TO DATE:

\$ 13,694.00

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 Fahd E. Syed NAME OF ORGANIZATION WTCC
ADDRESS 130 Scott Rd. Waterbury Ct 06705 TELEPHONE # 203-509-9007
(street) (city) (state) (zip code)
SCHOOL REQUESTED Wallace DATES 4-9-24 ROOM(S) Gym
4-9-23 9am to 11pm (setup) 4-10-24
OPENING TIME 6:00am CLOSING TIME 12:00pm PURPOSE Setup on 4-9-24 / Prayer 4-10-24
ADMISSION (if any) None CHARGE TO BE DEVOTED TO WTCC / Fahd Syed
APPROXIMATE NUMBER OF PEOPLE TO BE PRESENT: ADULTS 500 CHILDREN 300
SIGNATURE OF APPLICANT [Signature] DATE 12-14-23

PERSON(S) NAME, ADDRESS & PHONE NUMBER RESPONSIBLE FOR SUPERVISION:

Fahd Syed 41 Woodlawn Pl. Waterbury Ct 06705-203-509-9007

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. (FS) (PLEASE INITIAL)

SCHEDULE OF RATES: CUSTODIAL FEES: \$42/HR plus 1 HR SERVICE PER CUST. (3) \$1,008.-

RENTAL FEES:

MISCELLANEOUS FEES:

SECURITY DEPOSIT \$ 250.- 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. 697-3452

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 a Building Permit)



APPLICANT/ORGANIZATION: Ford Spd - WICC

Please check below specific item(s):

Building Usage Fees ☒

Custodial Fees ☒

SCHOOL/ROOMS REQUESTED:

Gym

DATE(S): 4-9-24

TIMES: 900pm to 1100pm (Setup)

DATE(S): 4-10-24

TIMES: 600am to 12:00pm

DATE(S): _____

TIMES: _____

DATE(S): _____

TIMES: _____

DATE(S): _____

TIMES: _____

DATE(S): _____

TIMES: _____

12-14-23

Date

Signature

[Signature]

OFFICE USE ONLY

List total cost of fees being requested to be waived:

\$

Building Usage Fees

\$ 1,008.00

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: _____

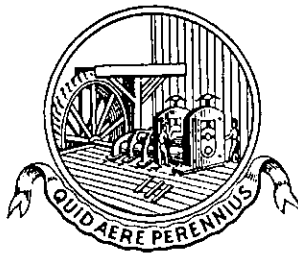
Clerk, Board of Education



COMMUNICATIONS



December 6, 2023 through
January 2, 2024



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 7, 2023

Fausto Cruz Cruz
76 Cottage St.
Meriden, CT 06450

Dear Mr. Cruz Cruz::

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education for the position of Maintainer I @ Waterbury Arts Magnet School (Req. #20240470) at \$17.24 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 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.

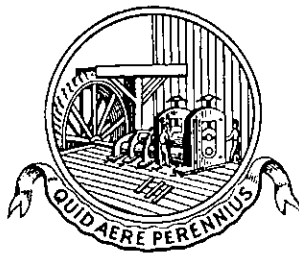
Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc Board of Education
Dr. Ruffin, Supt of Schools
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

December 7, 2023

Felicita Adames Luna
56 Cherry St.
Waterbury, CT 06705

Dear Ms. Adames Luna:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education for the position of Maintainer I @ Wilby High School (Req. #20240478) at \$17.24 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 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.

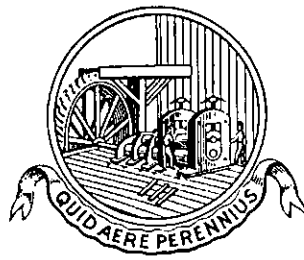
Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc Board of Education
Dr. Ruffin, Supt of Schools
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

December 8, 2023

Yocary Castillo de Morillo
22 Moran St.
Waterbury, CT 06704

Dear Ms. Castillo de Morillo:

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. #2023987) 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, January 4, 2024 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 January 4, 2024 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.

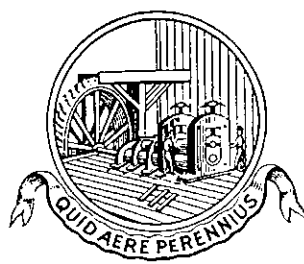
Again, welcome to the City of Waterbury.

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

December 11, 2023

Patrick Robillard
36 Cedar Lane
Wolcott, CT 06716

Dear Mr. Robillard:

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. #2024112) 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, January 4, 2024 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 January 5, 2024 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

December 11, 2023

Courtney Varrone
1447 Bank St., Apt. 3N
Waterbury, CT 06708

Dear Ms. Varrone:

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, January 4, 2024 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 January 5, 2024 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.

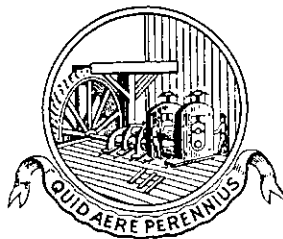
Sincerely,

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

December 12, 2023

Hunter Lynch
925 Oronoke Rd., Apt. 34C
Waterbury, CT 06708

Dear Ms. Lynch:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education - Kingsbury Elementary School for the position of Administrative Associate I (Req. #2023994) at \$17.12 per hour. Please contact Erik Brown, Principal @ Kingsbury Elementary School at (203) 574-8172 with any questions you may have in regards to this position.

We have scheduled your orientation for Thursday, January 4, 2024 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 January 5, 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.

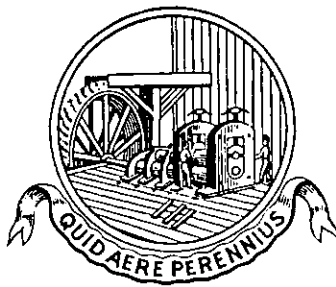
Again, welcome to the City of Waterbury.

Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist
NW/sd

cc Board of Education
Dr. Ruffin, Supt. of Schools
Erik Brown, Princ. @ Kingsbury ES
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 12, 2023

Eriana Washington
11 Myrna Ave.
Waterbury, CT 067054

Dear Ms. Washington:

Your name is being certified to the Department of Education for the position of Paraprofessional I (Req. #2022198) at \$18.20 per hour.

Your official start date is January 4, 2024.

We have scheduled your orientation for Thursday, January 4, 2024 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.

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 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.

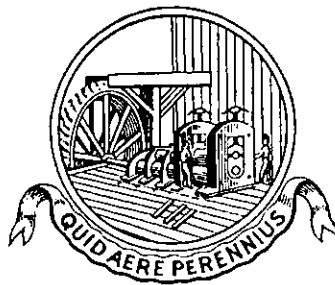
Sincerely,

Nichelle 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

December 12, 2023

Pamela Herington
24 McWeeney Dr.
Waterbury, CT 06705

Dear Ms. Herrington:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #2024110) at \$20.02 per hour.

Your official start date in this position will be January 4, 2024.

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.

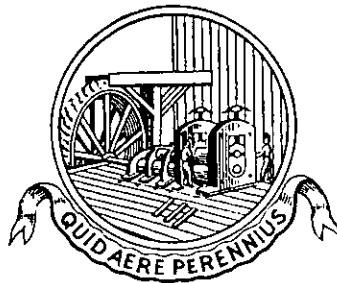
Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc: Board of Education
Dr. Ruffin, Supt. of Schools
Wendy Johns, 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

December 12, 2023

Jamesina Fields
105 Hillhouse Rd.
Waterbury, CT 06705

Dear Ms. Fields:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #2023247) at \$25.30 per hour.

Your official start date in this position will be January 4, 2024.

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.

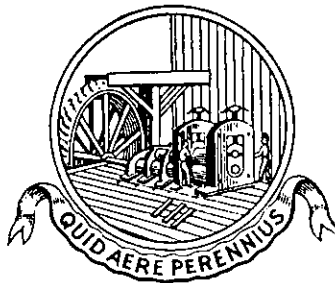
Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc: Board of Education
Dr. Ruffin, Supt. of Schools
Wendy Johns, 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

December 12, 2023

Celestino Toucet, III
25 Hartley Dr.
Waterbury, CT 06705

Dear Mr. Toucet, III:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #20240322) at \$20.02 per hour.

Your official start date in this position will be January 4, 2024.

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.

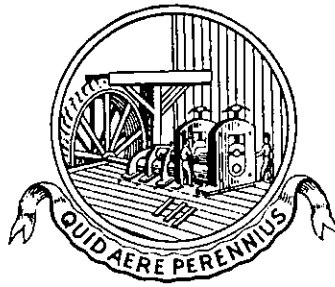
Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc: Board of Education
Dr. Ruffin, Supt. of Schools
Wendy Johns, 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

December 12, 2023

Joseph Martinez
15 Blue Trail Dr.
Prospect, CT 06712

Dear Mr. Martinez:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #20240348) at \$25.30 per hour.

Your official start date in this position will be January 4, 2024.

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.

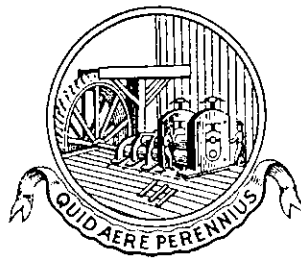
Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc: Board of Education
Dr. Ruffin, Supt. of Schools
Wendy Johns, 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

December 12, 2023

Denise Santos
264 Pearl Lake Rd.
Waterbury, CT 06706

Dear Ms. Santos:

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. #2024105) 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, January 4, 2024 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 January 5, 2024 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.

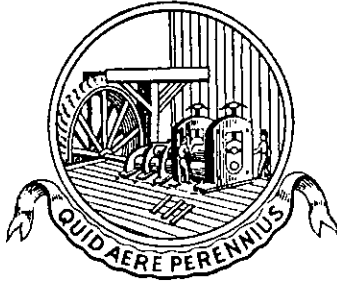
Again, welcome to the City of Waterbury.

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

December 13, 2023

Harry Padilla
250 Northridge Dr., Apt. 2
Waterbury, CT 06708

Dear Mr. Padilla:

We are pleased to receive your acceptance of our offer of temporary and at will employment for the position of Temporary Maintainer I (Req #20240481) for the Department of Education.

In this position your starting compensation will be \$17.24 per hour for a total of 40 hours per week. Please be advised that this offer is for a period of time not to exceed twelve (12) months in duration.

Your first day reporting to the Department of Education will be December 21, 2023.

We look forward to working with you.

Again, welcome to the City of Waterbury.

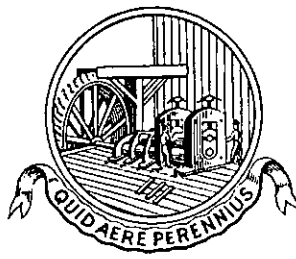
Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc: Board of Education
Dr. Ruffin, Supt. of Schools
Mike Konopka, School 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

December 13, 2023

Ariel Molina, Jr.
299 Dorchester Ave., Bldg 31
Waterbury, CT 06704

Dear Mr. Molina, Jr.:

Welcome to employment with the City of Waterbury. Your name is being certified to the Department of Education for the position of Maintainer I (Req. #20240526) at \$17.24 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, January 4, 2024 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 January 5, 2024 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.

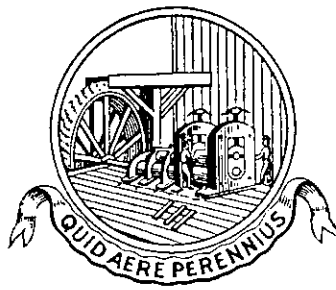
Sincerely,

Nicholle West

Nicholle West
Human Resources Generalist

NW/sd

cc Board of Education
Dr. Ruffin, Supt of Schools
Mike Konopka, School 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

December 18, 2023

Zaire Hunter
146 Transit St.
Waterbury, CT 06704

Dear Ms. Hunter:

Your name is being certified to the Department of Education for the position of Paraprofessional II (Req. #2022443) at \$22.32 per hour.

Your official start date in this position will be January 4, 2024.

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
Wendy Johns, Director of Pupil Services
File

Carrie Swain

From: JUANITA HERNANDEZ
Sent: Friday, December 22, 2023 11:18 AM
To: Carrie Swain; Jacqueline Jackson; ELIZABETH BROWN; MELISSA SERRANO ADORNO; ppernewski@waterburyct.org; Steffi Frias; JUANITA HERNANDEZ; LaToya Ireland; Margaret O'Brien; THOMAS VAN STONE SR.; Rocco Orso; Hector Navarro
Cc: JOSEPH GORMAN; JAMIE MICHELLE MILLER; Nancy Hill; ALISON FINLEY; Jennifer Sarja; DENA MOURA; KARI NIZZARDO; CHAYNA NATH; Elizabeth Corbin; LISA BROWN; PATRICIA FERRARE; WENDY OWEN; ROBERT DELANEY; MICHELLE BIBEAU; Kimberly DiVergilio; ROBERT JOHNSTON; Michelle Eckler; HOLLY MAXSON; Veda Harris; ROBERT SHAGENSKY
Subject: FW: Request for SAW contract postponement

Sent via the Samsung Galaxy S22 5G, an AT&T 5G smartphone

----- Original message -----

From: Jennifer Kathryn Sarja <jenniferksarja@gmail.com>

Date: 12/21/23 4:28 PM (GMT-05:00)

To: ppernewski@waterburyct.org, ELIZABETH BROWN <ebrown@waterbury.k12.ct.us>, JUANITA HERNANDEZ <jhernandez@waterbury.k12.ct.us>, LaToya Ireland <LaToya.Ireland@waterbury.k12.ct.us>, Margaret O'Brien <Margaret.O'Brien@waterbury.k12.ct.us>, Rocco Orso <rorso@waterbury.k12.ct.us>, MELISSA SERRANO ADORNO <mserranoadorno@waterbury.k12.ct.us>, "THOMAS VAN STONE SR." <tvanstone@waterbury.k12.ct.us>, Hector Navarro <Hector.Navarro@waterbury.k12.ct.us>, Steffi Frias <Steffi.Frias@waterbury.k12.ct.us>, Jacqueline Jackson <Jacqueline.Jackson@waterbury.k12.ct.us>

Cc: JOSEPH GORMAN <jgorman@waterbury.k12.ct.us>, HOLLY MAXSON <hmaxson@waterbury.k12.ct.us>, Michelle Eckler <meckler@waterbury.k12.ct.us>, KARI NIZZARDO <knizzardo@waterbury.k12.ct.us>, Veda Harris <pharris@waterbury.k12.ct.us>, Elizabeth Corbin <Elizabeth.Corbin@waterbury.k12.ct.us>, ROBERT SHAGENSKY <rshagensky@waterbury.k12.ct.us>, DENA MOURA <dmoura@waterbury.k12.ct.us>, CHAYNA NATH <cnath@waterbury.k12.ct.us>, Kimberly DiVergilio <Kimberly.DiVergilio@waterbury.k12.ct.us>, Jennifer Sarja <Jennifer.Sarja@waterbury.k12.ct.us>, Nancy Hill <Nancy.Hill@waterbury.k12.ct.us>, MICHELLE BIBEAU <mbibeu@waterbury.k12.ct.us>, ROBERT DELANEY <rdelaney@waterbury.k12.ct.us>, WENDY OWEN <wowen@waterbury.k12.ct.us>, LISA BROWN <lmbrown@waterbury.k12.ct.us>, ALISON FINLEY <afinley@waterbury.k12.ct.us>, JAMIE MICHELLE MILLER <jmmiller@waterbury.k12.ct.us>, PATRICIA FERRARE <pferrare@waterbury.k12.ct.us>, ROBERT JOHNSTON <rjohnston@waterbury.k12.ct.us>

Subject: Request for SAW contract postponement

EXTERNAL MAIL- Think before you Click. More than 90% of successful cyber attacks start with a phishing email. This email originated from outside the District.

Dear Members of Waterbury's Board of Education:

On behalf of a supermajority of the administrators classified as "Supervisors (12 months)," we are requesting a postponement of the Board's vote to approve item 11.1) School Administrators of Waterbury (S.A.W.)

Collective Bargaining Agreement. Concerns have been raised regarding a refusal to bargain collectively and in good faith with a subsection of the administrators of S.A.W. We are asking the Board of Education to pause the process in order to understand and consider the concerns of the administrators classified as “Supervisors (12 months).”

With the utmost respect,
WPS Supervisors (12 months)

This email message, including any attachment(s), is for the exclusive use of the intended recipients and may contain confidential and/or privileged information under applicable federal and state laws, including, but not limited to, the Family Educational Rights and Privacy Act (FERPA). If the reader of this message is not an intended recipient, you are hereby directed to delete and destroy this message and any copies of the same and to contact the sender immediately. Any unauthorized review, use, disclosure or distribution of this message, including any of its attachment(s), is strictly prohibited.

From: Rep. Reyes, Geraldo <Geraldo.Reyes@cga.ct.gov>
Sent: Thursday, December 21, 2023 6:27 PM
To: Dr. Verna D. Ruffin; Liz Brown No; Carrie Swain; JUANITA HERNANDEZ
Subject: School renaming - Geraldo Reyes

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Please share with BOE
I don't have the emails

—————

CLEMENTE SCHOOL NAMING PROJECT

Roberto Clemente is a symbol of pride, heroism, brilliance, and so much more for the Latino community all over the world. Many in my generation and our youth look up to Clemente because he was selfless, a champion, a leader, and a hero. His influence is still prevalent more than 50 years after his untimely death. Naming a school in his honor would serve as an inspiration to students, emphasizing values like perseverance, generosity, and the importance of community service. His legacy goes beyond his achievement in sports, making him a role model for future generations.

In addition to being a Hall of Fame baseball player, Clemente was a humanitarian to his core. He once said, "Any time you have an opportunity to make a difference in

this world and you don't, then you are wasting your time.” As a player, Clemente visited sick patients in hospitals on the road and in Pittsburgh. He used donations to help crippled children whose parents could not afford medical costs.

He also had a passion for racial equality in part due to his admiration and friendship with Dr. Martin Luther King Junior. Clemente was a spokesman for people of color on the field and off the diamond. He demanded an end to segregation and promoted equality just like his hero Dr. King.

Clemente spearheaded humanitarian efforts for victims of a devastating earthquake in Nicaragua. As he earned a prestigious award in Puerto Rico, he immediately started efforts to help those in need in Nicaragua. He worked for nine days, barely sleeping in efforts to collect relief supplies, even soliciting help in door-to-door requests in his native Puerto Rico. Unfortunately, he lost his life on a mission of mercy when his plane crashed on its way to Nicaragua on December 31, 1972.

Like I said earlier, Clemente's legacy and influence is very much alive, and he continues to serve as an influence for our children. About 75% of our students within Waterbury

Public Schools are Latino yet none of our 39 schools are named a Hispanic role model.

We have found the perfect fit at the International Dual Language School. Clemente spoke both English and Spanish. We couldn't find a better match in our community. I humbly ask the Waterbury Board of Education to please consider renaming the school in Clemente's honor. He gave so much to those in need in his life, so let's give back to his legacy.

State Representative
Geraldo Reyes Jr

Sent from my iPhone

From: Felix Rodriguez <felixmrodz@att.net>
Sent: Thursday, December 21, 2023 7:56 PM
To: Carrie Swain
Subject: Support for Renaming Dual Language School

EXTERNAL MAIL- Think before you Click. More than 90% of successful cyber attacks start with a phishing email. This email originated from outside the District.

Dear Honorable Commissioners of the Waterbury Board of Education,

As a former commissioner and vice president of this prestigious board and quite frankly one of the hardest working boards of this city, I am here tonight to provide my wholehearted support of renaming the Dual Language School to the Roberto Clemente International Dual Language School. I firmly believe will greatly benefit our community and resonate with the diverse student population in our city. I strongly recommend renaming one of our schools after the legendary baseball player and humanitarian, Roberto Clemente.

Some of you will remember that ten years-ago, I strongly advocated for a city school to be renamed after a prominent Latino. Roberto Clemente's name was my choice then and it remains my top choice today. At that time in 2013, 47% of the student population were Latino students and as of today in 2023, 62% of the student population in the city of Waterbury are Latino students. That is a 14% growth and it will only continue to increase.

Honoring a prominent figure like Roberto Clemente would not only reflect the cultural diversity within our schools but also provide a positive representation for our students. Clemente's legacy extends beyond the baseball field; his commitment to social justice, humanitarian efforts, and advocacy for education aligns with the values we hold dear in our educational community.

By renaming a school after Roberto Clemente, we send a powerful message of inclusivity, unity, and appreciation for the contributions of diverse communities. This act can inspire students from all backgrounds to strive for excellence, cultivate a sense of pride in their heritage, and foster a more inclusive and supportive learning environment.

Furthermore, this renaming initiative could serve as an educational opportunity, allowing teachers to incorporate Roberto Clemente's life and achievements into the

curriculum. It provides a chance to celebrate diversity, promote cultural awareness, and instill values of empathy and social responsibility in our students.

I kindly request the Board's support for this proposal, believing that renaming a school after Roberto Clemente is a step toward creating an educational environment that embraces and celebrates the rich diversity within our city.

Thank you for your time and consideration.

Sincerely,

Felix Manuel Rodriguez
16 Rockhurst Drive
Waterbury, CT 06708

Carrie Swain

From: Maria Matos <mματος@ctlead.org>
Sent: Thursday, December 21, 2023 8:20 PM
To: Carrie Swain
Subject: Support for Renaming International Dual Language School to Roberto Clemente Dual Language School

EXTERNAL MAIL- Think before you Click. More than 90% of successful cyber attacks start with a phishing email. This email originated from outside the District.

Carrie A. Swain,
Clerk Board of Education
City of Waterbury

I hope this letter finds you well. My name is Maria Matos, and I am writing to express my strong support for the request made by Representative Geraldo Reyes, Jr. to rename the International Dual Language School to the Roberto Clemente Dual Language School.

As the Vice President of Operations and Expansion at Latinos for Educational Advocacy and Diversity (LEAD), I am particularly invested in initiatives that promote inclusivity, diversity, and cultural awareness in our educational institutions. Renaming the school after Roberto Clemente, an iconic figure known for his dedication to humanitarian causes and his contributions to baseball, would not only honor his legacy but also serve as an inspiration to the students attending the school.

The proposed change aligns with the values of equity and equality that I hold dear. It is essential to recognize and celebrate individuals who have made significant contributions to our society, especially those who represent values of unity and understanding.

I believe that renaming the school to Roberto Clemente Dual Language School will contribute positively to the school's identity and foster a sense of pride among the students, staff, and the community.

Thank you for your time and consideration of this matter. I look forward to witnessing the positive impact this change could bring to the International Dual Language School community.

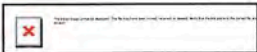
Sincerely,

Maria Matos
Vice President of Operations and Expansion
Latinos for Educational Advocacy and Diversity (LEAD)

Maria Matos

Vice President/CPO | LEAD

(203) 826 9267 |



MMatos@ctlead.org | www.ctlead.org



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