MANCHESTER BOARD OF EDUCATION
REGULAR MEETING
Monday, September 13, 2021
Revised
Lincoln Center - Hybrid: In-Person and Virtual Meeting

Policy Committee	**5:30 P.M. - Lincoln Center**
Executive Session	**6:30 P.M. - Lincoln Center**
Board of Education Meeting	**7:00 P.M. - Lincoln Center**

Public access to view meeting :
Live streaming on FaceBook**:** Link to MPS Pride FaceBook Page
Live at Silk City TV: Link to Live at Silk City TV
On demand after the meeting: Link to on-demand after the meeting

A. ***OPENING***

1.) Call to order
2.) Pledge of Allegiance
3.) Board of Education Minutes - August 30, 2021 A - 3

B. ***COMMITTEE REPORTS***

C. ***CONSENT CALENDAR***

1.) Personnel Actions C - 1
2.) Transfer of Funds C - 2
3.) Permission to apply for the Carl D. Perkins Career and Technical Education Secondary Basic Grant for the FY 21/22in the amount of $119,485.00 C - 3
4.) Permission to apply for the Alliance District Grant for the FY 21/22 in the amount fo $9,133,576 C - 4
5.) Permission to apply for the Priority School District Grant for the FY 21/22 in the amount of $829,424 C - 5
6.) Permission to apply for the Priority School District Extended School Hours Grant for the FY 21/22 in the amount of $131,566 C - 6
7.) Permission to apply for the Priority School District Summer School Grant for the FY 21/22 in the amount of $153,450 C - 7
8.) Establish an appropriation for the RISE Innovation Grant for the FY 21/22 in the amount of $246,000 C - 8

D. ***REPORT FROM STUDENT REPRESENTATIVE*** ***- None***

E. ***PUBLIC COMMENTS*** **-** Request to Speak Form
Residents that would like to speak during public comments session must complete the Request to Speak Form

Welcome to the Manchester Board of Education meeting. Observers are always welcome. The following instructions are to assist those who wish to speak during the Public Comment session(s):

- Print your name and address on the sign-in sheet at the podium for accurate record keeping.
- State your name and address for the record. Students state name only.
- Three minute time limit for any item that may come before the Board. Listen for the bell.

- Comments must be limited to items on the Board's agenda for this meeting. The Board Chair has the discretion to limit comment time.
- Written statements may be substituted for Board members if time runs out for the speaker.
- Immediate replies to questions/concerns should not be expected (Board Chair/Superintendent's discretion).
- Inappropriate topics: Confidential information, personal issues and legal concerns. Please avoid derogatory and profane language.

F. ***SUPERINTENDENT'S REPORT***

1.) Update on Buckley and Bowers Projects, Randall Luther, TSKP Studio F - 1

2.) Update in Opening of Schools, Matt Geary, Superintendent of Schools F - 2

G. ***UNFINISHED BUSINESS***

H. ***NEW BUSINESS***

1.) Review and Approval of the Photovoltaic Bid Documents for Buckley Elementary School H - 1

Recommended Motion:
Move that the Manchester Board of Education certifies that the final plans and project manual(s) as prepared for bidding and dated 23 August 2021 and the professional cost estimate, completed in accordance with Level 3 of ASTM International Standard E1557, Standard Classification of Building Elements and Related Sitework-UNIFORMAT II for this project, dated 07 September 2021, have been reviewed and approved for this project.

2.) Ratification of the Manchester School Administrators Contract

Recommended Motion:
Move to approve the Manchester School Administrators Contract, covering the period of July 1, 2022 – June 30, 2026.

I. **PUBLIC COMMENTS** - Request to Speak Form

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- Inappropriate topics: Confidential information, personal issues and legal concerns. Please avoid derogatory and profane language.

J. ***COMMUNICATIONS*** ***- None***

K. ***ITEMS FOR FUTURE AGENDAS***

Topics for Superintendent's Report

Monday, September 27, 2021	Update on Technology
Thursday, October 14, 2021	Bowers Update
Monday, November 8, 2021	Update on Human Resources Reaffirmation of Board of Education Bylaws

L. ***ADJOURNMENT***

MANCHESTER BOARD OF EDUCATION

Regular Meeting
August 30, 2021
Lincoln/Virtual

PRESENT: Heinrich, Hughes, Meggers, Pattacini, Stefanovicz, Thames

ALSO PRESENT: Superintendent of Schools Geary, Deputy Superintendent Curriculum & Special Services Radikas, Assistant Superintendent Clancy, Assistant Superintendent Sone-Moyano

ABSENT: Luna, Patterson

A. OPENING

A.1. & 2. Meeting Called to Order

Chairperson Thames called the meeting to order at 7:03 p.m. All in attendance participated in the Pledge of Allegiance to the Flag, led by Mr. Thames.

A.3. Approval of Minutes of Previous Meeting

APPROVED – Minutes Regular Meeting of the Board of Education of August 9, 2021. Secretary Pattacini moved and Ms. Stefanovicz seconded the motion.

6/0 – Voted in favor.

B. COMMITTEE REPORTS

None.

C. CONSENT CALENDAR

Mr. Geary presented three items on the Consent Calendar for Board approval.

C.1. Personnel Action

Details had already been provided to the Board members with their agenda.

C.2. Transfer of Funds

- Transfer from Bennet Academy School Administration General Supplies and Materials account to Bennet Academy Library/Media Services Databases account in the amount of $174.00
- Transfer from Bentley Alternative Education Field Trips account to Bentley Alternative Education Computer Supplies and Materials account in the amount of $1,200.00
- Transfer from System-wide Language Arts Professional Development account in the amount of $11,200.00. Transfer to System-wide Language Arts Instructional Supplies and Materials account in the amount of $10,000.00 and transfer to System-wide Language Arts Periodicals account in the amount of $1,200.00 for a total transfer of $11,200.00

C.3. Permission to apply for the Rise Innovation Grant for the FY 21-22 in the amount of $210,000

The Chairman called for a motion.

Secretary Pattacini moved and Mr. Heinrich seconded the recommendation to adopt the Consent Calendar as outlined in this evening's agenda.

6/0 - Voted in favor.

D. STUDENT REPRESENTATIVE REPORT

None.

E. PUBLIC COMMENTS

Ms. Christine Paige, 165 Wetherell Street, is against the mask policy. Her students (a son and daughter) struggled last year and have dealt with rashes and sores around their mouths due to mask wearing. She claims it is hard for them to breath with masks on, especially after gym class when they may be forced to mask while still struggling to breath. She noted that her son, who was in Kindergarten last year, is shy and struggled with making connections in school as faces are important for that skill and the mask

impedes the ability to make connections. She claimed for three months her child cried because it was so hard to make connections in school. Ms. Paige wants to be a voice for our children. She feels kids are resilient and should not be forced to mask. Her family has ridden an emotional rollercoaster through this pandemic.
[Ms. Paige refused to yield the floor at the end of her time limit and Mr. Pattacini called a recess at 7:13, seconded by Mr. Thames with a 6/0 vote. The meeting was called back to order at 7:16 and Ms. Paige was allowed 1 minute to tie up her comments and reminded there is a second opportunity to speak (for 3 minutes) later in the evening. Ms. Paige claimed that the mask mandate from the state is only "guidance" and not a law and that we do not need to force our children to wear them. She feels only parents should be making that decision for their children. Ms. Paige asked the Board members to look into their hearts as parents and educators if they at all doubt the mask mandate.

Mr. Tom Stringfellow, 183 Hillstown Road, pointed out Labor Day is approaching, this being the 140th year of labor unions. He recommended a book on the Spanish American War titled *How to Hide an Empire*. Mr. Stringfellow feels it is important to hear all of history, not just the pleasant parts. He also pointed out an article about masks and the anti-vax sentiment in a magazine, *Rethinking Schools*

F. Superintendent's Report

F.1. Update on Opening of School

Mr. Geary reviewed that students in grades Pre-K through 5, 7 and 9 start school on Wednesday, September 8th. Students in grades 6, 8 and 10-12 start the following day, September 9th. Headstart begins September 13th.

Mr. Geary reviewed that we had originally planned to offer a remote option, even though it was not mandated, however the State Department legislation ultimately did not allow for any remote learning options. There may be a work-around if a student has a documented health issue or lives with a vulnerable person and he is looking into that.

Regarding masks, the state REQUIRES masks for all schools, both students and staff along with visitors regardless of vaccination status through September 30th at this point. Our attorneys, Shipman & Goodwin, looked into the mandate and

it is a binding legal requirement. The Town of Manchester has also issued an indoor mask mandate.

In addition, all school staff are required to show proof of a first dose (and an appointment for a second) or full vaccination by September 27th, or submit to weekly testing. (There is a medical exemption to vaccination, with weekly testing). Mr. Geary pointed out that the executive order was vague around this requirement and we have asked our attorneys to obtain clarity around the testing option, such as who is responsible for providing tests, how to track etc.

Regarding students social distancing, the current rule is students in a classroom (does not apply when in other areas such as gym, cafe etc) only qualify as a "close contact" in terms of contact tracing if they have been closer than 3 feet to a peer, unmasked. Hopefully this will mean far less students being required to quarantine, as that disrupts their learning.

Mr. Geary pointed out that with the precautions we took last year, only two cases out of hundreds involved possible school spread, while all the rest were exposed outside of school and no peers/staff contracted the virus from an in-school contact.

Classroom seats will be placed at least 3 feet apart, but may face any direction (as opposed to having to all face one direction last year). We are also allowing for flexible seating to be put back into classrooms.

Breakfast this year will continue to be grab and go and K-8 students will eat lunch in classrooms with desk shields for the most part. At MHS students may eat in the courtyard or cafeteria.

Students who ride the bus will have assigned seats and masks required to cut down on possible transmission as bus rules are 6 feet instead of the classroom 3 feet rule.

At Illing and MHS they will continue with directional halls and stairwells.

Mr. Geary noted that we may be able to offer field trips soon. We can have large outdoor gatherings. Music class has specific guidelines.

Regarding quarantining - if you are vaccinated and show no symptoms as a close contact you would not have to quarantine. If you are not vaccinated a 10 day quarantine is required. With adults the 6 foot distance (not 3 feet) remains for contact tracing. Specifics will be sent to staff regarding these rules.

Sports will look very much like pre-pandemic times, with the exception of masks being required inside, including in locker rooms.

We have provided students with supplies again this year and we can share those supplies as there is now less concern over surface spread of the virus.

There are currently no travel restrictions in place.

We will run more vaccine clinics as the vaccine becomes available to younger students.

Ventilation systems have been maximized, though this is harder in the older buildings.

Visitors will be allowed into buildings if necessary, masked. If it is possible to conduct your business virtually we ask that you continue to do so.

Students should bring refillable water bottles as water fountains will remain closed and we will continue with the filling stations.

Bus routes have been published. The transportation department has extra staff manning the phones during this busy period. Please be patient.

Students and staff will all begin the year with the same devices they had last year.

Elementary teacher assignments went out in the mail and Bennet, Illing and MHS will post their assignments online by Wednesday.

This week the staff will be in professional development all week. We have a lot of new hires and still have several openings to fill.

Mr. Pattacini asked for a clarification on quarantine rules. Mr. Geary reviewed that over a 24 hour period, if you are an adult and have been in close contact (meaning closer than 6 feet) with a positive individual for more than 15 minutes total, you would be required to quarantine if you are not vaccinated.

If you are a student the 24 hours/15 minutes total still applies, but the space drops from 6 feet to 3 feet. This drop in proximity only applies to classroom settings, not the bus, cafeteria, etc.

Masks breaks will occur either outside, or in the classroom utilizing their desk shields.

Mr. Pattacini appreciates the work being done to keep our kids safe.

Ms. Stefanovicz wondered what we could do to advocate for a remote learning option. Mr. Geary believes that most students learn better in person, though we had originally planned to offer a remote option for families that requested it. The state said no, even taking away the possibility of remote snow days. The legislators are currently not in session. You can reach out to your legislators to express your concerns. Many families are concerned with the health and safety of their families and Mr. Geary is not sure what the thinking behind removing the remote option was. He feels it may become an option again for the 22-23 school year if necessary.

Regarding weekly testing of unvaccinated staff, Ms. Stefanovicz wondered who pays for that and how it will be provided. Mr. Geary stated they are trying to figure out the logistics and are currently looking at the number of staff in question.

F.2. Update on Building Projects

Mr. Geary reviewed he met recently with Mr. Thames, the mayor, town manager and Building Committee chair to review current projects. Buckley is well underway. Costs, however, are rising in response to the pandemic, so we are looking at finances and building supplies. When these projects were forecast years ago we obviously did not plan for a pandemic to impact costs so greatly. In addition, making projects Net-Zero impacted budgets as well.

Mr. Geary reviewed the original cost estimates for Buckley ($23.4m), Bowers ($23.9m) and Keeney ($21.4m) and the addition of Net-Zero planning pushed those numbers approximately $4m and now current projections for those projects are now approximately Buckley ($27m), Bowers ($33.4m) and Keeney ($26m). However with higher costs come higher amounts for reimbursement. At this time Buckley's contingency amount seems to be enough to cover the difference in that project. Regarding Bowers, there is $1.4m in the contingency budget to cover part of the $2.5 gap and we are also looking at a possible $150k rebate. We will continue to follow up and will hold off on scaling back on any projects at this time.

Mr. Geary pointed out that we also have $2.4m in the non-lapsing fund from last year that could potentially be used in any of these projects. When we bid Bowers in about six months these numbers may all change.

Ms. Stefanovicz wondered what the root cause of the increase was. Mr. Geary noted mostly materials and labor costs. In addition, the Bowers site is the most challenging where Net-Zero comes into play. However, it is too early to start scaling back any plans.

Mr. Pattacini wondered how we know that Bowers costs went from $28.1m to $33.4m if we haven't gone to bid yet. Mr. Geary noted that when the papers for Keeney were submitted in July the other projects were looked at then.

When we did the Verplanck, Waddell and Bennet projects the town bid all three projects at once to be able to move funds between projects as needed. We try our best to maximize the reimbursement rate and we certainly do not want to cut $2.5m from the Bowers plan.

Mr. Pattacini asked about the reimbursement so far on Verplanck and Waddell. Mr. Geary will get those numbers and noted that because those schools have larger common spaces for their 525 students the reimbursement rate is a little lower.

Mr. Pattacini is comfortable with waiting the 6 months until we see how this plays out before making any major decisions. Mr. Geary also noted there is room to move in the bond.

Mr. Thames agreed with the plan to move forward and noted that the Governor praised our Buckley Net-Zero project.

G. UNFINISHED BUSINESS
None.

H. NEW BUSINESS
None.

I. PUBLIC COMMENTS (Limited to items on tonight's agenda)
Ms. Christine Paige, 165 Wetherell Street, claimed the statistics show that most children have no issues related to COVID-19 and therefore should not be required to wear masks. She compared their reaction to COVID as similar to getting the flu. She would like people to do their own research. Ms. Paige was unhappy that the Board is making rules for our children and then going out to events. She claimed that we can go into stores with no masks, but we are "forcing" the kids to wear them in school. She would like that choice left up to families. She does not want to teach her children to go against authority by not wearing their masks. Ms. Paige points out that if families are unhappy with this mandate and choose to pull their students from the public school, it is the district that loses that money. She knows remote school is not an option, and her children do better in person anyway, they need the social interaction. Last, Ms. Paige claimed that child suicide rates have risen recently.

Mr. Geary replied briefly that remote learning is only an option during quarantine.

Mr. Thames added that we do not take any of this lightly and we appreciate the comments. This has been a trying year and he understands people's stress levels.

Mr. Tom Stringfellow, 183 Hillstown Road, hopes people will educate themselves about masks, though he knows every family situation is different and we are all under stress. He recommended an article on the Science of Overcoming Racism in *Scientific* magazine, as well as articles on how to help special education students adjust to mask

wearing. He recommended an article on ADHD in *Attitude* magazine. Last, Mr. Stringfellow reminded us that the 20th anniversary of 9/11 is approaching.

Ms. Sarah Bilea, 10 Livingston Way, wonders what happens if schools have to close for two weeks again. Would students then be allowed to learn remotely?

Mr. Geary agreed that if there is a temporary shut-down the state would allow for that, as they did in the past.

Ms. Bilea asked about when reimbursements come from the state, and is it paid over time or all at once?

Mr. Geary noted that when a project is fully closed out, after a punch list of items is addressed, the state then calculates reimbursement based on the number of students in the building at that time.

Claire Lippolis, 209 East Center Street, wondered the rationale behind elementary schools dismissing at 3:00pm but buses not leaving until 3:40pm. She wonders if walkers will be allowed to partake in that grace period since MELC will not start until 3:40pm. She wondered who would be watching the students for those 40 minutes and she is not happy to have to pay for MELC for afternoon care when ultimately they would not be in charge of her child from 3:00pm and she only needs care until 4:00pm.

Mr. Geary clarified our staff would be in charge of those students. He revealed the reason for the change this year was that last year it was difficult for elementary parents to accommodate PD days on Wednesdays (we started late on Wednesdays when we returned full time). This year grades 5-12 are dismissing early on Wednesdays starting in October and to that end, elementary schools were adjusted to avoid an early dismissal day. Regarding specific needs, he recommended Ms. Lippois should reach out to the principal of her school.

Sheralyn Lazu, 22 Oak Grove Street asked about specials at the elementary level now being in a "funky" rotation of three weeks. She is not in favor of this.

Mr. Geary noted that elementary specials are now on a three week rotation schedule in elementary schools so that teachers can develop deeper relationships with students.

Ms. Lazu wondered who will supervise lunch in classrooms, noting that in the past she has been told those supervisors have been on cell phones or gave kids screen time.

Mr. Geary noted if there is a specific issue to reach out to the principal of that school, or even himself. We will continue to have students eat in classrooms at the elementary level with desk shields and noon aides or other staff supervising them while the teacher has their own lunch elsewhere.

J. COMMUNICATIONS

Ms. Stefanovicz wondered if the agenda could better reflect the 3 minute time limit for public speakers to make it more user-friendly in the agenda.

K. ITEMS FOR FUTURE AGENDAS

Monday, September 13, 2021 - District Improvement Plan Update/Professional Development Highlights

Monday, September 27, 2021 - Update on Technology

Thursday, October 14, 2021 - Bowers Update

L. ADJOURNMENT

Mr. Thames called for a motion to adjourn.

Secretary Pattacini moved and Mr. Hughes seconded the motion to adjourn the meeting.

6/0 - Voted in favor.

Adjournment 8:32 p.m.

Respectfully submitted,

Christopher Pattacini
Board Secretary

PERSONNEL ACTIONS

APPOINTMENTS

Ms. Kirsten Buckmaster to be a Humanities Teacher ELA, Grades 5-6 at Manchester Middle Academy. Ms. Buckmaster received her Master's in Educational Leadership from the University of Alaska, Southeast (Juneau) and currently resides in Coventry. It is recommended that her appointment be approved effective September 7, 2021 (Master's +30 / Step 4.5, $62,696.00).

Ms. Shannon Czerwinski to be a Special Education Teacher at Waddell Elementary School. Ms. Czerwinski received her Master's Degree in Special Education from Cambridge College and currently resides in Tolland. It is recommended that her appointment be approved effective September 13, 2021 (Master's / Step 3.5, $55,905.00).

Mr. James Follett to be a Grade 4 Teacher at Waddell Elementary School. Mr. Follett received his Master's in Curriculum and Instruction from the University of Connecticut and currently resides in West Hartford. It is recommended that his appointment be approved effective August 30, 2021 (Master's / Step 2.5, $53,868.00).

Mr. Roberto Gonzalez-Zamudio to be a Spanish Teacher at Manchester High School for the 2021-2022 school year. Mr. Gonzalez-Zamudio received his Bachelor's Degree from Eastern Connecticut State University and currently resides in Willimantic. It is recommended that his appointment be approved effective August 30, 2021 (Bachelor's / Step 2.5, $50,699.00).

Ms. Katharine Reilly to be a Special Education Teacher at Bennet Academy. Ms. Reilly received her MAsters in Advanced Teaching in Special Education from St. Joseph College and currently resides in Newington. It is recommended that her appointment be approved effective August 30, 2021 (Master's / Step 3.5, $ 55,905.00).

Mr. Thomas Simon to be a District-wide School Social Worker. Mr. Simon received his Master of Social Work from Salem State College, currently resides in Tolland and has been with Manchester Public Schools since 2015 as an Associate Behavior Specialist. It is recommended that his appointment be approved effective August 30, 2021 (Master's / Step 4.5, $58,168.00).

Ms. Deborah Oquendo to be a School Social Worker at Martin Elementary School. Ms. Oquendo received her Master of Science in Marriage and Family Therapy from Central Connecticut State University, and currently resides in Manchester. It is recommended that her appointment be approved effective September 28, 2021 (Master's +30 / Step 2.5, $58,395.00).

Ms. Ashley Smith to be a School Social Worker at Keeney Elementary School. Ms. Smith received her Masters of Social Work from the University of Connecticut and currently lives in Vernon. It is recommended that her appointment be approved effective August 30, 2021 (Master's / Step 2.5, $52,868.00).

Ms. Erin Smith to be a Special Education Teacher at Waddell Elementary School. Ms. Smith received her Master of Arts degree from the University of Connecticut and currently resides in Windsor Locks. It is recommended that her appointment be approved effective September 7, 2021 (Master's / Step 7.5, $66,317.00).

Ms. Hannah Polinski to be a Kindergarten Teacher at Buckley Elementary School for the 2021-2022 School Year. Ms. Polinski received her Bachelor of Science in Early Childhood Education from the University of Hartford and currently resides in Coventry. It is recommended that her appointment be approved effective September 8, 2021 (Bachelor's / Step 2.5, $50,699.00).

RESIGNATIONS

LEAVE OF ABSENCES

Town of Manchester
Board of Education

To: **Manchester Board of Education**

From: **Mr. Matthew Geary, Superintendent of Schools**

Subject: **Transfer of Funds**

Date: **August 11, 2021**

Background: In accordance with Board of Education Policy 3160, Transfer of Funds between Categories, I am requesting the Board approve the following transfers in the FY2021-2022 Budget.

Discussion/Analysis: Transfer from Bennet Academy Mathematics Instructional Supplies and Materials in the amount of $534.00 and transfer from Bennet Academy School Administration General Supplies and Materials in the amount of $180.00. Transfer to Bennet Academy Mathematics Dues and Fees in the amount of $714.00.

Financial Impact: None

Other Board/Commission Action: None

Recommendation: The Superintendent of Schools recommends that the Board of Education approve these transfers in the FY2021-2022 Budget.

Matthew Geary

Matthew Geary
Superintendent of Schools
Manchester, CT
September 13, 2021

Manchester Public Schools
Manchester, Connecticut

TO: Accounting Department **School/Department: Bennet Academy**

Date of Request: 08/11/2021 **Approver: Joseph Chella**

Date Approved: 08/11/2021

JUSTIFICATION (Required Field): Math Olympiad registration.

SUBJECT:
TRANSFER BUDGET MONIES FROM ONE LINE ACCOUNT TO ANOTHER

DECREASE - In whole dollars only:

$ 534.00	**Account #13051100 5611**	**Description: Bennet Math Instructional Sup.**
$ 180.00	**Account #42351240 5610**	**Description: Bennet Sch. Admin. Gen. Sup.**
$	**Account #**	**Description:**

$ 714.00 TOTAL DECREASE

INCREASE - In whole dollars only:

$ 714.00	**Account #130511100 5810**	**Description: Bennet Math Dues & Fees**
$	**Account #**	**Description:**
$	**Account #**	**Description:**

$ 714.00 TOTAL INCREASE (Must match total decrease)

Accounting Department Only

Board Approval Needed: Yes X No ___

Date of Board Approval: _____

Date Transfer Completed: _____ Name: _____

Town of Manchester
Board of Education

To: Manchester Board of Education

From: Matthew Geary, Superintendent of Schools

Subject: Permission to apply for the Carl D. Perkins Career and Technical Education Secondary Basic Grant for FY 21/22

Date: September 2, 2021

Background:
Manchester Public Schools have demonstrated a record of excellence in career and technical education. The Carl D. Perkins Career and Technical Education Secondary Basic Grant will improve and expand education and career guidance systems for Manchester's youth. The grant is funded by the State of Connecticut.

Discussion/Analysis:
Funds will be used to:

1. Revise and/or re-write curriculum to ensure alignment with state/national common core standards in Business, Family Consumer Science, Health Careers and Technology Education departments.
2. Provide professional development opportunities to ensure that students are exposed to specific career-based competencies, which will prepare them for a transition to a technologically-advanced employment workplace.
3. Provide funding for externships and field trips in conjunction with the College Career Pathways initiative.
4. Support specific developmental initiatives through funding for instructional programs, supplies and equipment for grades 9-12 in the aforementioned areas.

Financial Impact: None to the Board of Education

Other Board/Commission Action: None

Recommendations: The Superintendent recommends that the Board of Education gives permission to apply for the FY 21/22 Carl D. Perkins Grant in the amount of $119,485.

Matthew Geary

Matthew Geary
Superintendent of Schools
Manchester, CT
September 13, 2021

Town of Manchester
Board of Education

To: Manchester Board of Education

From: Matthew Geary, Superintendent of Schools

Subject: Permission to apply for the Alliance District Grant FY 21/22

Date: September 1, 2021

Background: The Alliance District program is a unique and targeted investment in Connecticut's 33 lowest-performing districts. Connecticut General Statute Section 10-262u established a process for identifying Alliance Districts and allocating increased Education Cost Sharing (ECS) funding to support district strategies to dramatically increase student outcomes and close achievement gaps by pursuing bold and innovative reforms.

Discussion/Analysis: Alliance District's receipt of designated ECS funding is conditioned upon district submission and Commissioner of Education's approval of a plan, district progress and performance relative to that plan, and subsequent plans on an annual basis and approved plans aligned to the goals of the program. Annual plan approval is predicated upon district implementation and performance during the prior school year.

Financial Impact: None

Other Board/Commission Action: None

Recommendations: The Superintendent of Schools recommends that the Board of Education approve the filing of an application for the FY 21/22 Alliance District Grant in the amount of $9,133,576.

Matthew Geary

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Matthew Geary
Superintendent of Schools
Manchester, Connecticut
September 13, 2021

Town of Manchester
Board of Education

To: Manchester Board of Education

From: Matthew Geary, Superintendent of Schools

Subject: Permission to apply for the Priority School District Grant FY 21/22

Date: September 1, 2021

Background: Per Connecticut General Statutes Sec. 10-266p, the State Board of Education administers a priority school district grant program to assist designated school districts in improving student achievement and enhancing opportunities, including early reading intervention programs. Grant awards are authorized after proposals have been submitted by eligible school districts and approved through the Commissioner.

Discussion/Analysis: Priority School District funding may be used to focus on the following initiatives: (1) the creation or expansion of programs or activities related to dropout prevention; (2) alternative and transitional programs for students having difficulty succeeding in traditional education programs; (3) academic enrichment, tutorial and recreation programs or activities in school buildings during non-school hours and during the summer; (4) development or expansion of extended-day kindergarten programs; (5) development or expansion of early reading intervention programs including summer and after-school programs; (6) enhancement of the use of technology to support instruction or to improve parent-teacher communication; (7) initiatives to strengthen parent involvement in education of children and parent; and other community involvement in school and school district programs; or (8) for purposes of obtaining accreditation for elementary and middle schools from the New England Association of Schools and Colleges. At least 20% of each grant shall be used for early reading intervention programs.

Financial Impact: None

Other Board/Commission Action: None

Recommendations: The Superintendent of Schools recommends that the Board of Education approve the filing of an application for the FY 21/22 Priority School District Grant in the amount of $829,424.

Matthew Geary

Matthew Geary
Superintendent of Schools
Manchester, CT
September 13, 2021

Town of Manchester
Board of Education

To: Manchester Board of Education

From: Matthew Geary, Superintendent of Schools

Subject: Permission to apply for the Priority School District Extended School Hours Grant FY 21/22

Date: September 1, 2021

Background: Connecticut General Statute 10-266t establishes grants for Extended School Hours Programs in Priority School Districts. These funds are used for academic, enrichment and recreational programs and shall include, but not be limited to, before and after school hours, weekends, summer and school vacations.

Discussion/Analysis: This grant will contribute to Manchester Early Learning Centers (MELCs) after school care/extended school hour component to include an hour of academics delivered by district elementary teachers.

Financial Impact: None

Other Board/Commission Action: None

Recommendations: The Superintendent of Schools recommends that the Board of Education approve the filing of an application for the FY 21/22 Priority School District Extended School Hours Grant in the amount of $131,566.

Matthew Geary

Matthew Geary
Superintendent of Schools
Manchester, CT
September 13, 2021

Town of Manchester
Board of Education

To: The Manchester Board of Education

From: Matthew Geary, Superintendent of Schools

Subject: Permission to apply for the Priority School District Summer School Grant FY 21/22

Date: September 1, 2021

Background: Connecticut General Statutes Sec. 10-265m establishes grants for summer school programs in Priority School Districts. Funds are to be used for summer school for students in grades K-3 who are substantially deficient in reading in order to provide instruction that incorporates the competencies for early reading success and effective reading. Priority is given first to elementary and then to middle schools with the highest number of students who are substantially deficient in reading.

Discussion/Analysis: School Accountability – Summer School Priority School District funding will be used to assist funding of Summer Academy Advantage of Manchester (SAAM). SAAM is a summer program that is held for students in need of reading acceleration. The program is in effort to reduce the summer reading slide.

Financial Impact: None

Other Board/Commission Action: None

Recommendations: The Superintendent of Schools recommends that the Board of Education approve the filing of an application for the FY 21/22 Priority School District Summer School Grant in the amount of $153,450.

Matthew Geary

Matthew Geary
Superintendent of Schools
Manchester, CT
September 13, 2021

Town of Manchester
Board of Education

To: Manchester Board of Education

From: Matthew Geary, Superintendent of Schools

Subject: Item for Appropriation Rise Innovation Grant FY 21/22

Date: September 3, 2021

Background:
Funded by the Dalio Foundation, the Connecticut RISE Network supports educators in preparing students for college, career, and life successes. The RISE Educator Innovation Grant assists educators in pursuing innovative strategies to increase on-track achievement and college and career readiness. Since 2016-17, RISE educators have leveraged the Innovation Fund to launch hundreds of projects, securing funding to enrich their instruction and classroom environments to build student engagement and connections to school, create experiences that invest and motivate their students, and enable students to explore post-secondary opportunities.

Discussion/Analysis:
Funding to achieve the purpose of the RISE Network Innovation Projects, exercising best efforts to demonstrate measurable improvement against the Rise goals for the 2021-22 academic year focusing on;

Strategy 1: On-Track Coaching
Strategy 2: On-Track Data Teams
Strategy 3: Summer Transition Programs
Strategy 4: College and Career Supports
Strategy 5: Educator-Inspired Innovations

Financial Impact: None.

Other Board/Commission Action: None.

Recommendations:
The Superintendent of Schools recommends the Board of Education request the Board of Directors to establish an appropriation for FY 21/22 Rise Innovation Grant in the amount of $246,000.

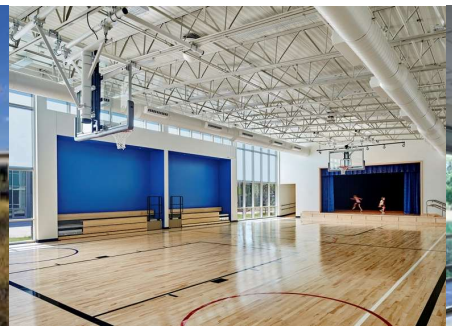
Matthew Geary

Matthew Geary
Superintendent of Schools
Manchester, CT
September 13, 2021

Manchester Public Schools

Buckley/Bowers Elementary Schools

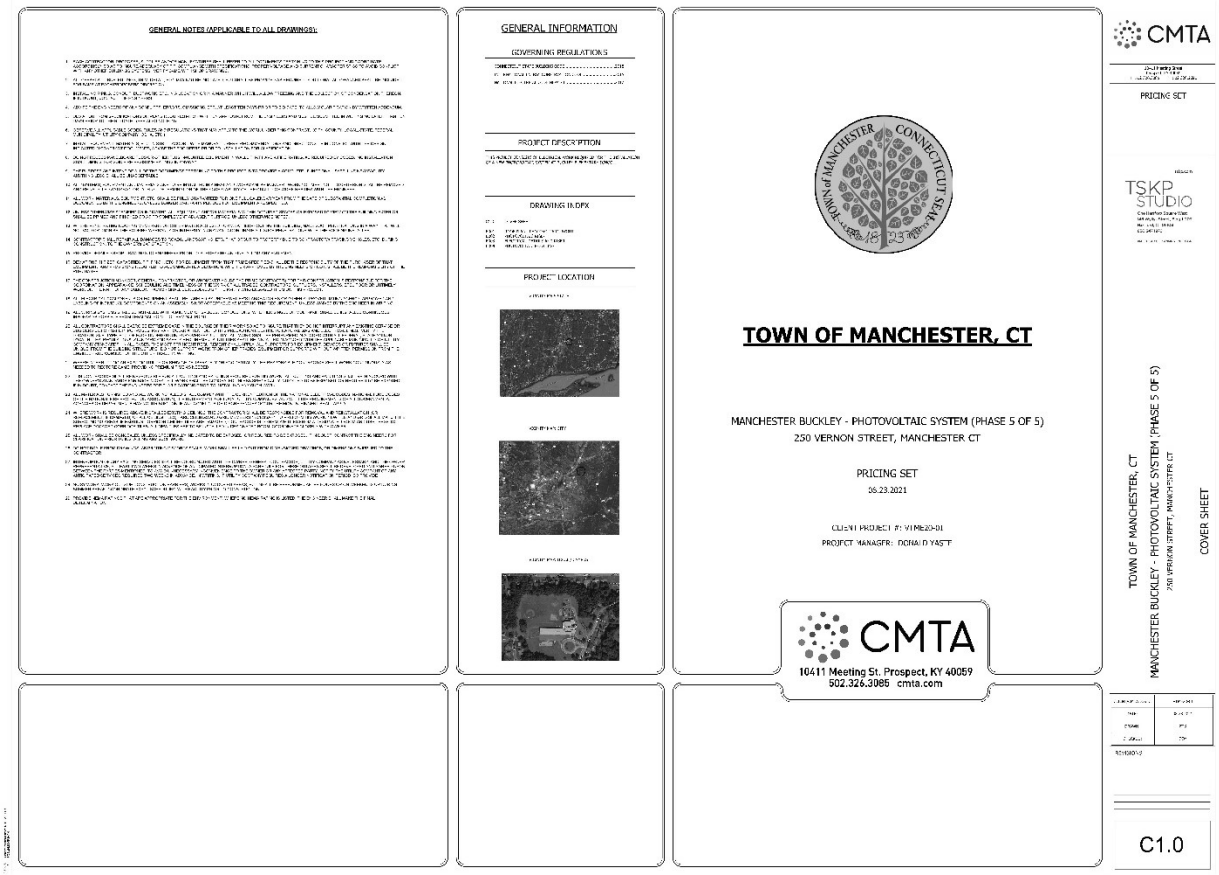
September 13, 2020 BOE Presentation

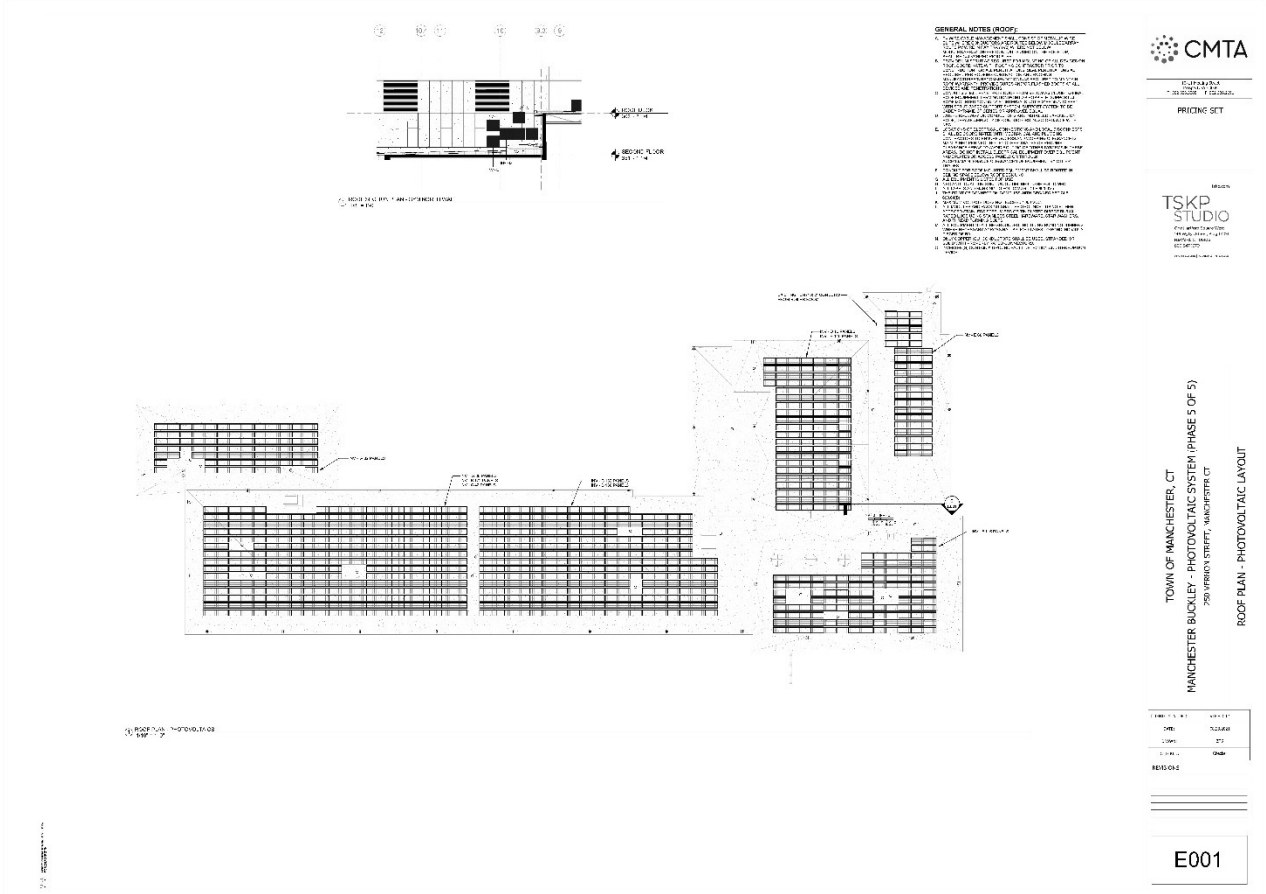


TSKP STUDIO ARCHITECTURE | PLANNING | INTERIORS

Buckley | PV Construction Documents



Buckley | PV Roof Plan



Buckley | PV Estimate

CONSTRUCTION ESTIMATE
PHOTOVOLTAIC PANELS
PROJECT COST SUMMARY

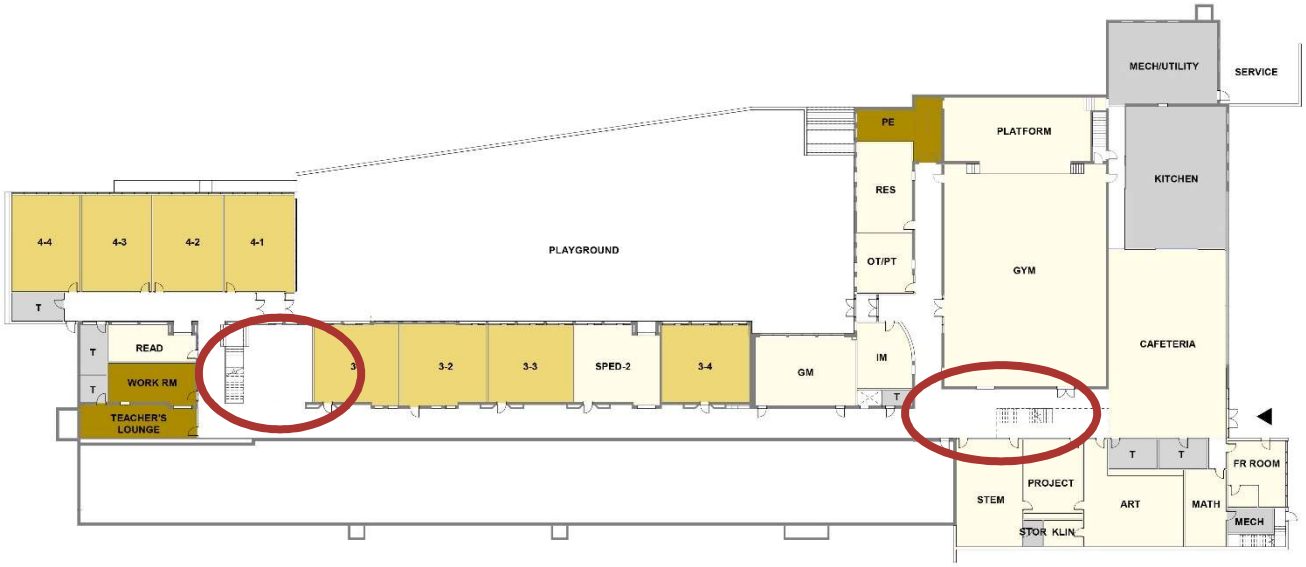
BUCKLEY ELEMENTARY SCHOOL - PHASE 5 OF 5

DESCRIPTION	QTY	U/M	UNIT COST	TOTAL
CONSTRUCTION TRADE COSTS				
1. **BUILDING COSTS / ADD PHOTO-VOLTAIC ROOF PANELS**	67,687	SF	$ 15.65	1,059,342
TRADE SUBTOTAL ITEMS:	67,687	GSF	$ 15.65	1,059,342
2. CT STATE SALES TAX (EXEMPT)				----
3. BUILDING PERMIT FEE: TOWN (EXEMPT)				----
4. C.M. - STAFF & REIMBURSABLES				n/a
SUBTOTAL:				----
CONTINGENCY				
1. **DESIGN / DOCUMENT CONTINGENCY**	4.0%			42,374
2. **ESCALATION - 2 MONTHS TO BID RECEIPT (6.0%/YR)**	1.0%			11,017
3. CM CONTINGENCY - N/A	-			----
SUBTOTAL:				53,391
CM FEES				
1. PRE-CONSTRUCTION PHASE				n/a
2. POST-OCCUPANCY PHASE				n/a
3. PERFORMANCE & PAYMENT BOND (N/A - CMA)				n/a
4. INSURANCE GL / PL (IN REIMBURSABLES)				n/a
SUBTOTAL:				----
TOTAL CONSTRUCTION COSTS	67,687	GSF	$16.44	$ 1,112,732

Buckley | Proposed Upper Level



Buckley | Proposed Lower Level

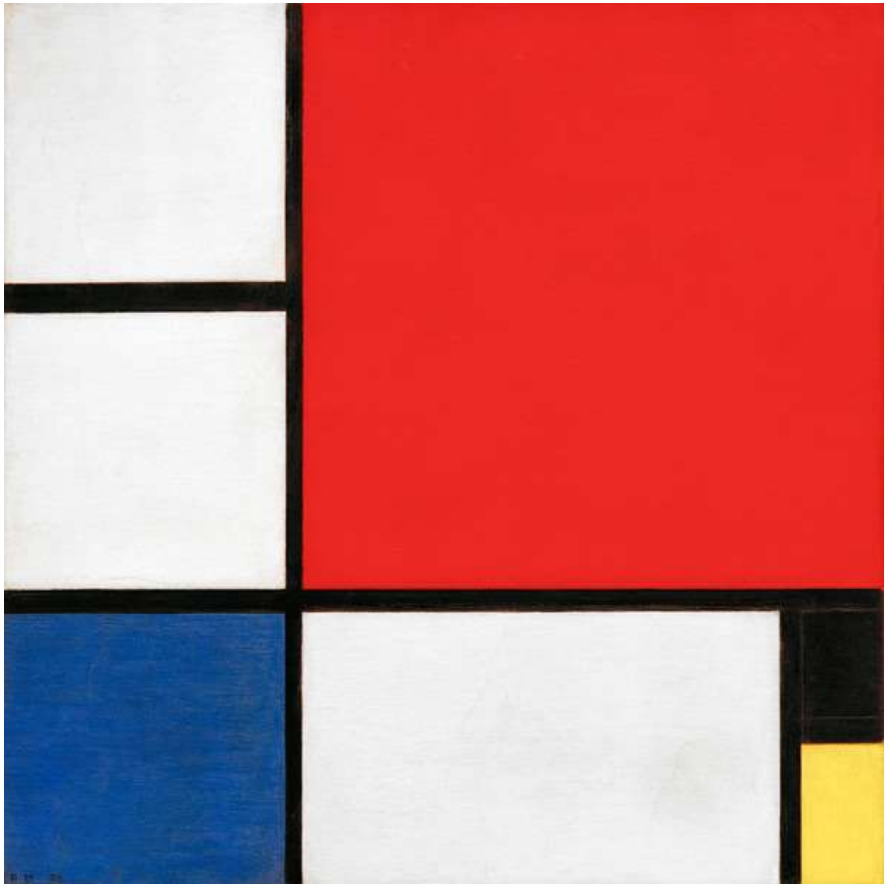


Buckley | Proposed Sections



Celebrate Vertical
Circulation

Buckley | Inspiration



Piet Mondrian

Composition with Red Blue and Yellow

Buckley | Imagery



Breakout Space



Lobby Space

TSKP STUDIO

Bowers | Existing Site Plan



N

TSKP STUDIO

Bowers | Site Plan



TSKP STUDIO

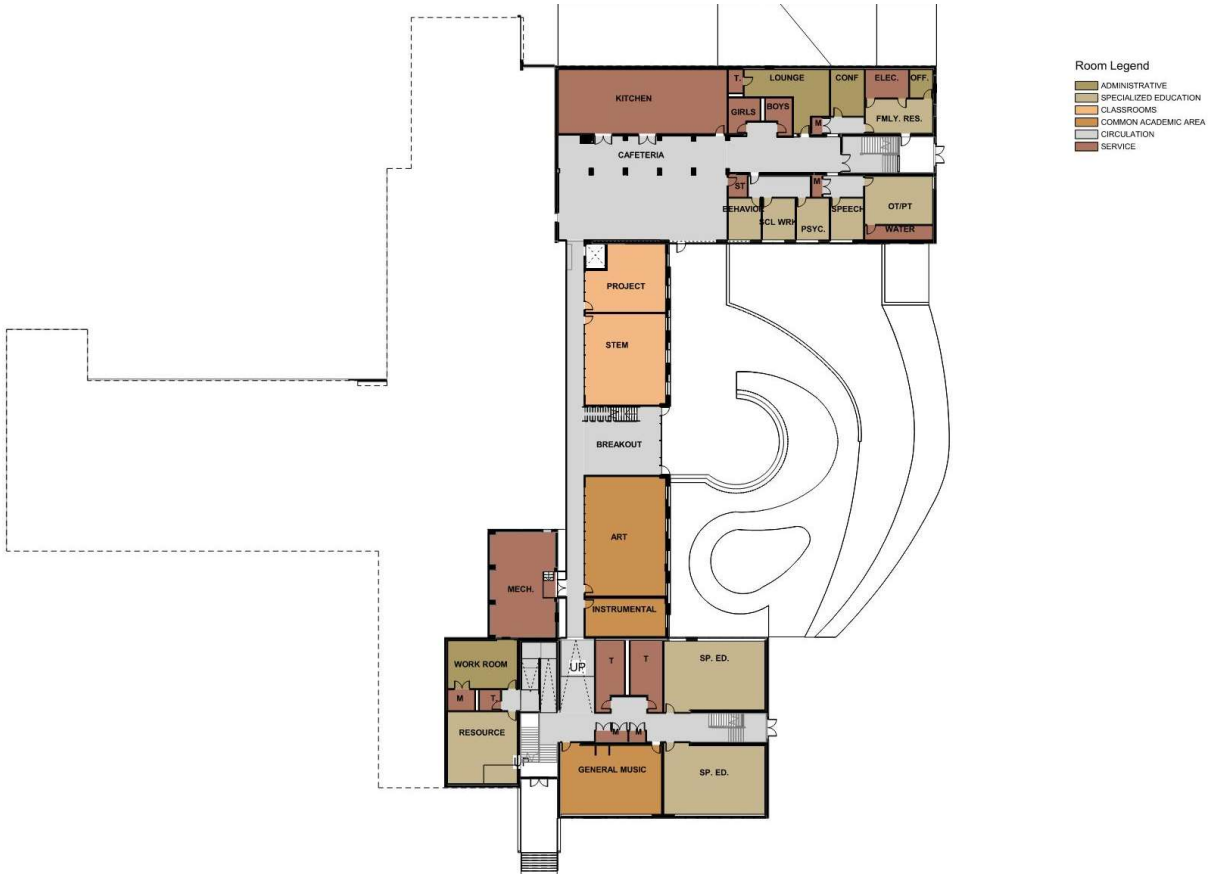
Bowers | Proposed Site



Bowers | Proposed Upper Plan



Bowers | Proposed Lower Plan



Bowers | West Elevation













TSKP STUDIO

Bowers | East Elevation



Bowers | North Elevation



Bowers | South Elevation



Bowers | Aerial Perspective



Bowers | Entrance View



Bowers | Courtyard View



TSKP STUDIO

Update on Opening of School

2021-22

Student Count - Elementary

School	PK	KF	1	2	3	4	Total
Bowers		60	74	69	61	63	**327**
Buckley	27	55	52	57	68	56	**315**
Highland		64	61	74	59	72	**330**
Keeney	49	34	53	69	43	40	**288**
Martin		49	51	27	49	37	**213**
Verplanck		69	82	95	99	76	**421**
Waddell		92	95	104	93	91	**475**
Total	**76**	**423**	**468**	**495**	**472**	**435**	**2369**

Student Count - Secondary

School	5	6	7	8	9	10	11	12	**Total**
MMA	2	6	18	15	0	0	0	0	**41**
Bennet	422	412	0	0	0	0	0	0	**834**
Illing	0	0	431	428	0	0	0	0	**859**
Bentley	0	0	0	0	8	10	8	15	**41**
MHS	0	0	0	0	514	381	369	416	**1680**
New Horizons	0	0	0	0	3	10	14	10	**37**
MRA	0	0	3	4	9	19	16	13	**64**
Manchester Transition Ctr	0	0	0	0	0	0	0	29	**29**

Staffing

Position	School	Position	School
2.0 STEM	Bennet	1.0 Preschool Teacher	Keeney
1.0 STEAM / Computers	Bennet	1.0 Grade 1 Teacher	Keeney
1.0 Humanities	Bennet	1.0 Grade 2 Teacher	Keeney
1.0 Physical Education Teacher	Buckley	1.0 Grade 4 Teacher	Keeney
2.0 TESOL Teacher	District-wide	1.0 Math Teacher	MHS
2.0 ELA/Reading Teacher	Illing	1.0 Spanish Teacher	MHS
1.0 Science Teacher	Illing	1.0 Special Education Teacher	MHS
1.0 Technology Teacher	Illing	1.0 Math Teacher	MMA
1.0 Special Education Teacher	Illing	1.0 Preschool Teacher	MPC
1.0 Kindergarten Teacher	Martin	Non-certified Staff	All Schools

Data Tracking - Covid

School	Date	Case	# in Quarantine
MHS	Tuesday, 8/31	Student	16 students
Bowers	Wednesday, 9/8	Student	5 students
Bowers	Friday, 9/10	Staff	1 staff, 1 student
Bowers	Friday, 9/10	Student	3 students
Bowers	Sunday, 9/12	Staff	15 students
Illing	Sunday, 9/12	Staff	1 staff

Positive Cases

- Background
- Process
- Decision Making
- Communication
- Student Learning

Professional Development

Monday:	School Based Meetings and Community Building Experiences Time in Classrooms
Tuesday:	District Equity Professional Learning Featured Speaker: Tim Wise Summer Equity Reading Discussion
Wednesday:	Recognition of Teacher of the Year Culturally Responsive Teaching and the Brain Content Area Planning

Professional Development

Thursday:	Wellness Building Based Operational Update Human Resources Modules (required) through Protraxx Technology Update Module
Friday:	Family Connections / Parent Outreach / K Visits Staff Meeting Time in Classrooms


C H E S T E R
Home Of The
Red Hawks


BARKIS
Munchal Munchal Munchal!
WAITING
KEVIN HENKES


RED HAWKS
OPENING REMARKS
Senior Class News


STOP
CROSSING GUARD


3013
Poland Spring




LUNDBERG
organic
Boebal


OFC. CZMYR


Illing

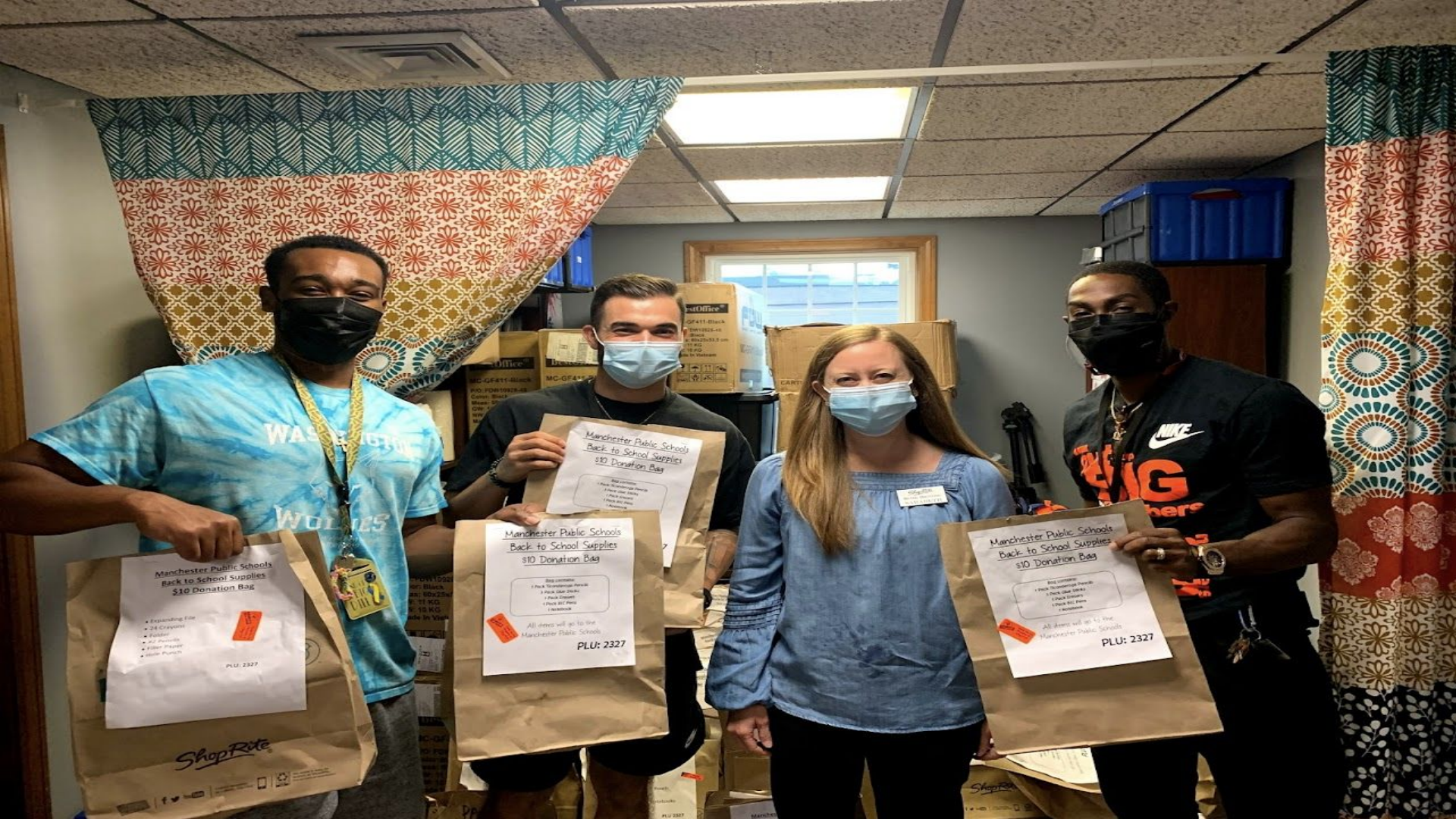



Would you rather...
Be able to fly?
Be able to breathe underwater?
TODAY A READER
READING
WRITING
HOMEWORK


BOSTON
RED SOX


I AM
A
MAN
I'M COUNTING ON YOU!
NOW-ALL TOGETHER
CLASSROOM
NORMS
My Sessions


MATH
Snack: 10:40
-10:50
9:50 SEL/Equity/STEM
10:30 Shared Reading
10:40 Snack
10:45 Writer's Workshop
11:25 Art
12:05 Reader's Workshop
12:55 Fact Fluency
1:15 Lunch
1:35 Recess
1:55 Math Workshop
50
70
140
160
170
180


Manchester Public Schools
Back to School Supplies
$10 Donation Bag
PLU: 2327
ShopRite
NIKE





Questions



BUCKLEY ELEMENTARY SCHOOL - PHASE 5 OF 5

MANCHESTER, CT

CONSTRUCTION ESTIMATE

PHOTOVOLTAIC PANELS

September 7, 2021

ARCHITECT

TSKP STUDIO

HARTFORD, CT

PREPARED BY: DAVID R. LONGO
SENIOR ESTIMATOR

TRACY BRENNAN
LEAD ESTIMATOR

MARK JEFFKO
PROJECT EXECUTIVE

BUCKLEY ELEMENTARY SCHOOL - PHASE 5 OF 5

MANCHESTER, CT

PHOTOVOLTAIC PANELS

CONSTRUCTION ESTIMATE

INDEX

September 7, 2021

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MAIN ESTIMATE SHEETS

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DESIGN DATA ---------- 5

QUALIFICATIONS & EXCLUSIONS ---------- 6

CONSTRUCTION ESTIMATE
PHOTOVOLTAIC PANELS
PROJECT COST SUMMARY

BUCKLEY ELEMENTARY SCHOOL - PHASE 5 OF 5

DESCRIPTION	QTY	U/M	UNIT COST	TOTAL
CONSTRUCTION TRADE COSTS				
1. BUILDING COSTS / ADD PHOTO-VOLTAIC ROOF PANELS	**67,687**	**SF**	**$ 15.65**	**1,059,342**
TRADE SUBTOTAL ITEMS:	**67,687**	**GSF**	**$ 15.65**	**1,059,342**
2. CT STATE SALES TAX (EXEMPT)				----
3. BUILDING PERMIT FEE: TOWN (EXEMPT)				----
4. C.M. - STAFF & REIMBURSABLES				n/a
SUBTOTAL:				**----**
CONTINGENCY				
1. DESIGN / DOCUMENT CONTINGENCY	**4.0%**			**42,374**
2. ESCALATION - 2 MONTHS TO BID RECEIPT (6.0%/YR)	**1.0%**			**11,017**
3. CM CONTINGENCY - N/A	-			----
SUBTOTAL:				**53,391**
CM FEES				
1. PRE-CONSTRUCTION PHASE				n/a
2. POST-OCCUPANCY PHASE				n/a
3. PERFORMANCE & PAYMENT BOND (N/A - CMA)				n/a
4. INSURANCE GL / PL (IN REIMBURSABLES)				n/a
SUBTOTAL:				**----**
TOTAL CONSTRUCTION COSTS	**67,687**	**GSF**	**$16.44**	**$ 1,112,732**

CONSTRUCTION ESTIMATE
PHOTOVOLTAIC PANELS
PROJECT COST SUMMARY

BUCKLEY ELEMENTARY SCHOOL - PHASE 5 OF 5

DESCRIPTION	QTY	U/M	UNIT COST	TOTAL
OWNERS ESTIMATED "SOFT" COSTS - TO BE CONFIRMED BY OWNER				
1. LAND ACQUISITION: NONE				----
2. TOWN STAFF: MISCELLANEOUS ADMINISTRATION COSTS				----
A. CLERK OF THE WORK				----
3. ARCHITECT / ENGINEER FEES, CONSULTANTS	**1**	**LS**		**58,823**
A. A/E REIMBURSABLES	1	LS		n/a
4. ENVIRONMENTAL CONSULTANTS	1	LS		n/a
5. SURVEYS, BORINGS, (GEOTECHNICAL INCL IN A/E)	1	LS		n/a
6. TRAFFIC STUDY				----
7. TESTING, INSPECTIONS, SPECIAL INSPECTIONS	1	LS		n/a
A. SPECIAL INSPECTIONS	1	LS		n/a
8. STRUCTURAL PEER REVIEW (NOT REQUIRED)				----
9. LOCAL REVIEW OPTION	1	LS		n/a
10. PRINTING, MAILING, ADVERTISING	1	LS		n/a
11. FURNITURE, EQUIPMENT	1	LS		n/a
A. FURNITURE CONSULTANT				----
12. TELEPHONE SYSTEM				----
13. TECHNOLOGY EQUIPMENT	1	LS		n/a
A. TECHNOLOGY CONSULTANT, IN ABOVE				----
14. PLAYGROUND EQUIPMENT				----
A. PLAYGROUND SURFACING				----
15. BUILDER'S RISK INSURANCE	1	LS		n/a
16. MOVING EXPENSES, STORAGE	1	LS		n/a
17. DISTRICT BONDING FEES				n/a
18. SHORT TERM FINANCING (ALLOWANCE)				----
19. STATE PERMIT FEE (0.26 / 1000 OF CONST. COST)	**0.26**	**/ K**		**289**
20. COMMISSIONING	1	LS		n/a
21. UTILITIES	1	LS		n/a
22. OWNERS CONTINGENCY	1.00	LS		n/a
23. OWNERS REPRESENTATIVE				----
24. BCI CHAIR REMOVAL				----
25. MISC. EXPENSES	1.00	LS		n/a
26. THIRD PARTY ESTIMATE				----
ESTIMATED TOTAL OF OWNERS "SOFT" COSTS:				**$ 59,112**
TOTAL PROJECT COST:				**$ 1,171,845**

BUCKLEY ELEMENTARY SCHOOL - PHASE 5 OF 5

CONSTRUCTION ESTIMATE

PHOTOVOLTAIC PANELS

September 7, 2021

SECTION/DIVISION BUILDING SUMMARY

GSF BLDG AREA = 67,687 SECTION	DESCRIPTION	PHOTOVOLTAICS
DIVISION 1 - GENERAL REQUIREMENTS		
01 50 00	GENERAL REQUIREMENTS	**IN ELECTRICAL**
	TOTAL - DIVISION 1	**----**
DIVISION 26 - ELECTRICAL		
26 00 00	ELECTRICAL SYSTEMS	**1,059,342**
	TOTAL DIVISION 26	**1,059,342**
	TOTAL TRADES COST	**$ 1,059,342**

Manchester Public Schools - Buckley Elementa							**100% CD Submission MEP Estimate**		
Manchester, CT							Gross Floor Area (sf):		n/a
Phase 5 of 5 - Photovoltaics Roof Panels								Date:	7-Sep-21
				Description			**Quantity**	**Unit**	**Unit Cost**	**Total**
FACILITY SERVICES										
26		**ELECTRICAL**								
			Electrical Miscellaneous							
				Photovoltaic System:						
				PV module 415w			952	ea	381.72	363,397
				Optimizer			476	ea	188.76	89,850
				Mounting rack per module			952	ea	192.00	182,784
				Ballast blocks			1,904	ea	14.31	27,246
				Roof pads			1,904	ea	27.37	52,105
				Inverter			6	ea	6,864.00	41,184
				Production Meter			1	ea	1,500.00	1,500
				Main Disconnect Switch, non fused NEMA3R 1200A			1	ea	10,800.00	10,800
				Terminate 1200A feeder at existing switchboard			1	ea	2,880.00	2,880
				New Panel PV 1200A 208V MCB (6x 3p175A CB, 1x 3p30A CB)			1	ea	28,320.00	28,320
				4" RGS conduit, complete			280	lf	79.68	22,310
				2" RGS conduit, complete			1,000	lf	32.51	32,514
				350 MCM THWN str copper			1,600	lf	22.58	36,132
				#3/0 AWG THWN str copper			5,040	lf	11.68	58,859
				#4/0 AWG THWN str copper			5,040	lf	14.24	71,784
				#6 AWG THWN str copper			1,260	lf	2.85	3,596
				Grounding			1	lot	6,180.00	6,180
				Arc flash study			1	ea	9,900.00	9,900
				Checkout and test			1	ea	18,000.00	18,000
				Electrical Miscellaneous						**1,059,342**
		TOTAL		**ELECTRICAL**						**1,059,342**

BUCKLEY ELEMENTARY SCHOOL

MANCHESTER, CT

ADDITIONS & RENOVATIONS

November 16, 2020

==========

DESIGN DATA

September 7, 2021

THE FOLLOWING DOCUMENTS AS PREPARED BY TSKP STUDIO WERE USED IN THE PREPARATION OF THIS ESTIMATE.

SPECIFICATIONS	DATE RECEIVED	DATE REVISED
1. SPECIFICATIONS FOR BUCKLEY ES PHASE 5 OF 5 DIVISION 26 ELECTRICAL	8/23/2021	

DWG #	DESCRIPTION	DWG DATE	DATE REVISED
C1.0	COVER & GENERAL INFORMATION	8/23/2021	
E001	ROOF PLAN - PHOTOVOLTAIC LAYOUT	8/23/2021	
E002	PHOTOVOLTAIC RISER	8/23/2021	
E003	ELECTRIC DETAILS AND RISER	8/23/2021	
E004	PHOTOVOLTAIC MODELING	8/23/2021	

BUCKLEY ELEMENTARY SCHOOL
MANCHESTER, CT

PHOTOVOLTAIC PANELS
CONSTRUCTION ESTIMATE
==========
ESTIMATE QUALIFICATIONS & EXCLUSIONS
September 7, 2021

A. QUALIFICATIONS

1 BALLAST BLOCKS AND ROOF PADS ARE INCLUDED.

2 CURRENT DESIGN INCLUDES A 395 KW SYSTEM.

3 INFRASTRUCTURE FOR THE NEW SYSTEM IS ASSUMED TO BE COMPLETE AND INSTALLED AT THE TIME OF THIS WORK.

B. EXCLUSIONS

1 SOLAR FLOWERS (NOT SHOWN OR SPECIFIED).

2 MODIFICATIONS OR ADDITIONAL WORK RELATED TO THE EXISTING OR NEW P/V INFRASTRUCTURE.

3 ANY WORK RELATED TO ROOFING, SITEWORK OR NON-ELECTRICAL BUILDING RELATED TRADES.

4 SNOW REMOVAL, WINTER OR COLD WEATHER WORK CONDITIONS.

5 OVERTIME OR PREMIUM TIME.

6 SALES OR USE TAXES

7 BUILDING PERMIT FEES.

GENERAL NOTES (APPLICABLE TO ALL DRAWINGS):

1. EACH CONTRACTOR, PROPOSER, SUPPLIER AND/OR MANUFACTURER SHALL REFER TO ALL DOCUMENTS PERTAINING TO THIS PROJECT AND COORDINATE ACCORDINGLY SO AS TO INSURE ADEQUACY OF FIT, COMPLIANCE WITH SPECIFICATIONS, PROPER VOLTAGE AND CURRENT CHARACTERISTICS TO AVOID CONFLICT WITH ANY OTHER BUILDINGS SYSTEMS. VERIFY SAME WITH SHOP DRAWINGS.
2. ALL OFFSETS, TURNS, FITTINGS, TRIM, DETAIL, ETC. MAY NOT BE INDICATED, BUT SHALL BE PROVIDED AS REQUIRED. ADDITIONAL ALLOWANCES SHALL BE INCLUDED FOR SAME AT EACH PROPOSERS DISCRETION.
3. INSTALL NO PIPING, CONDUIT, DUCTWORK, ETC. IN A LOCATION OR IN A MANNER WHICH WILL ALLOW FREEZING AND THE COLLECTION OF CONDENSATION THEREON. IF IN DOUBT, CONTACT THE ENGINEERS.
4. ADVISE THE ENGINEERS OF ANY CONFLICTS, ERRORS, OMISSIONS, ETC. AT LEAST TEN DAYS PRIOR TO BID DATE, TO ALLOW CLARIFICATION BY WRITTEN ADDENDUM.
5. DEVIATION FROM SPECIFICATIONS OR PLANS REQUIRES PRIOR WRITTEN APPROVAL FROM THE ENGINEERS AND MUST BE SUBMITTED IN WRITING NO LATER THAN TEN DAYS PRIOR TO THE BID DATE. (SEE ALSO NOTE 21).
6. OBSERVE ALL APPLICABLE CODES, RULES AND REGULATIONS THAT MAY APPLY TO THE WORK UNDER THIS CONTRACT. (CITY, COUNTY, LOCAL, STATE, FEDERAL, MUNICIPALITY, UTILITY COMPANY, OSHA, ETC.)
7. INSTALL EQUIPMENT, MATERIALS, ETC. IN STRICT ACCORD WITH MANUFACTURERS' RECOMMENDATIONS AND DIRECTIONS. IF IN CONFLICT WITH THE DESIGN INDICATED IN CONTRACT DOCUMENTS, ADVISE THE ENGINEERS PRIOR TO INSTALLATION FOR CLARIFICATION.
8. DO NOT RECESS PANELBOARD TUBS OR OTHER FLUSH-MOUNTED EQUIPMENT IN WALLS THAT HAVE A FIRE RATING, AS REQUIRED BY CODES. NO INSTALLATION SHALL DIMINISH OR VOID FIRE RESISTIVE RATINGS IN ANYWAY.
9. THE PURPOSE AND INTENT OF ALL OF THE DOCUMENTS PERTAINING TO THIS PROJECT IS TO PROVIDE A COMPLETE, FUNCTIONAL, SAFE, LIKE NEW FACILITY. ANYTHING LESS SHALL BE UNACCEPTABLE.
10. ALL SYSTEMS, EQUIPMENT AND MATERIALS ARE TO BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. WORK NOT MEETING THIS CRITERION SHALL BE REMOVED AND REINSTALLED SATISFACTORILY. FINAL DETERMINATION OF THE ACCEPTABILITY OF THE QUALITY OF WORK RESIDES WITH THE ENGINEER.
11. ALL WORK, MATERIALS, EQUIPMENT, ETC. SHALL BE FULLY GUARANTEED FOR ONE FULL CALENDAR YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION AS DOCUMENTED BY THE ENGINEERS, UNLESS LONGER WARRANTY PERIODS FOR EQUIPMENT ARE SPECIFIED.
12. UNLESS OTHERWISE SPECIFIED OR INDICATED, ALL EQUIPMENT AND/OR MATERIALS WITHIN OCCUPIED SPACES OR EXPOSED TO VIEW ON THE BUILDING EXTERIOR SHALL BE PRIMED AND FINISHED SO AS TO COMPLEMENT ADJACENT SURFACE, UNLESS OTHERWISE NOTED.
13. WHERE PENETRATING ROOFING MEMBRANE OR OTHER MATERIALS USED FOR WEATHERPROOFING THE BUILDING, MAKE SUCH PENETRATIONS IN A WAY THAT WILL NOT VOID OR DIMINISH THE ROOFING WARRANTY OR INTEGRITY IN ANYWAY. COORDINATE ALL SUCH PENETRATIONS WITH THE ROOFING INSTALLER.
14. CONTRACTOR SHALL REPAIR ALL DAMAGES TO ROADS, LANDSCAPING, ETC. THAT OCCUR TO PROPERTY DUE TO CONTRACTOR's STAGING VEHICLES, ETC. DURING CONSTRUCTION, TO THE OWNER's SATISFACTION.
15. PROVIDE DETAILED SHOP DRAWINGS TO ENGINEERS PRIOR TO PURCHASING AND INSTALLING ANY EQUIPMENT.
16. DEVIATIONS IN SIZES, CAPACITIES, FIT, FINISH, ETC. FOR EQUIPMENT FROM THAT PRIME SPECIFIED SHALL BE THE RESPONSIBILITY OF THE PURCHASER OF THAT EQUIPMENT. ANY PROVISIONS REQUIRED TO ACCOMMODATE A DEVIATION, WHETHER APPROVED BY THE ENGINEERS OR NOT, SHALL BE THE RESPONSIBILITY OF THE PURCHASER.
17. THE CONSTRUCTION MANAGER, GENERAL CONTRACTOR, OR WHOMEVER HOLDS THE PRIME CONTRACT(S) FOR THIS CONSTRUCTION IS RESPONSIBLE FOR THE COORDINATION, APPEARANCE, SCHEDULING AND TIMELINESS OF THE WORK OF ALL TRADES, CONTRACTORS, SUPPLIERS, INSTALLERS, ETC.. POOR OR UNTIMELY WORK ON THE PART OF ANY SUBCONTRACTOR SHALL BE RESOLVED BY THE PARTY WHO ENGAGED THEM ON THIS PROJECT.
18. ALL ELECTRICAL COMPONENTS OR EQUIPMENT SHALL BE LABELED BY UNDERWRITER'S LABORATORIES OR OTHER APPROVED LISTING AGENCY. APPROVED AND LABELING OF INDIVIDUAL COMPONENTS ON AN ASSEMBLY IS NOT ACCEPTABLE AS MEETING THIS REQUIREMENT, UNLESS WAIVED BY THE ENGINEER IN WRITING.
19. ALL WIRING SYSTEMS SHALL BE INSTALLED WITH A MINIMUM OF SPLICES. CONDUCTORS, WHETHER SINGLE OR MULTI-PAIR SHALL BE INSTALLED CONTINUOUS INSOFAR AS POSSIBLE FROM TERMINAL POINT TO TERMINAL POINT.
20. ALL CONTRACTORS SHALL EXERCISE EXTREME CARE IN THE COURSE OF THEIR WORK SO AS TO INSURE THAT THEY DO NOT INTERRUPT ANY EXISTING SERVICE OR SUB-SERVICE FOR SAFETY PURPOSES, PAY PARTICULAR ATTENTION TO THIS PRECAUTION RELATIVE TO NATURAL GAS AND ELECTRICAL LINES, VERIFY THE LOCATION, SIZE, TYPE, ETC. OF EACH UNDERGROUND OR OVERHEAD UTILITY. ALL WORK SHALL BE PERFORMED IN ACCORD WITH ALL FEDERAL, STATE AND/OR LOCAL RULES, REGULATIONS, STANDARD AND SAFETY REQUIREMENTS. UTILITIES SHALL BE INSTALLED IN ACCORD WITH THE APPLICABLE MUNICIPALITY OR UTILITY COMPANY STANDARDS. IN ALL CASES, THE MOST STRINGENT REQUIREMENT SHALL APPLY. ALL SUPPORTS FOR EQUIPMENT, DEVICES OR FIXTURES SHALL BE UNIQUE, FROM THE BUILDING STRUCTURE. DO NOT SUPPORT WORK FROM OTHER TRADES, EQUIPMENT OR SUPPORTS WITHOUT WRITTEN PERMISSION FROM THE ENGINEER AND CONSENT OF THE OTHER TRADE, IN WRITING.
21. WHERE INTERRUPTING AN EXISTING UTILITY OR SERVICE DELIBERATELY OR ACCIDENTALLY, THE RESPONSIBLE CONTRACTOR SHALL WORK CONTINUOUSLY AS NEEDED TO RESTORE SAME, PROVIDING PREMIUM TIME AS NEEDED.
22. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR HIS WORK. ALL CUTTING AND PATCHING SHALL BE IN ACCORD WITH THE OWNER'S STANDARDS FOR SUCH WORK. ALL WORK SHALL BE CONCEALED UNLESS SPECIFICALLY INDICATED TO BE EXPOSED, OR REQUIRED TO BE EXPOSED. IF IN DOUBT, CONTACT THE ENGINEERS FOR CLARIFICATIONS PRIOR TO INSTALLING ANY SUCH WORK.
23. ALL MATERIALS FURNISHED AND ALL WORK INSTALLED SHALL COMPLY WITH THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODES, NATIONAL FURE CODES OF THE NATIONAL FIRE PROTECTION ASSOCIATION, THE RQUIREMENTD OF LOCAL UTILITY COMPANIES, AND WITH THE REQUIREMENTS OF ALL GOVERNMENTAL AGENCIES OR DEPARTMENTS HAVING JURISDICTION. IF ANY CONFLICTS OR DISCREPENCIES OCCUR THE MOST STRINGENT SHALL APPLY.
24. WHERE WORK IS REQUIRED ABOVE INSTALLED EXISTING CEILINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND REINSTALLATION (OR REPLACEMENT, IF DAMAGED) OF ALL CEILING TILES, HARD CEILINGS AND GRID MEMBERS NECESSARY TO PREFORM HIS WORK. NEW TILE AND GRID SHALL MATCH THE SURROUNDING AREAS. IF EXISTING CORRIDOR CEILING TILES ARE DAMAGED, CONTRACTOR IS TO REMOVE TILES FROM A DESIGNATED ROOM AND USE THESE TO REPLACE DAMAGED CORRIDOR TILES. ALL NEW TLES ARE TO BE INSTALLED IN DESIGNATED ROOM. COORDINATE CLOSELY WITH OWNER.
25. ALL WORK SHALL BE CONCEALED UNLESS SPECIFICALLY INDICATED TO BE EXPOSED, OR REQUIRED TO BE EXPOSED. IF IN DOUBT, CONTACT THE ENGINEERS FOR CLARIFICATION PRIOR TO INSTALLING ANY SUCH WORK.
26. DO NOT SCALE FROM DRAWINGS, AS PRINTING DISTORTS SCALE. WORK SHALL BE LAID OUT FROM DIMENSIONED DRAWINGS, OR DIMENSIONS SUPPLIED TO THE CONTRACTOR.
27. INTERRUPTION OF ANY EXISTING SERVICES SHALL BE COORDINATED WITH THE OWNER, GENERAL CONTRACTOR, UTILITY COMPANY AS NECESSARY, AND THE OWNER REPRESENTATIVE, AT LEAST TWO WEEKS IN ADVANCE OF ANTICIPATED INTERRUPTION, A SCHEDULE FOR THESE OUTAGES SHALL BE DEVELOPED AND AGREED UPON BETWEEN THE PARTIES MENTIONED, TO AVOID UNNECESSARY INCONVENIENCE TO THE OWNER OR ANY AFFECTED PARTY. NOTIFY THE UTILITY COMPANT OF ANY ANTICIPATED SERVICES REQUIRED TWO WEEKS IN ADVANCE, IN WRITING. IF UTILITY COMPANY REQUIRES A LONGER NOTIFICATION PERIOD, SO PROVIDE.
28. NOISY WORK, WORK OUTSIDE CONSTRUCTION PARRIERS, WORKS IN OCCUPIED AREAS, ECT. SHALL BE PERFORMED AFTER HOURS OR ON WEEKENDS OR DURING SUMMER BREAK, COORDINATE EXACT SCHEDULING WITH FACILITY PRIOR TO CONSTRUCTION.
29. PROVIDE NEMA RATINGS THAT ARE APPROPRIATE FOR THE ENVIRONMENT, WHERE NO NEMA RATING IS LISTED, THE ENGINEER SHALL MAKE THE FINAL DETERMINATION.

GENERAL INFORMATION

GOVERNING REGULATIONS

CONNECTICUT STATE BUILDING CODE 2018
INTERNATIONAL ENERGY CONSERVATION CODE 2015
NATIONAL ELECTRICAL CODE NFPA 70 2017

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF ELECTRICAL WORK REQUIRED FOR THE INSTALLATION OF A NEW PHOTOVOLTAIC SYSTEM AT BUCKLEY ELEMENTARY SCHOOL.

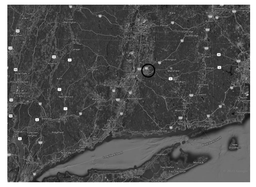
DRAWING INDEX

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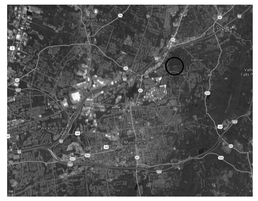
E001 ROOF PLAN - PHOTOVOLTAIC LAYOUT
E002 PHOTOVOLTAIC RISER
E003 ELECTRICAL DETAILS AND RISER
E004 PHOTOVOLTAIC MODELING

PROJECT LOCATION

VICINITY MAP: STATE



VICINITY MAP: CITY



VICINITY MAP: LOCAL / CAMPUS



TOWN OF MANCHESTER, CT

MANCHESTER BUCKLEY - PHOTOVOLTAIC SYSTEM (PHASE 5 OF 5)
250 VERNON STREET, MANCHESTER CT

PRICING SET
08.23.2021

CLIENT PROJECT #: VTME20-01
PROJECT MANAGER: DONALD YASTE

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10411 Meeting St. Prospect, KY 40059
502.326.3085 cmta.com

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TOWN OF MANCHESTER, CT
MANCHESTER BUCKLEY - PHOTOVOLTAIC SYSTEM (PHASE 5 OF 5)
250 VERNON STREET, MANCHESTER CT

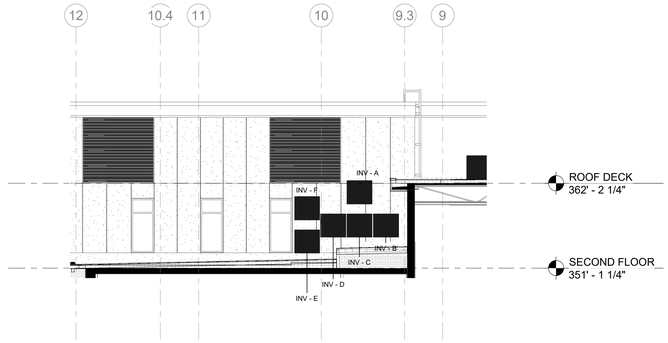
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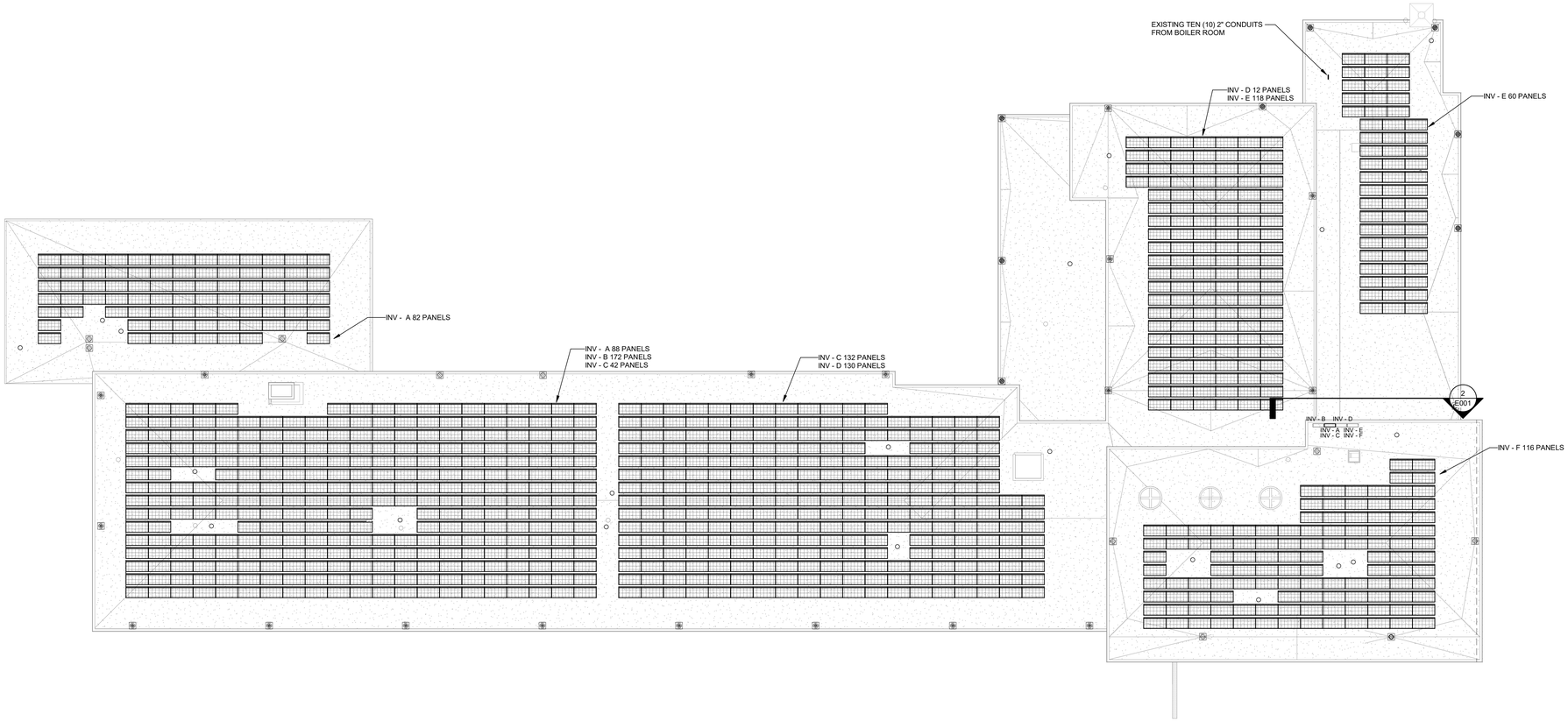
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2 ROOF SECTION PLAN - GYM NORTH WALL
1/8" = 1'-0"

GENERAL NOTES (ROOF):

A. PV WIRE CABLE MANAGEMENT SHALL CONSIST OF METALLIC WIRE CLIPS WHERE CONDUCTORS ARE ROUTED BELOW MODULES/ARRAY. ROUTE PV WIRE IN RAY TRAY (V2) WHERE NOT BELOW MODULES/ARRAY. WHERE CONDUIT IS USED ON THE ROOFTOP, IT SHALL BE GALVANIZED RIGID STEEL.
B. PROVIDE UNI-STRUT AS REQUIRED FOR MOUNTING OF ALL DEVICES ON ROOF. COORDINATE WITH ROOFING CONTRACTOR PRIOR TO CONSTRUCTION FOR ALL PENETRATIONS. SEAL PENETRATIONS AS REQUIRED PER ROOFING CONTRACTOR AND ROOFING MANUFACTURER'S RECOMMENDATIONS AS REQUIRED TO MAINTAIN ROOF WARRANTY. PROVIDE CURBS AND/OR FLASHED BOOTS AT ALL DEVICES AND PENETRATIONS.
C. CONDUITS SHALL PENETRATE ROOF FROM BELOW AS CLOSE TO FINAL ROOF EQUIPMENT TERMINATION POINT AS POSSIBLE. SUPPORT ALL ROOF MOUNTED CONDUITS AT INTERVALS NOT EXCEEDING 10 FEET WITH STRUT-BASED SUPPORT SYSTEM. SUPPORT SYSTEM TO BE CADDY PYRAMID ST SERIES OR APPROVED EQUAL.
D. WHERE RACEWAY OR CONDUCTORS ARE INSTALLED EXPOSED ON ROOF, DERATE AMPACITY OF CONDUCTORS IN ACCORDANCE WITH NEC.
E. LOCATIONS OF ELECTRICAL CONNECTIONS AND LOCAL DISCONNECTS SHALL BE COORDINATED WITH MECHANICAL AND PLUMBING CONTRACTORS TO ENSURE ACCESS AND WORKING CLEARANCE IS MAINTAINED PER NEC. NOTIFY OTHER TRADES OF REQUIRED CLEARANCE AREAS TO AVOID ROUTING OF OTHER SYSTEMS IN THESE AREAS. DO NOT INSTALL ELECTRICAL EQUIPMENT OVER EQUIPMENT NAMEPLATES OR ACCESS PANELS OR THROUGH ACCESS/MAINTENANCE CLEARANCES OF EQUIPMENT BY OTHER TRADES.
F. CONDUIT FOR ROOF MOUNTED EQUIPMENT SHALL BE ROUTED IN CEILING SPACE BELOW ROOF DECK UNO.
G. ALL EQUIPMENT IS LISTED FOR USE.
H. NEC AND LOCAL JURISDICTION GUIDELINES TO BE FOLLOWED.
I. ALL LABELS AND MARKING TO FOLLOW ARTICLE 690 (IV.)
J. THE POINT OF CONNECTION COMPLIES WITH CEC/NEC ARTICLE 690.64(B).
K. MAXIMUM VOLTAGE DOES NOT EXCEED 1000 VDC.
L. ALL MODULES AND RACKING SHALL BE GROUNDED USING EITHER APPROVED STAINLESS STEEL WEBS OR TIN PLATED DIRECT BURIAL RATED LUGS USING STAINLESS STEEL HARDWARE, STAR WASHERS, AND THREAD FORMING BOLTS.
M. ALL EQUIPMENT SHALL BE GROUNDED, INCLUDING BONDING JUMBERS WHERE NECESSARY ACROSS RAIL SPLICE PLATES TO BOND INDIVIDUAL PIECES OF RAIL.
N. ONLY COPPER (CU) CONDUCTORS SHALL BE USED. STRANDED OR SOLID WITH PROPERLY RATED CONNECTORS.
O. INVERTER(S) CONTAIN A GROUND FAULT DETECTION AND ITERRUPTION DEVICE.



1 ROOF PLAN - PHOTOVOLTAICS
1/16" = 1'-0"

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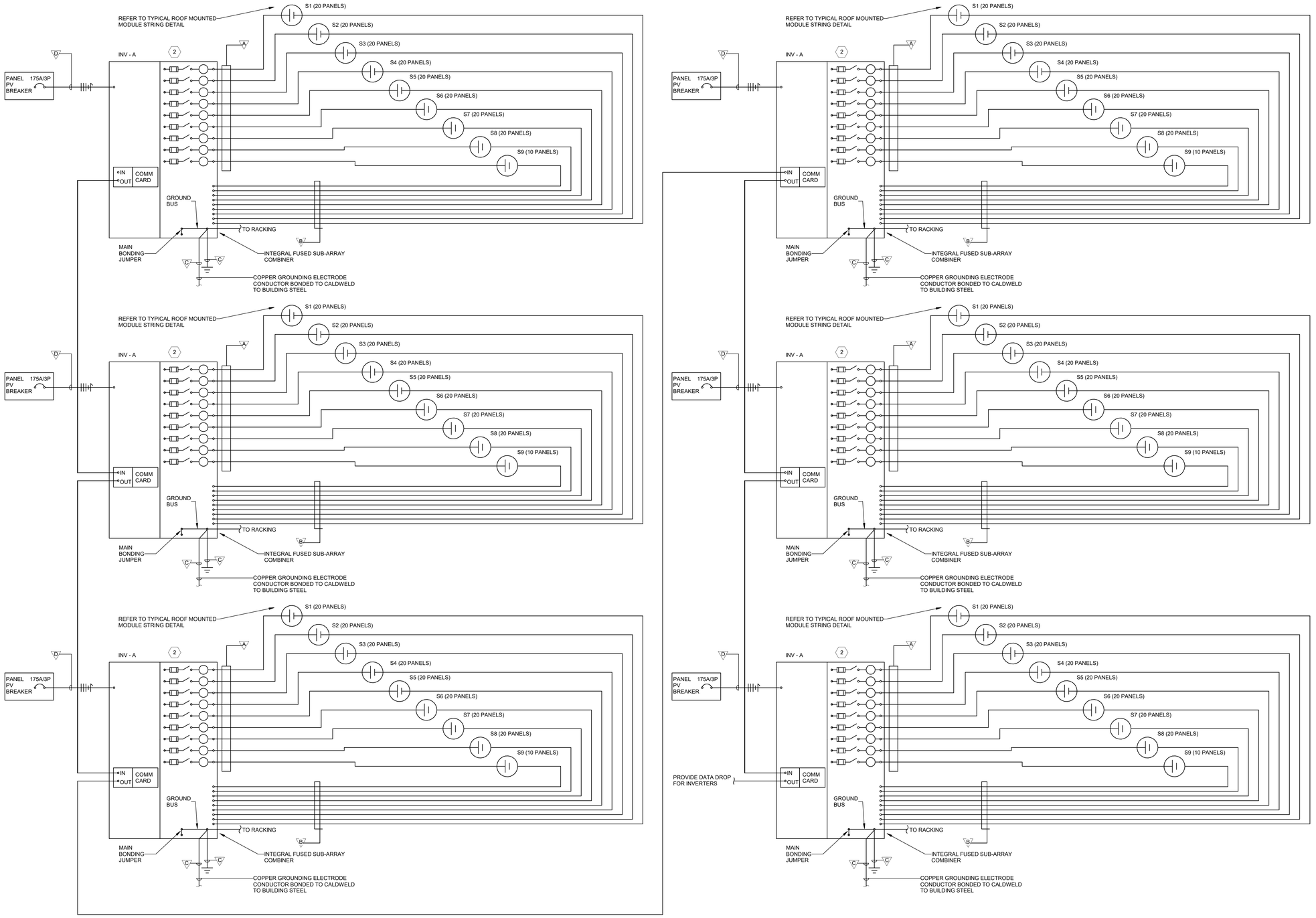
ROOF PLAN - PHOTOVOLTAIC LAYOUT

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POWER RISER GENERAL NOTES :

A. ALL CONDUCTORS SHALL BE COPPER (SEE SPECIFICATIONS FOR TYPES).

B. AS PART OF THIS CONTRACT, PROVIDE A COORDINATION/FAULT CURRENT STUDY FOR BREAKERS ON THIS PROJECT. STUDY SHALL INCLUDE ALL MAINS AND FEEDERS SHOWN ON THESE DRAWINGS AND SHALL EXTEND TO THE MAIN LUGS OR BREAKER OF THE FURTHEST DEVICE DOWNSTREAM SUBMIT AS SHOP DRAWING TO ENGINEER PRIOR TO ORDERING ANY POWER DISTRIBUTION EQUIPMENT .

C. AS PART OF THIS CONTRACT, PROVIDE A COMPREHENSIVE ARC FLASH HAZARD ANALYSIS FOR POWER DISTRIBUTION DEVICES ON THIS PROJECT. PROVIDE ALL LABELS, WARNING SIGNAGE, ETC. PER NPFA-70E AND OSHA REQUIREMENTS.

POWER RISER TAGGED NOTES :

1. PROVIDE COPPER GROUNDING ELECTRODE FROM NEW GROUND BAR AT INVERTER TO BUILDING MAIN GROUND.

2. PROVIDE 1000VDC/120/208 VAC/3PH/50KW PHOTOVOLTAIC INVERTER WITH MINIMUM CALIFORNIA ENERGY COMMISSION (CEC) EFFICIENCY RATING OF 96.5%. SOLAREDGE SE50KUS OR APPROVED EQUAL. INVERTER SHALL BE PROVIDED WITH THE FOLLOWING CHARACTERISTICS AND OPTIONS:
   - A. PV VIEW SUB-ARRAY MONITORING
   - B. PV ZONE SUB-ARRAY MONITORING
   - C. ENVIRONMENTAL MONITORING
   - D. BACKFEED PROTECTION
   - E. AUTOMATIC ARRAY FAULT ISOLATION
   - F. INTEGRATED AC CONTACTOR SHALL OPEN AT NIGHT AND MINIMIZE STANDBY LOSSES
   - G. GROUND FAULT INTERRUPTION
   - H. MAXIMUM WEIGHT OF 106 LBS
   - I. SHALL CONFORM TO NEC 690.12

POWER RISER FEEDERS :

A. PROVIDE # OF #10 INDICATED, 1000VDC, PV WITH BLACK INSULATION.

B. PROVIDE # OF #10 INDICATED, 1000VDC, PV WITH BLACK INSULATION AND GRAY STRIPE.

C. PROVIDE ONE (1) #6 GROUND. ROUTE IN 3/4" CONDUIT WHERE EXPOSED. CONTRACTOR SHALL UTILIZE EXISTING 2" CONDUITS FROM BOILER ROOM TO ROOF. INTERCEPT AND EXTEND EXISTING CONDUIT AS REQUIRED.

D. PROVIDE # OF #4/0 CONDUCTORS AND # OF #6 GROUND IN 2" CONDUIT. CONTRACTOR SHALL UTILIZE EXISTING 2" CONDUITS FROM BOILER ROOM TO ROOF. INTERCEPT AND EXTEND EXISTING CONDUIT AS REQUIRED.

1 PHOTOVOLTAIC RISER DIAGRAM
NO SCALE

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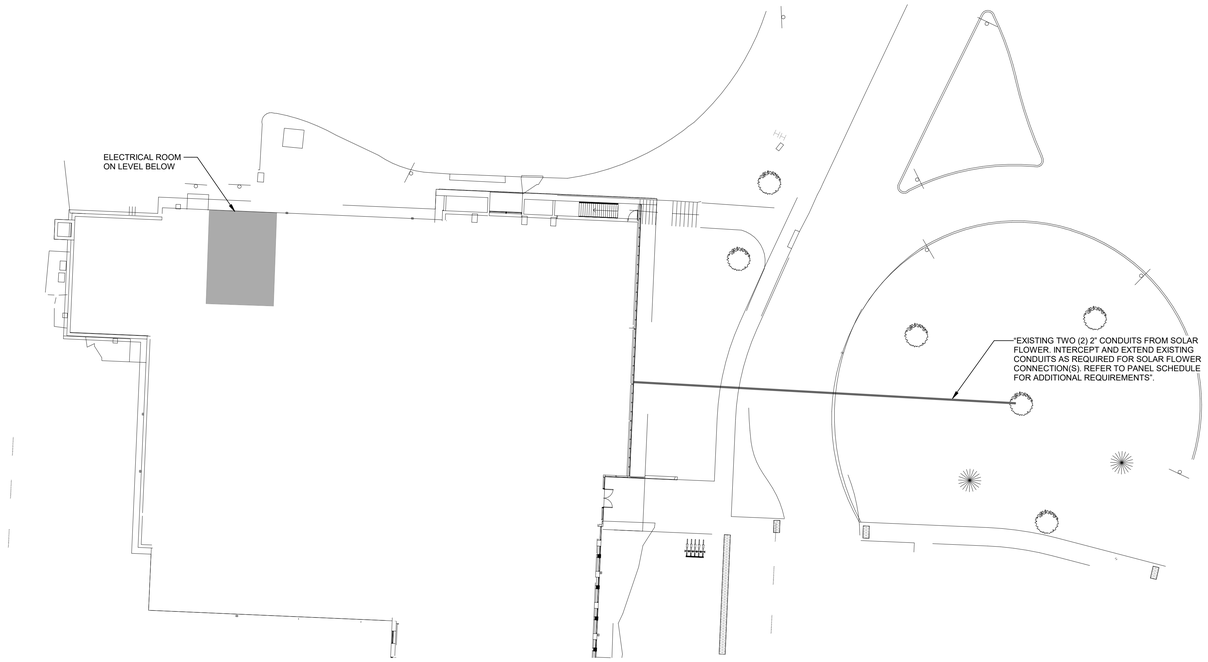
PHOTOVOLTAIC RISER

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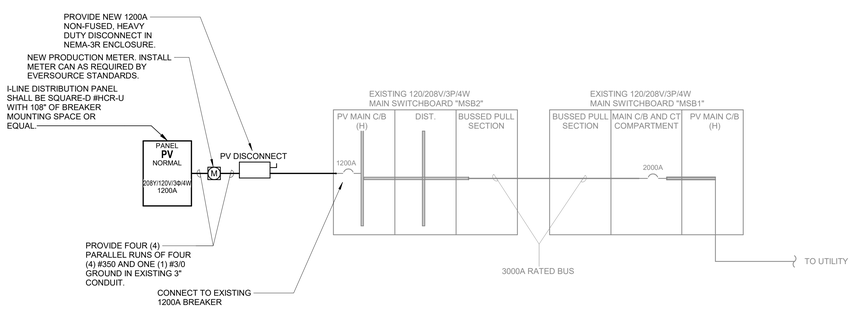
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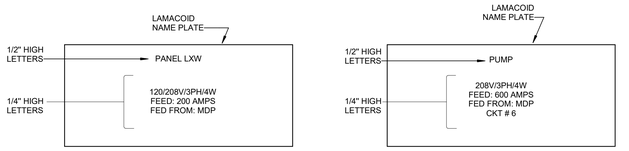
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1 SOLAR FLOWER EQUIPMENT CONNECTIONS
1" = 20'-0"



3 POWER DISTRIBUTION RISER DIAGRAM
NOT TO SCALE



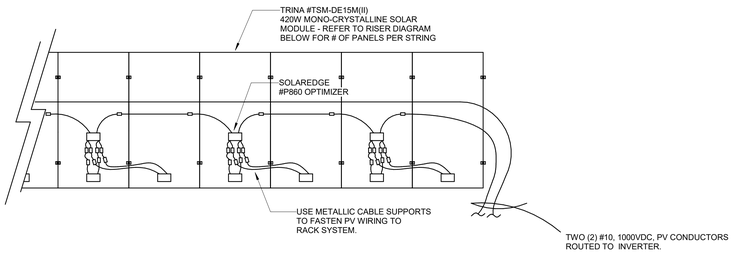
NORMAL POWER LABELS SHALL BE BLACK WITH WHITE LETTERS
EMERGENCY POWER LABELS SHALL BE RED WITH WHITE LETTERS
UTILIZE SCREW-ON TYPE LAMACOID PLATES.

TYPICAL POWER PANEL NAMEPLATE DETAIL
NO SCALE

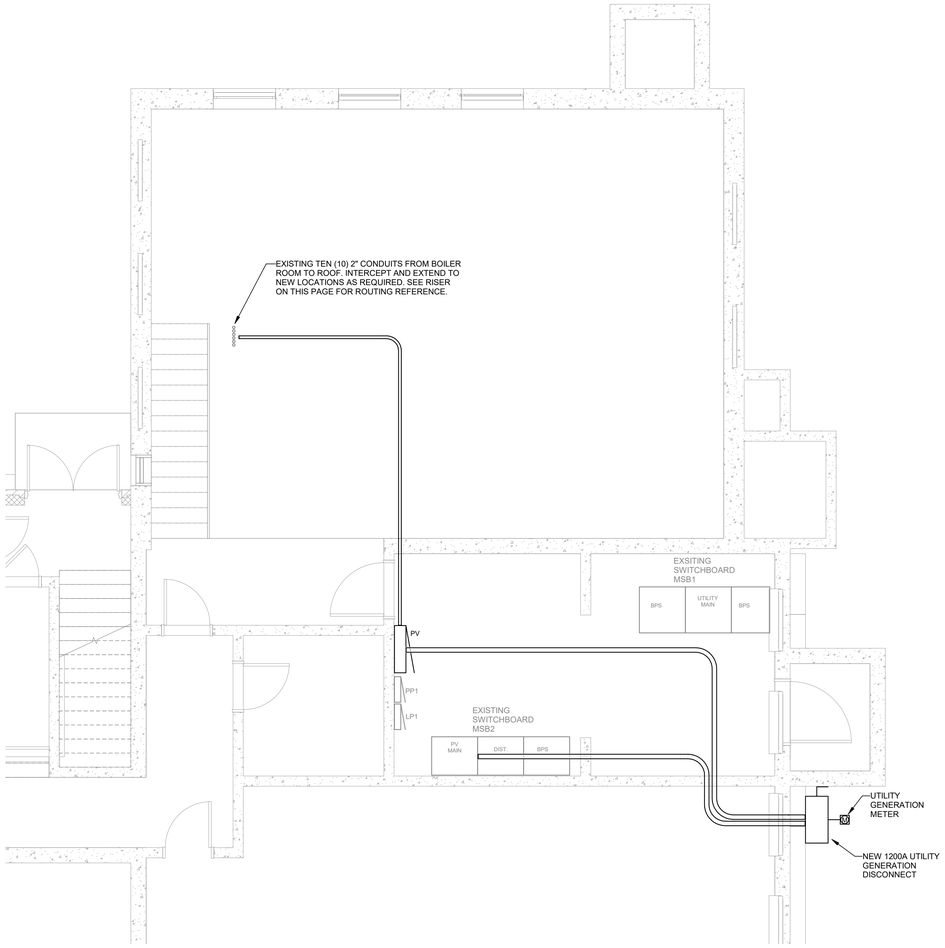
NORMAL POWER LABELS SHALL BE BLACK WITH WHITE LETTERS
EMERGENCY POWER LABELS SHALL BE RED WITH WHITE LETTERS
UTILIZE SCREW-ON TYPE LAMACOID PLATES.

TYPICAL DISCONNECT AND COMBINATION STARTER/DISCONNECT NAMEPLATE DETAIL
NO SCALE

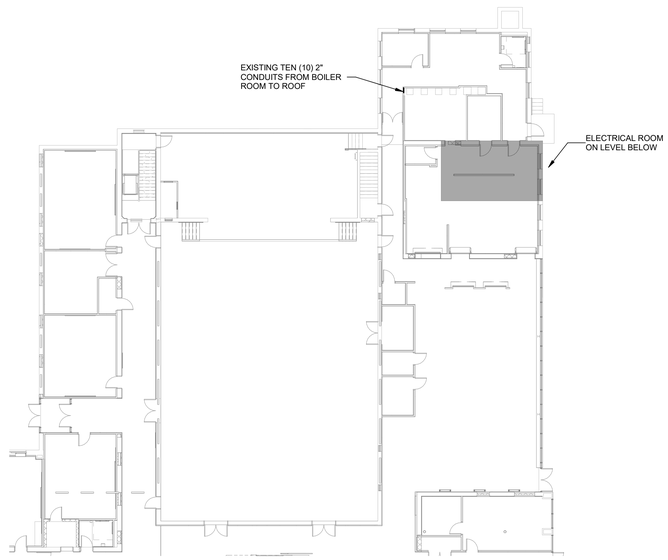
4 PANEL LABELING DETAILS
NOT TO SCALE



5 TYPICAL ROOF MOUNTED MODULE STRING DETAIL
NOT TO SCALE



2 ELECTRIC ROOM - PHOTOVOLTAIC EQUIPMENT CONNECTIONS
1/4" = 1'-0"



6 FLOOR PLAN - FIRST FLOOR INTERCONNECTION PLAN
1/16" = 1'-0"

PANELBOARD AND WIRING SCHEDULE

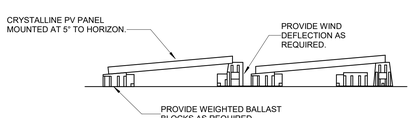
PANEL: PV
VOLTAGE: 208V/120V,3P,4W
AMPERES: 1200 A
MAINS TYPE:
SPD:
MOUNTING: SURFACE
SCCR (kA):
AVAIL FAULT CURRENT (kA):
SUPPLY FROM: GEAR-208/3, 120 V/208 V,...

CIRCUIT DESCRIPTION	WIRE	GND	C	OCP	P	CKT	A	B	C	CKT	P	OCP	C	GND	WIRE	CIRCUIT DESCRIPTION
						1	16.7			2						
INV - A	4/0	4	2"	175	3	3		16.7	16.7	4	3	175	2"	4	4/0	INV - B
						5			16.7	16.7	6					
INV - C	4/0	4	2"	175	3	7	16.7	16.7		8						
						9		16.7	16.7	10	3	175	2"	4	4/0	INV - D
						11			16.7	16.7	12					
INV - E	4/0	4	2"	175	3	13	16.7	16.7		14						
						15		16.7	16.7	16	3	175	2"	4	4/0	INV - F
						17			16.7	16.7	18					
						19	0.9			20						
SOLAR FLOWER	6	6	2"	20	3	21		0.9		22						
						23			0.9	24						
						25				26						
						27				28						
						29				30						
						31				32						
						33				34						
						35				36						
						37				38						
						39				40						
						41				42						
			TOTAL LOAD (kVA):				100.9 kVA	100.9 kVA	100.9 kVA							
			TOTAL CURRENT (A):				841 A	841 A	841 A							

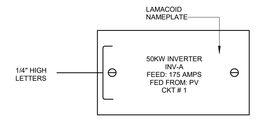
LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
EQUIP	302800 VA	100.00%	302800 VA	TOTAL CONNECTED LOAD:	303 kVA
				TOTAL ESTIMATED DEMAND:	303 kVA
				TOTAL CONNECTED CURRENT:	840 A
				TOTAL ESTIMATED DEMAND CURRENT:	840 A

NOTES: WHERE NOT LISTED, WIRE AND CONDUIT SHALL BE MINIMUM PER SPECIFICATIONS. SPARE BREAKERS TO BE 20A/1P.

NOTE:
PROVIDE NON PENETRATING FLAT ROOF RACKING SOLUTION UNIRAC #RM5. RACKING SHALL BE HIGH DENSITY TYPE TO ACCOMODATE ROOF LAYOUT ON POWER/SYSTEMS SHEETS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



7 SELF-BALLASTED PV RACKING DETAIL
NOT TO SCALE



LABELS SHALL BE YELLOW WITH BLACK LETTERS
UTILIZE SCREW-ON TYPE LAMACOID PLATES

8 TYPICAL INVERTER NAMEPLATE DETAIL
NOT TO SCALE

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TOWN OF MANCHESTER, CT
MANCHESTER BUCKLEY - PHOTOVOLTAIC SYSTEM (PHASE 5 OF 5)
250 VERNON STREET, MANCHESTER CT

ELECTRIC DETAILS AND RISER

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Report

Project Name	Manchester Buckley
Project Address	250 Vernon Street, Manchester, CT
Prepared By	Johnathan Stewart jstewart@cmtaegrs.com

CMTA

System Metrics

Design	5-degree tilt South facing
Module DC Nameplate	390.9 kW
Inverter AC Nameplate	480.0 kW Load Ratio: 0.81
Annual Production	437.9 MWh
Performance Ratio	80.5%
kWh/kWp	1,120.1
Weather Dataset	TMY, HARTFORD BRAINARD FD, NSRDB (tmy3, 3)
Simulator Version	125ee4a6bd-4598cc8d6e-ddff206053-6499f60a15b

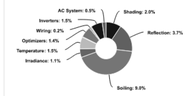
Project Location



Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,337.7	
	POA Irradiance	1,391.0	4.0%
	Shaded Irradiance	1,363.6	-2.0%
	Irradiance after Reflection	1,313.1	-3.7%
	Irradiance after Soiling	1,195.0	-9.0%
	Total Collector Irradiance	**1,194.9**	**0.0%**
Energy (kWh)	Nameplate	467,252.5	
	Output at Irradiance Levels	462,025.7	-1.1%
	Output at Cell Temperature Derate	454,972.7	-1.5%
	Output After Mismatch	454,582.6	-0.1%
	Optimizer Output	448,178.1	-1.4%
	Optimal DC Output	447,378.8	-0.2%
	Constrained DC Output	446,796.9	-0.1%
	Inverter Output	440,095.0	-1.5%
	Energy to Grid	**437,894.5**	**-0.5%**
Temperature Metrics			
	Avg. Operating Ambient Temp		13.8 °C
	Avg. Operating Cell Temp		20.5 °C
Simulation Metrics			
	Operating Hours		4437
	Solved Hours		4437

Components

Component	Name	Count
Inverters	SC125HCG (SolarEdge)	4.000 (0 kW)
Strings	8 AWG (Copper)	27 (7,065.7 ft)
Optimizers	P860 (SolarEdge)	483 (415.4 kW)
Module	Trina Solar, TSM-DE15M(II) 415 (2020) (415W)	962 (399.0 kW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone		12-36	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intra-row Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Fixed Tilt	Landscape (Horizontal)	5°	181°	0.6 ft	1x1	686	686	284.7 kW
Field Segment 2	Fixed Tilt	Landscape (Horizontal)	5°	181°	0.6 ft	1x1			0
Field Segment 3	Fixed Tilt	Landscape (Horizontal)	5°	181°	0.6 ft	1x1	74	74	30.7 kW
Field Segment 4	Fixed Tilt	Landscape (Horizontal)	5°	181°	0.6 ft	1x1	127	127	52.7 kW
Field Segment 5	Fixed Tilt	Landscape (Horizontal)	5°	181°	0.6 ft	1x1	55	55	22.8 kW



UNIRAC

ENGINEERING REPORT (STRUCTURAL ANALYSIS)

Plan review

AVERAGE PSF	3.92 psf
TOTAL NUMBER OF MODULES	952
TOTAL KW	399.84 KW
TOTAL MODULE AREA	~24649 ft²
TOTAL WEIGHT ON ROOF	96735 lbs
RACKING WEIGHT	9940 lbs
MODULE WEIGHT	46172 lbs
BALLAST WEIGHT	40736 lbs
MAX BAY LOAD (DEAD)	127 lbs

Loads Used for Design

BUILDING CODE	ASCE 7-16
BASIC WIND SPEED	120.00 mph
GROUND SNOW LOAD	30.00 psf
SITEARC (Sk)	0.18
ELEVATION	55.00 ft
WIND EXPOSURE	B
MPH	50
RISK CATEGORY	II

Loads Determined by Zip 06103

CITY, STATE	Hartford, CT
BASIC WIND SPEED	108.00 mph
GROUND SNOW LOAD	30.00 psf

Inspection

PRODUCT	ROOFMOUNT RM5
MODULE MANUFACTURER	Trina Solar
MODEL	TSM-DE15M(II) • 415 • UBuilder V1
MODULE WATTS	420 watts
MODULE LENGTH	79.33"
MODULE WIDTH	39.21"
MODULE THICKNESS	1.38"
MODULE WEIGHT	48.50 lbs
BALLAST BLOCK (CMU) WEIGHT	32.0 lbs
MAX BLOCKS PER BAY	2
BUILDING HEIGHT	15.00 ft
ROOF TYPE	EPDM
PARAPET HEIGHT	<= 1/2 Array Height (<= 4 inches)



CMTA
10411 Meeting Street
Prospect, KY 40059
T: 502 326.3085 F: 502 326.2691

PRICING SET

tskp.com
TSKP STUDIO
One Hartford Square West
146 Wyllys Street, Bldg 1-203
Hartford, CT 06106
860.547.1970
ARCHITECTURE | PLANNING | INTERIORS

TOWN OF MANCHESTER, CT
MANCHESTER BUCKLEY - PHOTOVOLTAIC SYSTEM (PHASE 5 OF 5)
250 VERNON STREET, MANCHESTER CT

PHOTOVOLTAIC MODELING

CLIENT/CMTA JOB #:	VTME20-01
DATE:	08.23.2021
DRAWN:	ZTS
CHECKED:	DDY

REVISIONS

E004

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BUCKLEY ELEMENTARY SCHOOL
Manchester, Connecticut
23 August 2021

Phase 5 of 5
100% Construction Document Specifications

State Project No. 077-0240 RNV

TSKP Studio
Architect

Bemis Associates
Elec/P/FP

Macchi Engineers
Structural

Milone & MacBroom
Site/Civil

CMTA
Mechanical/Lighting

TRC
Environmental Engineer

DIVISION 0

001116	Invitation to Bid
002113	Instructions to Bidders
002413	Bid Packages
003113	Project Schedule and Phasing
004200	Form of Proposal
005200	Contract Agreement
005223	Owner/CM Agreement
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006313	Bidders Prebid RFIs
007200	General Conditions
007316	Sample Certificates of Insurance
007343	Wage and Hour Rates
011200	CM Summary of Work
012100	Allowances
013513	Gen. Administrative Procedures for the Project
015000	Construction Controls and Temporary Facilities
017413	Project Cleanliness
017420	Construction Waste Management Plan
018120	Construction IAQ Management Plan

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 011000 - SUMMARY
SECTION 012500 - SUBSTITUTION PROCEDURES
SECTION 012900 - PAYMENT PROCEDURES
SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION
SECTION 013300 - SUBMITTAL PROCEDURES
SECTION 014000 - QUALITY REQUIREMENTS
SECTION 016000 - PRODUCT REQUIREMENTS
SECTION 017300 - EXECUTION
SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
SECTION 017700 - CLOSEOUT PROCEDURES
SECTION 017823 - OPERATION AND MAINTENANCE DATA
SECTION 017900 - DEMONSTRATION AND TRAINING
SECTION 018113 - SUSTAINABLE DESIGN REQUIREMENTS
HIGH PERFORMANCE SCHOOLS CHECKLIST (CHIPS SCORECARD)
SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

DIVISION 26 – ELECTRICAL

SECTION 260000 - GENERAL ELECTRICAL
SECTION 260500 - BASIC ELECTRICAL MATERIALS & METHODS
SECTION 260800 – ELECTRICAL SYSTEMS COMMISSIONING
SECTION 262000 - SERVICE AND DISTRIBUTION
SECTION 264100 – LIGHTNING PROTECTION

SECTION 265113 - INTERIOR LIGHTING
SECTION 265114 - EXTERIOR LIGHTING

DRAWING LIST

C1.0 - COVER
E001 – FLOOR PLAN – PHOTOVOLTAIC LAYOUT
E002 – PHOTOVOLTAIC RISER
E003 – ELECTRICAL DETAILS AND RISER
E004 – PHOTOVOLTAIC MODELING

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INVITATION TO BID
FOR
BUCKLEY ELEMENTARY SCHOOL RENOVATION PROJECT
STATE PROJECT NUMBER 077-0240 RNV, PHASE 5 OF 5
BUCKLEY ELEMENTARY SCHOOL
250 VERNON STREET
MANCHESTER, CT

BID NO. TBD

1. All bid proposals for the trade contracts listed below shall be sent electronically and must be received prior to the close of the bid period at 2:00 p.m. local time on the date listed below, and then immediately following, all bids will be opened publicly via video conference and read aloud. The video link will be made available to all bidders. Emailed bids received after the specified closing time will not be accepted.

   One (1) electronically signed copy of the bid using the Bid Form contained in Specification Section 00 4200 shall be submitted in PDF format electronically via email.

   It is mandatory that all bids be emailed to the following **TWO (2)** email addresses **at the time of original bid submission in order to be a valid bid**:

   - Construction Manager, O&G Industries, Inc. – cmbids@ogind.com
   - Town of Manchester – tradepackagesbuckley@manchesterct.gov

   All bidders must include the following information in the subject line of their email:
   State Project Number: **077-0240 RNV**
   District: **Manchester**
   Project Name: **Buckley Elementary School**
   Bid Package Number and Description – **BP 5.01 – Photovoltaic**
   Example: 077-0240 RNV, Buckley Elementary School, BP 5.01 Photovoltaic

   For questions regarding Addenda, or to confirm the bid date, contact: Mark Carroll at O&G Industries, Inc. (860) 496-4233 or email markcarroll@ogind.com.

   Technical questions, specific questions regarding bidding procedures, project scope and site visits may be directed to marksedensky@ogind.com or (860) 626-6455.

CTDAS Pre-Qualification Necessary	Trade Package	Set-Aside (CHRO)		Bid Due Date
		REQUIRED	GOALS	
Yes *	5.01 – Photovoltaic		25% SBE & 6.25% MBE	**TBD**

*** Note: Any bid in excess of $500,000 IS REQUIRED to be accompanied by the Bidder's CTDAS Update (Bid) Statement, as noted hereafter.**

In accordance with C.G.S. 4a-100, 4b-91, and 4b-101, any contractor or subcontractor submitting a bid greater than $500,000 is required to submit their DAS Update (Bid) Statement with their bid. Failure to submit this item with the bid will result in disqualification of the bidder. All subcontractors must be pre-qualified at the time of performance of their work. If you have any questions regarding these requirements contact CTDAS, at telephone number (860) 713-5280 or visit their web site at www.das.state.ct.us.

2. A Non-Mandatory Prebid meeting will be held for all contractors at the Buckley Elementary School Main Entrance located at 250 Vernon St, Manchester, CT 06040 @ ***TBD AM*** *on* ***TBD 2021.*** *Immediately following this meeting, all contractors are invited to walk the building and site in small groups with social distancing as prescribed by current Connecticut COVID-19 rules and regulations (face coverings are mandatory).* Although the Prebid meeting is non-mandatory, all bidders are responsible for examining existing conditions affecting their work. ***All contractors are encouraged to attend the Prebid meeting.***

3. Plans and specifications are available and may be viewed and downloaded free of charge from SmartBidNet at the following address:

TBD

Copies of the plans and specifications may be obtained at the cost of reproduction by contacting Michelle Frawley at the following location:

ADVANCED REPROGRAPHICS
50 CORPORATE AVENUE
PLAINVILLE, CT 06062
Contact: Michelle Frawley at Office@AdvancedRepro.net
PHONE: 860-410-1020

4. Bidders will be held accountable for the requirements of all documents made available including subsequently issued Addenda and Memoranda, if any. Although efforts will be made to make bidders aware of all Addenda and Memoranda, bidders are advised to contact Mark Carroll at the above number to verify they have all Addenda and Memoranda.

5. This project is being performed under the Construction Management form of construction. With respect to this project, the Construction Manager is the representative of the Owner. The Owner shall approve the award of all trade contracts. Each Trade Contractor's contract shall be with the Owner.

6. The Owner, Town of Manchester, has contracted with O&G Industries to serve as the Construction Manager Advisor (CMA).

7. No oral, telephone, telegraphic or hard copy proposals will be considered. All bids shall stand available for acceptance for a period of forty-five (45) days from the date proposals are received.

8. No bid shall be accepted from any person/company who is in arrears to the Owner upon debt, or contract, or who is a defaulter as surety or otherwise upon obligations to the Owner.

9. The Owner or its Designee reserves the right to reject any or all bids, without stating reasons therefor, including without limitation the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional bids and to reject the bid of any bidder if the Owner or its Designee believes that it would not be in the best interest of the Owner or the project to make an award to that bidder, whether because the bid is not responsive or the bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the Owner or its Designee. The Owner or its Designee reserves the right to waive informalities and to negotiate contract terms with one or more bidders without reopening the bidding process insofar as such negotiations are not violative of applicable competitive bidding statutes or law.

   In evaluating bids, the Owner or its Designee will consider the qualifications of bidder, whether or not the bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Form of Proposal or prior to Notice of Award.

   The Owner or its Designee may consider the qualification and experience of subcontractors and other persons and organizations proposed for those portions of the work as to which the identity of

subcontractors and other persons and organizations must be submitted as provided by the bid documents.

The Owner or its Designee reserves the right to require, prior to Notice of Award, a statement of facts in detail of the business and technical organization and plant of the bidder available for the contemplated work, including financial resources, present commitments, and experience of the bidder in performance of comparable work.

10. Bid Security, Payment and Performance Bonds are required. Refer to paragraph 1 in the Instructions to Bidders for amount of Bid Security required for this project.

11. Bidders should note the Town of Manchester's insurance requirements.

12. Out-of-state bidders without a permanent office in the State of Connecticut are required by the Connecticut Department of Revenue Services to obtain an Out-of-State Contractors "Guarantee Bond" if awarded the contract.

13. This contract is subject to state set-aside and contract compliance requirements, including non-discrimination statutes and set-aside requirements. State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract be set aside for award to subcontractors holding current certification from the Connecticut Department of Administrative Services. The contractor must demonstrate good faith effort to meet the 25% set-aside goals.

    Contractors shall note the Small/Minority Business participation requirements identified for each trade package and are responsible for ensuring that they, and the SBE/MBE's they have selected, are eligible contractors and that they meet State requirements. Trade Contractors will be responsible for compliance with the following Goals and Requirements established for this project as follows:

    a) In accordance with Sections 4a-60g and 4a-60h Conn. Gen. Stat., as revised, the contractors shall note the CHRO MBE Set-aside Program Requirements and Small/Minority Business participation requirements as indicated above for each trade package and are responsible for ensuring that they, and the SBE/MBE's they have selected, are eligible contractors and that they meet State of Connecticut CHRO Project Requirements. Referring to the Table above, trade contractors working on this project shall utilize State of Connecticut Supplier Diversity program certified Small Business Enterprises (SBE) and Minority Business Enterprises (MBE) for the minimum as stated above. For those trade contractors with goals indicated, the contractors shall provide documentation of their good faith efforts.

    b) Prior to the Scope Review Meeting, Bidders are required to provide Contractor's Means of Compliance Table totaling their Bid Value and outlining their means of compliance with these minimum project SBE and MBE goals. The successful contractor shall provide a clear and concise breakout of their Bid Value and assigned value allocation representing the contractor's means of compliance with the State of Connecticut CHRO percentages. This information is mandatory and required to be submitted for review and discussion at the Scope Review Meeting and compliance is a condition of contract award. See Specification Section 00 21 13 titled Instructions to Bidders.

14. The Town of Manchester is an affirmative action-equal opportunity M/F/veteran/disability employer.

END OF SECTION

SECTION 00 21 13 INSTRUCTIONS TO BIDDERS

1. BIDS

All bid proposals shall be submitted electronically to the two (2) email addresses listed on the Invitation to Bid and must be received by the date and time shown on the "Invitation to Bid" for each individual bid package. Mailed, faxed or hand-delivered bids will be rejected. Bids will be opened publicly via video conference and read aloud. Prepare proposals on your own letterhead duplicating the Form of Proposal contained in Section 00 42 00 and clearly indicate the amount of your proposal in both words and figures.

All proposals must be accompanied by Bid Security in the form of a Certified Check or a Cashier's Check, drawn upon either a State Bank & Trust Company or a National Banking Association, to the order of the Owner, the Town of Manchester, or accompanied by a Bid Bond, on Form AIA Document A310, 2010 Edition, and having as Surety thereto such Surety Company or Companies as are authorized to do business in the State of Connecticut and acceptable to the Owner. ***Bid Security shall be an amount not less than 10% of the total amount of the Bid.*** If a certified or cashier's check is to be submitted in lieu of a bid bond, the check should be scanned and emailed as part of the Form of Proposal and mailed to the Town of Manchester, c/o O&G Industries, Inc., 112 Wall Street, Torrington, CT, 06790, attention Mark Sedensky. The mail must be postmarked the day of the bid opening.

See Invitation to Bid and Addendum cover for instructions to submit bids electronically.

2. BID FORM

See Invitation to Bid and Addendum cover for instructions to submit bids electronically, no mailed or hand-delivered bids will be accepted.

3. MANDATORY ALTERNATES AND UNIT PRICES

If Mandatory Alternates and Unit Prices are required, the Bidders shall provide the information required on the Bid Proposal Form. Otherwise the Proposal may be considered non-conforming and subject to rejection.

4. ADDENDA AND INTERPRETATIONS

No interpretations of the meaning of the Plans, Specifications or other Contract Documents will be made orally to any bidder. Every request for such interpretation must be in writing to the awarding authority and to be given consideration must be received at least ten (10) days prior to the date fixed for the opening of bids.

Oral questions may be asked at the Pre-Bid meeting, but oral responses given by the Architect/Construction Manager or their representative shall not be binding unless confirmed in writing by addendum as set forth below. Any and all such interpretations, responses and supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be made available to all prospective bidders (at the respective addresses furnished for such purposes pursuant to the provisions of the Invitation to Bid) not later than five (5) days prior to the date fixed for the opening of bids. All such modifications shall be included in the work covered by the bid and shall become a part of this contract. The bidder shall state in his bid the number and title of all addenda which he has received.

5. QUALIFICATION OF BIDDERS

The Construction Manager may make such investigation as he deems necessary to determine the ability of Bidder to perform the work. The Bidder shall furnish all information and data for this purpose as the Owner may request. The Construction Manager reserves the right to reject any Bid if evidence submitted by the Bidder or investigation of the Bidder fails to satisfy the Construction Manager that the Bidder is properly qualified to carry out the obligations of the Contract and to complete the work within a specified time.

6. PREQUALIFICATION

In accordance with C.G.S. 4a-100, 4b-91, and 4b-101, any contractor or subcontractor submitting a bid of $500,000 or greater is required to submit their DAS Update (Bid) Statement with their bid. Failure to submit this item with the bid will result in disqualification of the bidder. All subcontractors must be pre-qualified at the time of performance of their work. If you have any questions regarding these requirements contact CTDAS, at telephone number (860) 713-5280 or visit their web site at www.das.state.ct.us.

7. CONTRACT

All successful Bidders will be required to execute the Town of Manchester, AIA 201 Contract Agreement in accordance with the sample form contained in Section 00 52 00 **without revision.** Successful bidders agree and acknowledge that by submitting a proposal, you are accepting without revision all terms and conditions of the sample form agreement and that proposed revisions to the sample form agreement by the bidder shall not be considered.

Successful bidders will be required to comply with the insurance requirements as outlined in Article 11 of the General Conditions, and as modified by the Supplementary General Conditions in the Form of Agreement.

The successful Bidder agrees to commence work within seven days of execution of a Contract or receipt of a Limited Notice to Proceed Letter, whichever is earlier. However no contractor may perform any physical work on the site until they have an executed contract and furnished an insurance certificate.

8. BONDS AND INSURANCE

The successful Bidder, within ten days after the award of the Contract, will be required to furnish a Performance Bond and a Labor and Material Payment Bond, each in the amount of 100% of the Contract price payable to the Owner on bond forms in Specification Section 00 6113.

The Bonds will be executed by a Surety Company or Companies that are authorized to do business in the State of Connecticut and who are acceptable to the Construction Manager and the Owner. The cost of these Bonds are to be paid for by the contractor and included in his bid.

The successful bidder shall purchase the bonds from a company or companies with an AM Best Rating of A- VII or better. Said bonds shall be maintained for the life of the contract.

Out-of-state bidders without a permanent office in the State of Connecticut are required by the Connecticut Department of Revenue Services to obtain an Out-of-State Contractors “Guarantee Bond” if awarded the contract.

9. REPRESENTATION

Each bidder, by submitting their bid, represents that they have read and understand the Bidding Documents and their Bid is made in accordance therewith. Also, they represent that they have visited the site and have familiarized themselves with the conditions under which the work is to be performed. Failure to do so will not relieve the successful Bidder of his obligation to furnish all labor, material and equipment necessary to complete his work in accordance with the Contract Document.

10. PRE-CONTRACT AWARD REQUIREMENTS

After submitting a bid proposal and prior to award of a contract, selected trade contractors will be required to attend a pre-construction/scope review meeting. At this meeting, the scope of work and requirements of the documents will be reviewed to confirm the lowest, qualified, responsible bidder.

When advised by O&G Industries, and prior to the award of a contract, each trade contractor shall submit to O&G Industries, a list of the proposed subcontractors which the trade contractor intends on using for the project, and shall sign and return the General Safety & Procedural Regulations and Environmental, Health and Safety Rules, Regulations and Procedures included in Section 01100 - Special Project Requirements.

11. IN ARREARS TO THE OWNER

No bid shall be accepted from, or contracts awarded to, any person/company who is in arrears to the Owner or O&G Industries, upon debt, or contract, or who is a defaulter as surety or otherwise upon obligations to the Owner or O&G Industries.

12. SITE VISITS

Arrangements can be made to visit the site by contacting Nelson Reis, O&G Industries, Inc., 112 Wall Street, Torrington, Connecticut, (860) 485-5587 or nelsonreis@ogind.com.

13. TIME OF ESSENCE

The provisions of the Contract relating to the time of performance and completion of the work are of the essence of this Contract. Accordingly, each trade contractor shall begin work on the day specified, and shall prosecute the work diligently so as to permit full occupancy not later than the first day following the construction period established in the Schedule of Construction

14. NON-DISCRIMINATION IN EMPLOYMENT

Each trade contractor, attendant subcontractors, vendors, and suppliers shall be subject to, and shall comply with the following requirements, included herein by reference, to insure through affirmative action that qualified employees, applicants for employment and subcontracting are not discriminated against because of race, creed, color, religion, age, sex, physical disability, or national origin.
Said requirements shall include compliance with all applicable Federal, state and local statues, ordinances and regulations relating to discrimination in employment. It shall be the responsibility of the bidder to be familiar with and knowledgeable about the above.
The apparent successful bidder may be required to undergo a pre-award compliance review for the purpose of ascertaining whether in the opinion of the Owner he is willing and/or capable of complying with the above requirements.

15. STATE LABOR STANDARD PROVISIONS, LAWS AND REGULATIONS

The prevailing wage rates for the Project are subject to annual adjustment in accordance with §31-55a of the Connecticut General Statutes. Bidders shall anticipate and include all annual adjustments to the prevailing wages rates within the lump sum bid price. Subsequent to Contract award, each Trade Contractor will be required to submit electronic certified payrolls weekly, in accordance with Connecticut General Statute (CGS) Title 31, Chapter 557 (Part III) §31-53(e) and §31-53(f), in a format acceptable to the Connecticut Department of Labor. Paper copies will be rejected.

All provisions of all applicable State Labor Standards must be complied with under this Contract.

The execution of the Contract by the Bidder binds him to all applicable State Labor Laws and Regulations. All such Standards, Laws and Regulations shall be binding to the same extent as if they were copied at length herein.

As a condition of contract, any out-of-state contractor who is awarded work must provide O&G Industries with a copy of the State of Connecticut Trade License for Employees working in the State of Connecticut.

16. SALES TAX

This project is exempt from State of Connecticut Sales Tax. A Tax Exemption Certificate will be issued to all contractors and material suppliers.

If a Trade Contractor is a nonresident, within the meaning of Connecticut General Statutes Section 12-430 (7) and will consume or use tangible personal property in Connecticut in carrying out this contract, the Trade Contractor shall comply with the requirement set out in said statute and cause the Commissioner of Revenue Services to provide the Construction Manager with a copy of the Commissioner's Certification of Compliance. If the Construction Manager does not receive this documentation on the earlier of (a) twenty-one days from the date that the Trade Contractor signs this Contract, or (b) the date on which it commences to provide any services or materials under the contract, then at the option of the Construction Manager, it may exercise any and all rights under the statute, including, but not limited to, making the deductions provided for in said statute and/or by declaring the Trade Contractor in breach and holding the Trade Contractor liable for any and all loss sustained as a result of the Trade Contractor's failure to comply with the statute and losses sustained by the Construction Manager as a consequence of the Trade Contractor's failure of performance.

17. ACCEPTANCE OF TOWN ORDINANCES AND REGULATIONS

The submission of a bid or proposal by a contractor for the whole or any part of the work contained in the specifications shall constitute an acceptance by such contractor of the terms and conditions of all duly promulgated ordinances and regulations of the Town of Manchester to the extent the same are applicable; and a contract awarded in response to such bid or proposal shall be deemed to incorporate all such pertinent ordinances and regulations.

18. MATERIAL AND EQUIPMENT SUBSTITUTIONS

Each bidder shall utilize the specified manufacturers. Any requests for substitutions (including “or equals”) must be submitted, in writing, fourteen (14) working days prior to the bid due date. Acceptance or rejection of a substitution will be issued to all bidders as an addendum. Substitutions will not be accepted after the bid date unless requested by the Owner. NOTE: Considering a manufacturer that is not specified as an “or equal” is considered a substitution.

19. NOTIFICATION TO BIDDERS

Prior to execution of a contract, the successful bidder will be required to document the good faith efforts to provide opportunities for SBE and MBE contractors to participate in the bidding process and to submit the Bidder Contract Compliance Monitoring Report.

The contractor who is selected to perform this State project 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.

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 (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 efforts to meet the indicated set-aside goals. For more information on good faith effort, follow this link http://www.ct.gov/chro/lib/chro/Good Faith Effort.pdf.

For municipal public works contracts and quasi-public agency projects, the contractor must complete a written or electronic non-discrimination affidavit form and submit the completed form to the Commission on Human Rights and Opportunities (email: spencer.hill@ct.gov). Forms can be found at http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav GID=1806.

20. SBE / MBE / WBE / DisBE RESOURCES AND CONSULTANTS

This project is subject to the requirements of the Connecticut Commission on Human Rights and Opportunities (CHRO).

It is mandatory that the Contractor's Means of Compliance with CHRO Requirements percentage amounts included in the Form of Proposal be completed and submitted with the bid. The stated participation percentages may be considered when evaluating the proposals.

Bidders are required to provide Contractor's Means of Compliance Table totaling their Bid Value and outlining their means of compliance with the minimum project SBE and M/WBE goals. Bidder shall submit this information after their Bid is recommended for approval and prior to contract execution. This Table shall include the Contractor's clear and concise breakout of their Bid Value and assigned value allocation representing the Contractor's means of compliance with the State of Connecticut CHRO percentages.

CONTRACTOR'S MEANS OF COMPLIANCE TABLE:

ITEM NO.	DESCRIPTION SPEC. SECTION	CERTIFIED SBE-M/WBE CONTRACTOR *	SCHEDULE OF VALUE	COMPLIANCE ALLOCATION TYPE *(Checkmark)*				TOTAL BID VALUE	PERCENTAGE OF BID VALUE
				SBE	MBE	WBE	DBE		

***SBE – M/WBE contractor shall be certified by CTDAS no later than the date of contract award of the applicable bid package.**

All bidders are required to document the good faith efforts made to obtain SBE and MBE participation during the bidding. All bidders should note that CHRO will reject any plan that is not accompanied by records of this good faith effort.

In accordance with C.G.S. Sec. 46a-68e the successful bidder is required to file a Set-Aside Plan (SAP) and have that plan approved by CHRO. All bidders should note that the CHRO requires that two percent (2%) of the contract value be withheld until acceptance of the trade contractor's SAP.

Each Trade Contractor that submits an SAP to CHRO is also required to adhere to the CHRO's monthly and quarterly report filings. In addition to this reporting the Construction Manager (CM) requires that each Trade Contractor submit to the CM signed copies of subcontracts and /or purchase orders to substantiate participation in meeting CHRO goals. As the work proceeds the Trade Contractor shall also provide satisfactory evidence of payment to SBE and MBE participants under their contract. The substantiation of participation commitment will be based on all of the information provided.

The CM strongly suggests that bidders employ a consultant to assist them in the development of the Set Aside and Affirmative Action Plans.

21. INCURRING COSTS

The Town of Manchester and the Construction Manager are not liable for any cost incurred for the preparation of proposals or submission of samples by the firms submitting proposals for the work requested in this bid document.

END OF SECTION

BID PACKAGE NO. 5.01
PHOTOVOLTAIC

I. SCOPE OF WORK

A. The following documents/specification sections are included in this Scope of Work. Unless specifically noted otherwise, wherever "Construction Manager" is indicated in these documents/specification sections, it shall mean "Trade Contractor" and thus it is the responsibility of the Trade Contractor to comply with the work noted therein. This Trade Contractor is responsible for complying with all of these documents in completing the work described in Paragraph IB and II:

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015000 Construction Controls and Temporary Facilities
016000 Product Requirements
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017700 Closeout Procedures
017823 Operation and Maintenance Data
017900 Demonstration and Training
018113 Sustainable Design Requirements
High Performance Schools Checklist (Chips Scorecard)
018120 Construction IAQ Management Plan
019113 General Commissioning Requirements

B. SPECIFIC:

Furnish all labor, material and equipment necessary to complete all work that is described in the following Sections of the Specifications, or is shown on the drawings and relates to one of the following Specification Sections but is not referenced in a Specification Section. This Scope of Work also includes any work indicated on the Drawings to be completed by this Trade Contractor unless modified by addendum, Paragraph II (Special Instructions) or Paragraph III (Exclusions):

260000	General Electrical
260500	Basic Electrical Materials & Methods
260800	Electrical Systems Commissioning
262000	Service and Distribution
264100	Lightning Protection
265113	Interior Lighting
265114	Exterior Lighting

II. SPECIAL INSTRUCTIONS

1. Contractors shall note the construction schedule included in Section 00 31 13. All work shall be performed between 7:00 a.m. and 3:30 p.m. on weekdays and between 7:00 a.m. and 3:30 p.m. on Saturday. Should the contractor require additional hours to perform their contract work outside of the hours listed here, the contractor shall inform the Construction Manager 48 hours in advance. All work performed outside the hours listed here require CM supervision for which additional charges may apply to the trade contractor. No exterior work will be permitted on Sundays.

2. All bidders are directed to the following specification sections to ensure that they include the allowance amounts and specific fees and requirements applicable to this project:

   a. Section 01 21 00 - Allowances. These allowances must be included in the base bid proposal of each trade contractor, as assigned.

   b. (ADD#2) Section 01 35 13 - General Administrative Procedures for the Project for Textura subscription and usage fees to be included in the contractor's base bid proposal. Aconex+Oracle fees will not be charged on this project.

3. This contractor shall include all filings, fees, permits and certificates required by authorities having jurisdiction for approval of this work. Fees payable to Town of Manchester (only) will be waived. The Construction Manager will obtain the General Building Permit.

4. All contractors are responsible for keeping the jobsite clean of debris and rubbish. All contractors shall refer to Sections 01 7413 - Project Cleanliness and 01 7700 - Closeout Procedures for their responsibilities and requirements regarding jobsite cleanliness and final cleaning on this project. Refer to Section 01 7420 - Construction Waste Management Plan for trade contractor responsibility of disposal of construction debris.

5. The trade contractor shall provide one of the named manufacturers, without exception. Any contractor that opts to deviate from the basis of design product is responsible to insure the use of another named product is compatible with the basis of design intent. Any cost associated with modifications required for use of the named product and not the basis of design is the responsibility of the trade contractor.

6. The Construction Manager will facilitate and manage the coordination process. Three-dimensional BIM/Modeling as described in Spec. Section 01 3116 will be used to produce the coordination drawings. All trades referenced in Spec. Section 01 3116 are responsible for forwarding three-dimensional models to the Construction Manager for clash detection. The electrical contractor shall note that they are required to include conduits, among other items as indicated, in their three-dimensional models to be provided to the Construction Manager. Once the model is assembled, the Construction Manager will identify clashes and work with the trades to resolve them.

7. All bidders will include all costs in their bid to comply with the Connecticut Safe Workplace Rules for Essential Employers. Bidders can find requirements at: https://portal.ct.gov/DECD/Content/Coronavirus-Business-Recovery/Safe-Workplace-Rules-for-Essential-Employers.

8. The photovoltaic contractor shall provide the Construction Manager progress as-built drawing(s) on a monthly basis. The As-built drawing(s) shall include all work completed to date either as a CAD file or hand markup, the size of the drawing(s) shall be 30"x42". These drawing(s) shall be submitted each month with the contractors Pay Application. No Applications for Payment will be processed without the submission of the current as-built drawing(s).

9. It shall be the responsibility of the HVAC, plumbing, fire protection, electrical and low-voltage contractors to furnish and install all required floor sleeves. The HVAC, plumbing, fire protection, electrical and low-voltage contractors shall locate and furnish all required wall sleeves to the masonry and concrete contractors who shall install the sleeves in their respective walls and layout must be provided to the concrete and masonry contractors for proper placement. If sleeves are not provided or missed by any contractor, the contractor who needs the sleeve shall be responsible for any coring costs and clean-up.

10. The responsibility of access doors as specified in Section 08 31 13 shall be as follows: The drywall contractor shall furnish all access doors that are shown on the interior of the building to the masonry contractor for installation in masonry partitions or shall provide them where shown in drywall partitions and drywall ceilings. Any access door that is not shown on the contract drawings, but required by the MEPFP or low-voltage contractor, shall be furnished by the MEPFP or low-voltage contractor to the masonry contractor for installation into masonry walls or to the drywall contractor for installation into drywall partitions and drywall ceilings. The MEPFP or low-voltage contractor shall provide a location plan and provide layout in the field. All field layout must be provided for in sequence creation of the rough openings. The MEPFP or low-voltage contractor shall provide the same brand and keyed access door being provided by the drywall contractor.

11. (Memo#1) The responsibility of Specification Section 07 84 46 - Fire-Resistive Joint Systems shall be as follows: The masonry contractor shall be responsible for all firestopping and smokestopping required at masonry walls. The drywall contractor shall be responsible for all firestopping and smokestopping at drywall partitions and if required at drywall/masonry interfaces. Where either a drywall or masonry partition stops at the underside of a structural steel member, the contractor whose partition stops at the underside of the member shall also be responsible for the required firestopping or smokestopping above the structural steel member, between the steel member and the metal deck above. *The 1.07 Firestopping contractor shall each be responsible for any firestopping or smokestopping that is required as a result of penetrations in walls, floors or ceilings by conduits, piping or other penetrating items provided by other contractors.* The general trades contractor shall provide the joint systems at the exterior curtain-wall/floor intersections. Contractors providing firestopping shall note the installer qualifications required for this project. All firestopping and smokestopping shall be provided by one manufacturer selected by the Construction Manager to be used by all trade contractors at no additional cost to the Owner. Identification of each firestopped/smokestopped area per the Technical Specifications will be strictly enforced.

12. Each contractor that requires a penetration for the installation of new conduit, wiring, and/or pipe shall be required to provide any and all vertical and horizontal penetrations through existing construction (e.g. concrete, masonry, drywall/plaster and steel) as it relates to their work. This includes all foundation, slab on grade and elevated slab penetrations, concrete wall penetrations, masonry and gypboard/plaster wall penetrations and steel member penetrations. Each contractor shall work with the masonry contractor to install sleeves through new CMU partitions. The firestopping contractor is responsible for any required firestopping or smokestopping at these floor and wall penetrations as specified in Section 07 84 13. Each contractor is also responsible for sealing their respective penetrations that are not to be firestopped or smokestopped.

13. Before coring or cutting through any existing concrete slab (on-grade or elevated), reasonable investigation, including but not limited to, the use of radar or x-ray, must be made to try to determine what conduits and/or other utilities may be in the area. This investigation shall be done in the presence of the Construction Manager by the contractor who is going to cut the floor slab. Having completed the investigation, the cost of repairing any conduits or other utilities that may be accidentally cut, which are located within the floor slab, will be paid for by the Owner. With the exception of any conduits or other utilities located below the bottom of the floor slab that are cut, these damages will be repaired at the expense of the contractor cutting the floor slab and/or excavating.

III. EXCLUSIONS:

None.

END OF BID PACKAGE 5.01

SECTION 003113 - PROJECT SCHEDULE AND PHASING

1. SCHEDULES

a. This Contractor is responsible to meet the requirements of the Level III Construction Schedule included in the bid documents. This includes providing the appropriate manpower, equipment and materials. The Contractor is required to perform its work in compliance with all safety rules issued by the Owner, Construction Manager, State, Federal and Local agencies, and to sufficiently staff the site to effectuate this performance. The Contractor will be responsible for all overtime and costs associated with meeting this schedule.

b. The intent of the Level III Construction Schedule is to define the construction performance period(s). The Level III Construction Schedule included in these documents shall represent the major activities of work and the duration of time allocated to those activities, also referred to hereinafter as the assigned construction performance period(s). It is the responsibility of the trade contractor to develop a detailed construction schedule of activities and plan their work within the assigned construction performance period(s) provided by the Level III Construction Schedule. The Trade Contractor by providing a Bid acknowledges and accepts the defined assigned construction performance period(s) to complete their work and further agrees to provide detailed information to the Construction Manager for the development of the detailed Level IV Construction Schedule.

c. A more detailed Level IV Construction Schedule will be prepared and issued during the project by the Construction Manager. Within twenty (20) working days of receipt of the Limited Notice to Proceed, each trade contractor shall provide detailed scheduling information for the creation of the Level IV Construction Schedule. This information is to include, at a minimum, a man loaded construction schedule with detailed itemizations, durations and sequences of all work activities including predecessor/successor relationships and designation of manpower required to achieve the schedule in accordance with the assigned construction performance period(s) as outlined in the Level III Construction Schedule.

d. Failure to submit required schedule information to the Construction Manager as outlined in this section forfeits the trade contractor’s opportunity for any adjustment to durations, sequence, or logic of specific tasks. Further, as this scheduling information is critical to the successful execution of the project, any delay in providing such information will cause all payments due the Trade Contractor to be held until such time as the information is submitted and approved by the Construction Manager.

e. All Trade Contractors are obligated to comply with the Level IV Construction Schedule upon its issuance. The Level IV Construction Schedule will be updated throughout the project to incorporate changes in work, changes in sequence and changes in logic, all of which are recognized and anticipated as common in the construction industry and with this project. As such, all Trade Contractors shall comply with the appropriate adjustments to their manpower and material and equipment deliveries to accommodate the schedule changes without additional compensation from the Construction Manager or Owner.

f. In the event the Construction Manager determines the Trade Contractor is behind schedule and/or will not be able to meet milestone dates at the Trade Contractor's current rate of progress, the Construction Manager may direct the Trade Contractor to increase its workforce. Should the Trade Contractor at any time refuse or neglect to: supply a sufficiency of properly skilled workmen; supply materials of the proper quality and quantity; become insolvent or unable to pay its obligations as they mature; in the opinion of the Construction Manager, fail in any respect to prosecute the work with sufficient promptness and diligence to insure its completion within the time herein provided; or fail in the performance of any of the agreements on its part herein

contained; the Construction Manager shall be at liberty (after two (2) business days of written notice to the Trade Contractor, delivered personally or mailed to or left at its place of business) to default the Trade Contractor. In the event the Construction Manager declares the Trade Contractor in default, the Construction Manager may (1) terminate this Contract in whole or in part or, (2) supplement the Trade Contractor's forces and use any materials, implements, equipment, or tools furnished by or belonging to Trade Contractor. In the event the Construction Manager itself, or another contractor, or both, furnishes labor and material to complete Trade Contractor's work, Construction Manager may offset the cost thereof and any expenses therefore including overhead and profit against any money due or to become due under this Contract. Trade Contractor shall be liable for any excess costs and expenses over the Contract amount for completion of Trade Contractor's work. In the event the costs and expenses of completing Trade Contractor's work are less than the amount remaining on this Contract, the Trade Contractor shall be entitled to the differential. In addition to the costs and expenses of completing Trade Contractor's work as set forth herein, Construction Manager shall be entitled to reasonable legal fees to enforce the terms of this Contract. Notwithstanding the Construction Manager's use of its own forces and/or utilizing forces of another contractor in performing in whole or in part the work of the Trade Contractor, the Trade Contractor shall remain fully responsible for the timely completion of the work which is the subject of this Contract.

g. If the work is complete but the area is not cleaned and debris or equipment is not removed, the Owner/Construction Manager shall have the right to prepare the area for occupancy with his own forces and deduct the costs from the contract amount.

h. If the Trade Contractor fails to staff the job adequately to meet the milestone or completion dates, the Owner/Construction Manager reserves the right to assume possession of the material and complete the installation with the Owner's forces or other Contractors under the direction of the Construction Manager or to require the Trade Contractor to work second shift and/or weekends. The trade contractor shall be responsible for any additional costs incurred by other contractors and/or the Construction Manager resulting from the trade contractor working overtime, Saturday and/or Sunday to remedy the delay.

2. PHASING

a. See Site Logistic Plans

b. Swing-overs to new services shall be made so as to cause the least interruption to the facilities' operations. Any premium time cost for work related to utility shutdown or change over shall be included in the contractor's base bid.

c. In case of fluid, gaseous or electrical tie-ins, provide temporary manual monitoring equipment to ensure the safety of all employees and occupants.

d. Utility shutdowns shall be closely coordinated with the Construction Manager and the Owner.

e. It is the responsibility of all Trade Contractors to coordinate all work with the Construction Manager.

f. All work to be performed on the roof of the existing building shall be done during the summer months or any other period when school is not in session.

g. All trade contractors shall carefully review the Site Logistic Plans for this project and shall include in their base bid any premium costs for multiple mobilizations necessary for maintaining the construction schedule. Except for mechanical and electrical work in mechanical rooms, tunnels,

corridor ceilings, vertical shafts, and electric closets, no work will be allowed to be performed out of sequence, i.e., in different areas as shown on the Logistic Plan and Construction Schedule unless specifically approved or directed to do so by the Construction Manager. All trades must recognize the fact that due to phasing, some out-of-sequence work will be required in order to make systems in other phases operational. The cost of this out-of-sequence work is to be included in each contractor's base bid. The Construction Manager may, at his discretion, alter the sequencing of activities on the Bid Schedule if he deems these changes necessary to benefit the project.

h. No drilling or cutting into the building structure will be allowed in areas located over or under or immediately adjacent to an occupied space while school is in session.

i. All work that impacts any new and existing circulation areas (ex. corridors and stairs), including demolition, excavation, duct installation, sprinkler piping, electrical conduit and lighting, low voltage conduit and wiring, plumbing rough-in, new ceiling installation and new flooring shall be performed while school is not in session. Contractors shall cooperate in expediting their work during this time.

j. Contractors shall note the various dates of installation of materials and equipment due to the phasing and shall schedule delivery of materials and equipment to the site at intervals accordingly. Should materials be delivered to the site significantly ahead of the scheduled date of installation, they shall be moved/relocated by the respective contractor at no additional cost to another storage area as directed by the Construction Manager should the materials impede the progress of the work.

k. Contractors shall note the various dates of installation of materials and equipment due to the phasing and shall schedule delivery of materials and equipment to the site at intervals accordingly. The trade contractor shall only be allowed to store material within the construction area/phase that can be consumed (installed) within five (5) working days. All material stored within the construction area/phase will be on movable dollies and will be relocated by the trade contractor when requested to do so by the Construction Manager at the contractor's expense. All other material will be stored in storage trailers, if ample room on site is available, or in areas designated by the Construction Manager. Only material that will be consumed/installed within six (6) weeks of delivery to the site will be allowed to be stored on site or areas designated by the Construction Manager. Material not needed within the six (6) week period cannot be billed for by the trade contractor and may be required to be removed from the site at the contractor's expense. Delivery of materials and equipment must be reviewed and approved by the Construction Manager before arriving on site. Failure to do so will result in deliveries being turned away at the contractor's expense.

3. LEAN CONSTRUCTION

Lean Construction principles will be implemented during the construction of this project. As such, the following are contract requirements from each trade contractor for implementing Lean procedures.

a. Each Trade Contractor shall have their site foreman attend a weekly foreman's meeting and weekly work planning session. This meeting will be approximately one (1) hour long, but may run longer depending the extent of work taking place at any given time and the number of trade contractors working onsite.

    1. The purpose of this planning and coordination meeting is to plan the work for the coming weeks (up to six weeks in advance), confirm work currently ongoing and to confirm what work is complete and ready to be handed off to the next trade.

2. Each foreman shall come prepared and shall be required to engage themselves in this weekly planning session and have the authority to commit to start and completion dates. The foreman shall also have the authority to adjust their crew size to meet the requirements of the schedule.
3. Each trade contractor shall have their foreman attend these meetings starting two-weeks before their work onsite begins so that they may fully coordinate their work with the other Trade Contractors.

b. Each trade foreman will participate in a 15 minute daily huddle. The purpose of this daily meeting to review the following days activities and address any coordination issues amongst the trades.

c. The Trade Contractors shall participate in Pull Planning sessions on a monthly basis. These scheduling sessions are typically 4 hours long but may run longer. It is mandatory that the Trade Contractor's foreman and Project Manager attend these sessions. The Trade Contractor's team shall be prepared to discuss the current construction schedule, details of the work, critical lead time items, duration and sequence of upcoming activities and other site issues that may affect the construction schedule. Members of the Trade Contractor's team shall have the authority to commit to start/completion dates, crew sizes and activity durations.

d. It shall be understood that each phase of the project shall be broken down into small work areas not to exceed 10,000 sf. The Trade Contractor shall complete **all** scheduled work activities within these work areas before they can proceed into the next work area. The Construction Manager shall have the right to modify, adjust, extend, re-sequence and re-phase these work areas as required to maintain the overall construction schedule. The Trade Contractor will make all required manpower and delivery adjustments to accommodate the current construction schedule at no additional cost to the Owner or Construction Manager.

4. SUBMITTAL & DELIVERABLES SCHEDULES

a. Within ten (10) working days of receipt of the Limited Notice to Proceed, the trade contractor shall submit a schedule of submittals to the Construction Manager for review and approval. This schedule shall include a complete listing of all shop drawings, samples, manufacturer's data, warranties/guarantees, O&M Manuals, etc. required by the specifications to be submitted for review. The submittal schedule shall reflect how submittals will be packaged and submitted to the Construction Manager. The trade contractor shall also indicate a target submission date for each item listed which will be consistent with the project milestone schedule requirements. Failure to provide a satisfactory submittal schedule shall result in all payment applications being held in abeyance until such time as a satisfactory submittal schedule is submitted and accepted by the Construction Manager. Failure to provide an initial submittal schedule within ten (10) working days shall result in O&G creating a submittal schedule on the trade contractor's behalf. At this time, the Construction Manager will issue a backcharge of $3,000.00 to the trade contractor for the creation of the submittal schedule. Once O&G has created the submittal schedule on the trade contractor's behalf, the trade contractor will be required to submit/package submittals following the Construction Manager's created submittal schedule. Failure to provide submittals as indicated on the submittal schedule will result in a $100.00 per day fine until the submittal has been received by O&G.

b. Critical submittals are due in the office of the Construction Manager within ten (10) working days, or as agreed to by the Construction Manager, of contractor's receipt of the Limited Notice to Proceed. All other submittals are due in the office of the Construction Manager within thirty (30) working days of receipt of the Limited Notice to Proceed. Once submittals are approved, the Construction Manager will make available copies of approved submittals for all applicable Contractors who may require them for coordination of their work. However, it is the sole responsibility of each Trade Contractor to ascertain any and all coordination requirements between the work of its Bid Package and the work of all other applicable Bid Packages.

c. Within fifteen (15) working days of receipt of the Limited Notice to Proceed, all contractors shall furnish the following:
   1. A schedule of values for billing purposes broken down with individual line items for each major component of the work. This schedule of values shall be subject to review and approval by the Construction Manager.
   2. A man-loaded construction schedule shall be submitted to the Construction Manager for review. This schedule shall minimally meet the requirements of the Project Schedule and the bid documents. The schedule shall be updated monthly to indicate progress and submitted with contractor's requisition for payment.

d. Not later than ten (10) days from the date of execution of the contractor's agreement, the contractor shall provide a list showing the name of the manufacturer to be used for each product identified in the specifications and, where applicable, the name of the installing subcontractor.

5. SCHOOL CALENDAR AND PROJECTED TEST DATES

a. The School will not be occupied during the scheduled construction period.

6. LIQUIDATED DAMAGES FOR FAILURE TO COMPLETE ON SCHEDULE

a. The Construction Manager and each Trade Contractor agree that time is of the essence to the Contract Documents and all obligations thereunder. The Trade Contractor acknowledges and agrees that the Owner will sustain damage and loss as a result of the Trade Contractor’s failure to meet the time schedules established herein. The Owner will hold the Construction Manager responsible for those damages and losses. The exact amount of such damages and loss will be extremely difficult to ascertain. Therefore, the parties agree that in the event the Trade Contractor fails to meet the time schedule set forth in the Contract Documents, the Trade Contractor shall be assessed liquidated damages, and not as a penalty, the per diem amounts set forth in Paragraph 3b. It is expressly agreed such liquidated damages are a reasonable pre-estimate of damages the Owner will incur as a result of the Trade Contractor failing to meet the schedule. In addition, the Trade Contractor agrees to be responsible for, indemnify and save the Construction Manager harmless from all losses, claims or damages claimed by other Trade Contractors or others resulting from or connected with the Trade Contractor’s failure to meet the time schedule. The Construction Manager and the Trade Contractor whose funds have been retained specifically retain the right to contest a Trade Contractor’s claim for delay on factual, legal and contractual grounds.

b. All Trade Contractors are responsible for scheduling its labor and material procurement so as to complete its work within the time periods set forth in the Contract Documents. The Trade Contractor is also required to perform its work in such a manner so as not to interfere with or prohibit other Trade Contractors from completing their work within the time periods set forth in the Contract Documents. In the event the Trade Contractor does not meet the time requirements set forth in the time schedule to its work, the Trade Contractor will be assessed Liquidated Damages at the rate of $1,000.00 a day for each day completion is delayed. Notwithstanding the foregoing, and as consequence of special circumstances, reference is made to the Special Instructions for per diem liquidated damage amounts that shall be applicable to specific work tasks.

7. ADDITIONAL DAMAGES FOR FAILURE TO COMPLETE ON SCHEDULE

a. In the event the non-performance or under-performance of a Trade Contractor causes the Construction Manager to increase its staffing over the levels set forth in the Contract between the Owner and the Construction Manager, the Construction Manager may backcharge by Change Order the cost of the additional staffing to the Trade Contractor whose under or non-performance caused the staffing increase.

b. These damages shall be in addition to any liquidated damages assessed due to the non-performance or under-performance of the Trade Contractor provided for in 3a above.

c. Trade contractors will be supplemented, backcharged and assessed liquidated damages for failing to meet any of the following milestone dates:

Bid Package No.	Activity Description	Late Start Date	Late Finish Date

NEW PROJECT SCHEDULE TO BE INSERTED HERE

SECTION 00 4200 - FORM OF PROPOSAL

Date _____

Construction Manager, O&G Industries, Inc. – cmbids@ogind.com

Town of Manchester, TradePackagesBuckley@manchesterct.gov

All:

Pursuant to and in compliance with your Invitation to Bid relating thereto, the Undersigned,

Company Name: _____

Street Address: _____

City, Town, Zip Code: _____

Contact: _____

Telephone Number/Fax Number:_____ / _____

E-Mail Address: _____

having visited the site, familiarized himself with the conditions present and carefully examined the Drawings, Bidding Package Contract Documents, and complete Specifications together with all Addenda issued and received prior to closing time for receipt of Bids as prepared by the Architect, TSKP Studio, hereby offers and agrees as follows:

To provide all materials, all labor and all else whatsoever necessary to erect and properly finish all work in connection with the Buckley Elementary School project, Manchester, Connecticut to the satisfaction of the Architect, Construction Manager and Owner for the lump sum as follows:

BID PACKAGE NUMBER	DESCRIPTION	LUMP SUM PRICE (WRITTEN AND NUMBERS)
5.01	Photovoltaic	_____ _____

UNIT PRICES

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. All Unit Prices shall include all cost to complete the Work to the representative contractor, including all charges for materials, labor, plant, equipment, additional insurance, taxes and all charges of whatever kind.

The stated unit prices shall apply whether the work is added or deducted to the Trade Contractor's Contract.

All items marked with an asterisk (*) shall include the completion of the excavation, formation and compaction of the subgrade; and the disposal of rock or surplus material in accordance with the Plans and Specifications or as directed by the Architect. All items marked with two asterisks (**) shall include the completion of the excavation, removal, disposal and replacement of unsuitable material with structural fill.

Item No.	Description	Amount
5.01 – Photovoltaic		
1	Asbestos pipe insulation/fittings (and associated debris) removal and disposal as ACM (including Selective demolition of walls to access assumed pipe insulation) *(For assumed locations and rooms/areas not called out/marked on drawings) (Allowance/Bid Quantity = 1,225 LF)* ***TBD***	$ /LF

UNIT LABOR RATES

The undersigned further proposes and agrees that should the amount of work required be increased or decreased where unit prices have not been established, the following unit labor rates will be the basis for any Change Order Proposal. For Change Order purposes, the Labor Rates which any contractor submits on this Form of Proposal must be based on current labor rates and not on projected labor rates. Upon confirmation of base labor rate increases, change order rates may be adjusted in July of each year but only after new prevailing wage rates have been issued by the Connecticut Department of Labor. Labor rates are to include all direct costs without overhead & profit as defined in Item 7.3 of the General Conditions. Prior to contract award, if requested by the CM, the successful bidder shall provide documentation substantiating the proposed labor rates.

Classification	Hourly Rate	Benefits	Workmen's Comp.	FICA	State U.C.	Federal U.C.	Total

MANDATORY ALTERNATES

The Undersigned further proposes and agrees that should the following alternate or alternates be accepted and included in this Contract, the amount of base bid, as heretofore stated, shall be increased by stated alternate amount. All materials and workmanship shall be in strict accordance with original specifications and drawings.

The Contract requirements shall be an integral part of the alternates. The base bid shall include all work shown on the drawings and specifications irrespective of any items included in the alternative. The alternate is subject to

acceptance or rejection by the Owner without affecting the price of the base bid. A Contract will be awarded on any base bid-alternate combination that is in the best interest of the Owner. Contractors shall perform all work required to complete execution of the accepted alternate. The amount of the alternate price shall include the cost of any and all modifications made necessary by the Owner's acceptance and all Contractor's expenses including overhead and profit. The bidding Trade Contractor shall state the amount of the alternate listed below. No response to the alternates will be interpreted as no change in cost.

Alternate No.	Description	Total
		Add/Deduct $
		Add/Deduct $
		Add/Deduct $
Identify either "add" or "deduct" by crossing out word that does not apply.		

ADDENDA

Acknowledgment is hereby made of the following addenda supplements to the Drawings and Specifications:

Addendum No. _____ Dated _____	Addendum No. _____ Dated _____
Addendum No. _____ Dated _____	Addendum No. _____ Dated _____
Addendum No. _____ Dated _____	Addendum No. _____ Dated _____

NON-COLLUSIVE BIDDING CERTIFICATION

By submission of this bid each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief:

1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; and

2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to the opening, directly or indirectly, to any other bidder or to any competitor; and

3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition. The foregoing statement subscribed by the bidder and affirmed by such bidder as true under the penalties of perjury and is made pursuant to the applicable section of the General Laws of the State of Connecticut as most recently amended.

CONTRACTOR'S MEANS OF COMPLIANCE WITH CHRO REQUIREMENTS

The contract to be awarded is subject to compliance requirements mandated by Connecticut General Statutes Sections 4a-60 and 4a-60a, 46a-71(d) and 46a-81 i (d). 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 the previously stated Sections of the Connecticut General Statutes.

Affidavit Form C - Nondiscrimination Certification shall be completed and submitted at time of bid. Form can be found at: http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806.

Unless otherwise noted, all Bidders are required to obtain a minimum goal of 25% of awarded contract to small business enterprises (SBE) and 6.25% to minority business enterprises (MBE) trade contractors and/or suppliers certified by the State of Connecticut Department of Administration Services (DAS)

The successful Trade Contractor shall substantiate this participation within **10 days of receiving a limited Notice to Proceed and prior to signing of the Trade Contract.**

Refer to Section 00 21 13 Instructions to Bidders for further information.

Indicate below the planned utilization of Small and Minority businesses SBE/MBE included as a percentage of the base bid. Failure to complete this or comply with stated SBE/MBE goals may result in your proposal being deemed incomplete, and thus may result in the rejection of your bid. Note if no indication is provided below then this shall be interpreted as zero participation is planned by the bidder.

This Proposal includes _____% certified SBE participation

This Proposal includes _____% certified MBE participation

In formulating these percentages, the bidder is cautioned to make sure that the SBE and MBE participation is in accordance with the requirements of the Connecticut General Statutes and CHRO regulations.

STATEMENT OF BIDDER'S QUALIFICATIONS

1. The undersigned company has been in business under its present name for ___ years.

2. The undersigned company has had ____ years experience in construction work similar to that described in the bid documents for this project.

3. List below the construction projects the undersigned company currently has under contract as of this date, use a separate sheet if necessary:

Project Name	Contract Sum	Class of Work	% Complete	Name of Owner and Contact Information - Email and Phone Number

4. List below a minimum of three (3) projects the undersigned company has performed in the past five (5) years which are representative of this project and would qualify you for this work, use a separate sheet if necessary:

Project Name	Contract Sum	Class of Work	% Complete	Name of Owner and Contact Information - Email and Phone Number

5. Has the undersigned company ever failed to complete awarded work? Circle the appropriate response. Yes No

   If the answer is yes, please provide location, date and reason below.

6. Has any officer or partner of the undersigned company, while performing in the capacity of an officer, partner or individual owner of another entity, ever failed to complete a construction contract? Circle the appropriate response. Yes No

   If the answer is yes, please state below the following information:
   Name of individual(s), name(s) of organization and reason(s)

7. Has the undersigned company been involved or is currently involved in any litigation, administrative or arbitration proceedings in the preceding five (5) years and the outcome? Use a separate sheet as necessary. Circle the appropriate response. Yes No

   If the answer is yes, describe all such actions including the outcome of any closed actions. Use separate sheet as necessary.

8. Has the Contractor or an officer, director, shareholder, partner, employee or other individual associated with the Contractor:

   a. been convicted or entered a plea of guilty or nolo contendere for or admitted to the commission of a criminal offense as an incident to obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of such contract or subcontract?
   Circle the appropriate response. Yes No

   If so, identify such conviction, plea or admission here and provide details on a separate sheet.

   b. been convicted or entered a plea of guilty or nolo contendere or admitted to the violation of any state or federal law for fraud, graft, embezzlement, theft, forgery, bribery, falsification, or destruction of records, receiving stolen property or any other offense indicating a lack of business integrity of business honesty which affects responsibility as a contractor? Circle the appropriate response. Yes No

If so, identify such conviction, plea, or admission here and provide details on a separate sheet.

c. been convicted or entered a plea of guilty or nolo contendere or admitted to a violation of any state or federal antitrust, collusion or conspiracy law arising out the submission of bids or proposals on a public or private contract or subcontract? Circle the appropriate response. Yes No

If so, identify such conviction, plea or submission here and provide details on a separate sheet.

d. committed a willful failure to perform in accordance with the terms of one or more public contracts, agreements or transactions? Circle the appropriate response. Yes No

If so, identify such willful failure here and provide details on a separate sheet.

e. have a history of failure to perform or of unsatisfactory performance of one or more public contractors, agreements or transactions? Circle the appropriate response. Yes No

If so, identify such contracts here and provide details on a separate sheet.

f. committed a willful violation of a statutory or regulatory provision or requirement applicable to a public contract agreement or transaction? Circle the appropriate response. Yes No

If so, identify such violation here and provide details on a separate sheet.

For purposes of Questions 8(a)-(f) above, the fraudulent, criminal or other seriously improper conduct of one contractor participating in a joint venture or similar arrangement may be imputed to other participating contractors if the conduct occurs for or on behalf of the joint venture or similar arrangement and these contractors knew of or had reason to know of such conduct.

9. Has the Contractor, or an officer, director, shareholder, or partner ever filed for protection from creditors under any chapter of the United States Bankruptcy Code? Circle the appropriate response. Yes No

If so, identify such company or individual here and provide details on a separate sheet.

10. State how much of your business is for private versus public owners.

Public: _____ %

Private: _____ %

11. Provide the names of the Principal/Project Executive, Project Manager and Field Superintendent/Foreman the Contractor will use on the Project. On a separate sheet summarize their experience that demonstrates they are suitable for the proposed work.

Principal/Project Executive: _____

Project Manager: _____

Field Superintendent/Foreman: _____

12. State the name of your surety and A.M. Best & Company rating of your surety.

    Surety: _____

    Rating: _____

13. State the bonding capacity and the bond premium rate for your firm.

    Bonding Capacity: $_____

    Bond Premium Rate: _____

14. State the name of your insurance carrier and the A.M. Best & Company rating of your insurance carrier.

    Insurance Carrier: _____

    Rating: _____

15. State the general liability rate for your firm and the interstate or intrastate workers' compensation experience modification rate for your firm for the past five (5) years.

    General liability rate: _____

    Workers' Compensation Experience Modification Rate:

    20__ _____ 20__ _____
    20__ _____ 20__ _____
    20__ _____

16. Summarize the accident and fatality experience of your firm for the last five (5) years by providing the relevant OSHA No. 300A logs as an attachment to your proposal.

17a. Has the Contractor or any persons associated with the firm been cited for one (1) or more willful or serious violations of any occupational safety and health act in the previous five (5) year period?
Circle the appropriate response. Yes No

17b. Has the Contractor or any persons associated with the firm received a criminal conviction related to the injury or death of an employee in the previous five (5) year period? Circle the appropriate response. Yes No

If yes to either or both, explain the citations or convictions on a separate sheet.

17c. On a separate sheet provide a list all citations issued to the contractor by OSHA, MSHA or other state agency regarding health, welfare or safety violations in the previous five (5) years. If none then state so here _____

18a. Within the prior five (5) year period, has the Contractor ever been cited by the Connecticut Department of Labor for disregarding its obligations under Connecticut General Statute sections 31-53 (prevailing wages) or 31-57c (length of workweek)? Circle the appropriate response. Yes No

18b. Has the Contractor been barred from bidding on any state or federal government contracts within the previous five (5) years? Circle the appropriate response. Yes No

If yes to either or both, please describe on a separate sheet.

19. Is your firm registered to conduct business in the State of Connecticut? Circle the appropriate response. Yes No

    If yes, please provide your Connecticut Tax Identification number _____

20. Has your bonding company, your company or a subcontractor to and through your company within the past 5 years been noticed or have been served with a claim, both either formally or informally by an Owner, a Construction Manager or General Contractor for failure to manage, perform, meet a deadline, a milestone or a schedule or fail to complete a project or a portion thereof?
    Circle the appropriate response. Yes No
    If yes, state the project, location, Owner, subcontractor (if applicable) and by whom the claim was filed.

21. Has your bonding company, your company or a subcontractor to and through your company within the past 5 years been charged with or paid liquidated damages or have been back-charged for failure to manage, perform, meet a deadline, a milestone or a schedule or fail to complete a project or a portion thereof? Circle the appropriate response. Yes No

    If yes, state the project, location, Owner, subcontractor (if applicable) and to whom the claim was paid and the dollar amount.

22. Has your company or a subcontractor to and through your company ever filed within in the last 5 years a formal or informal claim to an Owner, Construction Manager, or General Contractor for acceleration, delay, and/or other types of recovery costs? Circle the appropriate response. Yes No

    If yes, state the project, location, to whom the claim was filed and the dollar amount.

23. List the categories of work that your organization normally performs with its own forces
    _____

24. Complete the following items if your bid is in excess of $500,000.00:

    a. Do you have a DAS Pre-Qualification Certificate? Circle the appropriate response. Yes No
    b. Identify all trade classifications that you are pre-qualified for: _____
       _____

25. Failure to disclose any of the information requested above or fail in any way to respond to each question accurately and truthfully may be grounds for immediate rejection of the bid proposal.

OTHER REQUIREMENTS

It is understood that the Owner and/or Construction Manager reserves the right to accept or reject any and all bids that they deem to be in their best interest based upon the information provided within this Form of Proposal and during the Scope Review Meeting.

Upon notification of acceptance of this proposal, the undersigned agrees to execute a contract in the form as stated within these contract documents for the amount stated.

Prices quoted shall be guaranteed for ninety (90) days after date of the opening of bids. If written notice of award is received within ninety (90) calendar days after the opening of bids, the undersigned agrees to execute said contract

and furnish to the Construction Manager within ten (10) business days after receipt of said contract, the executed Contract, together with the Performance and Payment Bonds and Insurance Certificates as required herein.

The undersigned agrees that the Bid Security payable to Owner accompanying this proposal is left in escrow with the Owner; that its amount is the measure of liquidated damages which the Owner will sustain by the failure of the undersigned to execute and deliver the above-named bonds, insurance certificates and contract; and that if the undersigned defaults in furnishing said bonds and insurance and in executing and delivering said Contract within ten (10) business days of receipt of contract to him/her, then said Security shall be payable to the Owner for its own account; but if this proposal is not accepted within said ninety (90) days of the time set for submission of bids, or if the undersigned executes and delivers said bonds, insurance and Contract, the Bid Security shall be returned to the undersigned.

The undersigned hereby certifies that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

By submission of this proposal, the undersigned acknowledges that they have visited the site, informed themselves of the existing conditions, and have included in the proposal a sum to cover the costs of all items in the contracts.

By submission of this proposal, the undersigned acknowledges that they have read the job narrative and schedule requirements and agrees to provide sufficient staff and organization and to select subcontractors and suppliers to comply with the requirements for submittals, delivery dates, work periods and completion dates as specified.

Respectfully submitted,

_____
Signature

_____
Printed Name and Title

Attest: _____

SEAL IF REQUIRED

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)

White (not of Hispanic Origin)- All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. Black(not of Hispanic Origin)- All persons having origins in any of the Black racial groups of Africa. Hispanic- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.	Asian or Pacific Islander- 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. American Indian or Alaskan Native- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.

BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART I - Bidder Information

Company Name Street Address City & State Chief Executive	Bidder Federal Employer Identification Number _____ Or Social Security Number_____
Major Business Activity (brief description)	Bidder Identification (response optional/definitions on page 1) -Bidder is a small contractor. Yes __No __ -Bidder is a minority business enterprise Yes __No __ (If yes, check ownership category) Black ___ Hispanic___ Asian American___ American Indian/Alaskan Native ___Iberian Peninsula___ Individual(s) with a Physical Disability___ Female ___
Bidder Parent Company (If any)	- Bidder is certified as above by State of CT Yes__ No__
Other Locations in Ct. (If any)	

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__ No__	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__ No__
2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes__ No__	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes__ No__
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes__ No__	9. Does your company have a mandatory retirement age for all employees? Yes__ No__
4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes __No __	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__ No__ NA__
5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes __No __	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 __No __NA __
6. Does your company have a collective bargaining agreement with workers? Yes__ No__ 6a. If yes, do the collective bargaining agreements contain non-discrim ination clauses covering all workers? Yes__ No__ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of Ct? Yes__ No__	12. Does your company have a written affirmative action Plan? Yes __No __ If no, please explain. 13. Is there a person in your company who is responsible for equal employment opportunity? Yes __No __ 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? Yes__ No__

PART IV - Bidder Employment Information Date:

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											
Business & Financial Ops											
Marketing & Sales											
Legal Occupations											
Computer Specialists											
Architecture/Engineering											
Office & Admin Support											
Bldg/ Grounds Cleaning/Maintenance											
Construction & Extraction											
Installation , Maintenance & Repair											
Material Moving Workers											
Production Occupations											
TOTALS ABOVE											
Total One Year Ago											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

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					Work Experience	
Private Employment Agencies					Ability to Speak or Write English	
Schools and Colleges					Written Tests	
Newspaper Advertisement					High School Diploma	
Walk Ins					College Degree	
Present Employees					Union Membership	
Labor Organizations					Personal Recommendation	
Minority/Community Organizations					Height or Weight	
Others (please identify)					Car Ownership	
					Arrest Record	
					Wage Garnishments	

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 facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

(Signature)	(Title)	(Date Signed)	(Telephone)

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 not completed, 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:		
Project Number:		
Name of Company:		
FEIN:		
Company Address:		
Prequalification Contact:		**Telephone Number:**
Date of Prequalification with the DAS:	**Single Limit:**	**Aggregate Work Capacity (AWC):**
* This amount equals your company's AWC minus the Total $ Amount of Work Remaining.		*** Remaining Aggregate Work Capacity:**

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

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 ($)
		Total $ Amount of Work Remaining →		

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

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:

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 **Date**

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

Rev. 09_24_07

DRAFT **AIA® Document A132™ – 2019**

Standard Form of Agreement Between Owner and Contractor, *Construction Manager as Adviser Edition*

AGREEMENT **20/21-36 «ContractNumber»** made as of September 8, 2021
(In words, indicate day, month, and year.)

BETWEEN the Owner:

«Town of Manchester »« »
«41 Center Street »
«Manchester, CT 06045-0191 »
« »

and the Contractor:
(Name, legal status, address, and other information)

«ToCompany»
«ToAddressLine1»
«ToAddressCity», «State», «Zip»

for the following Project:

«Buckley Elementary School Renovation»
«250 Vernon Street»
«Manchester, CT 06042
State Project 077-0240RNV»

The Construction Manager:

«O&G Industries, Inc. »« »
«112 Wall Street »
«Torrington, CT 06790 »
« »

The Architect:

«TSKP Studio »« »
«One Hartford Square West, Bldg. 1-203 »
«Hartford, CT 06106 »
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

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

This document is intended to be used in conjunction with AIA Documents A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser. AIA Document A232™–2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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2 THE WORK OF THIS CONTRACT

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8 MISCELLANEOUS PROVISIONS

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EXHIBIT F1 INSURANCE AND BONDS (Limits as provided in Exhibit F – Sample Certificate of Insurance)

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

§2.1 The Contractor shall fully execute the Work. The Work is, except as specifically indicated in the Contract Documents to be the responsibility of others, the work described in the Contract Documents and the work which can reasonably be inferred as necessary to produce the results intended by the Contract Documents and, except to the extent inconsistent with the Contract Documents, such construction and services as are usually and customarily provided in conjunction with, or in furtherance of, such work.

§2.2 The Contractor shall be responsible for the performance of the Work as an independent contractor and in a good and workmanlike manner (i) consistent with the Contract Documents; (ii) consistent with the instructions, guidance and direction of the Owner and Architect; (iii) consistent with the with the highest prevailing applicable professional or industry standards; (iv) consistent with sound practices; (v) as expeditiously as is consistent with such professional skill and care and the orderly progress of the Work and with the Contract Documents and the instructions, guidance and direction of the Owner and Architect; and (vi) in a manner that will not exceed the contract Sum as set forth in the Agreement (the standards of this Section 2.2 shall be referred to herein as the "Contractor's Standard of Care"). The Contractor shall exercise the Contractor's Standard of Care in performing all aspects of the Work. All references in the Contract Documents to the knowledge, inference, reliance, awareness, determination, belief, observation, recognition or discovery of the Contractor or reference to any similar term shall include the constructive knowledge, inference, reliance, awareness, determination, belief, observation, recognition attributed to the Contractor ("constructive knowledge"). Such constructive knowledge shall include the knowledge, inference, reliance, awareness, determination, belief, observation and recognition the Contractor would have obtained upon the exercise of the Contractor's Standard of Care.

§2.3 The Contractor shall perform the Work in accordance with the Contract Documents and the Conditions, as defined in the AIA A232, and the Contractor shall obtain and post all necessary permits at the site.

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§2.4 If the Contractor is a "nonresident contractor" as defined in Section 12-430(7)(A) of the Connecticut General Statutes, as revised, the Contractor shall comply fully with the provisions of Section 12-430(7) and, prior to commencing the Work, shall furnish the Owner with a copy of the requisite certificate of compliance set forth in subparagraph (E) of Section 12-430(7).

§2.5 The Contractor shall schedule and perform the Work so as not to interfere with any other related or unrelated work being performed by the Owner in or about the site.

§2.6 The Contractor represents and warrants the following to the Owner (in addition to the other representations and warranties contained in the Contract Documents), as an inducement to the Owner to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement and the final completion of the Work:

.1 that it is financially solvent, able to pay its debts as they mature and possessed of sufficient working capital to complete the Work and perform its obligations under the Contract Documents;

.2 that it, through its Subcontractors or otherwise, is able to furnish the tools, materials, supplies, equipment and labor required to complete the Work and perform its obligations hereunder in a timely manner and has sufficient experience and competence to do so;

.3 the Contractor is authorized to do business in the State of Connecticut and is properly licensed by all necessary governmental authorities having jurisdiction over the Contractor and the Project; and

.4 the Contractor has visited the site of the Project and become familiar with the Contract Documents and the conditions of the site, and knows of no reason why the Work cannot be performed as set forth in the Contract Documents.

ARTICLE 3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

1. A date set forth in a notice to proceed issued by the Owner. Commencement/Notice to Proceed, in accordance with Limited Notice to Proceed issued on March 25, 2021;
2. Progress schedule and completion of the work is to be in conformance with the Supplemental Instructions, Exhibit 'H' – Project Schedule and other Contract Documents pertaining to or referencing Completion of the Work.

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion of the Project or Portions Thereof

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the date of Substantial Completion of the Work of all of the Contractors for the Project will be July 5, 2022:

« Progress schedule and completion of the work is to be in conformance with the Supplemental Instructions, Exhibit 'H' – Project Schedule and other Contract Documents pertaining to or referencing Completion of the Work.

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of all of the Contractors for the Project are to be completed prior to Substantial Completion of the entire Work of all of the Contractors for the Project, the Contractors shall achieve Substantial Completion of such portions by the dates established in the:

« Progress schedule and completion of the work is to be in conformance with the Supplemental Instructions, Exhibit 'H' – Project Schedule and other Contract Documents pertaining to or referencing Completion of the Work..»

§ 3.4 Substantial Completion

§ 3.4.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall substantially complete the entire Work of this Contract in accordance with the:

Progress schedule and completion of the work is to be in conformance with the Supplemental Instructions, Exhibit 'H' – Project Schedule and other Contract Documents pertaining to or referencing Completion of the Work.

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§ 3.4.2 If the Contractor fails to substantially complete the Work of this Contract, or portions thereof, as provided in this Section 3.4, liquidated damages, if any, shall be assessed as set forth in Specification Section 003113 – Project Schedule and Phasing.

§ 3.4.3 TIME IS OF THE ESSENCE in the completion of the Work. This Contractor agrees to substantially complete the Work by the Substantial Completion Date of July 5, 2022, the Contractor will pay to the Owner, as liquidated damages and not as a penalty, the sum of $1,000.00 per day (including Saturdays, Sundays and holidays) for each day after July 5, 2022 until Substantial Completion. Such damages are provided for because it will be impracticable and extremely difficult to fix actual damages that the Owner will sustain due to such a delay. The Project shall be deemed to have achieved Substantial Completion when the Architect has issued a Certificate of Substantial Completion and the Project may be used and occupied by the Owner as intended.

§ 3.5 FINAL COMPLETION

"The Work shall be deemed to have achieved Final Completion when all of the items set forth in Section 3.3 hereof have occurred and all of the following additional items have occurred:

.1 The Architect has issued a Final Certificate for Payment;

.2 All punch list items have been completed to the satisfaction of the Architect and the Owner; and

.3 The Owner has received full and final lien waivers from the Contractor and all subcontractors and material suppliers, irrespective of tier, together with a Contractor's affidavit or sworn statement covering all Work for the Project in the form of AIA documents G706 and G706A, respectively.

.4 **Completion of all closeout requirements and documentation as required within the Contract Documents.**

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:
(Check the appropriate box.)

[**«X»**] Stipulated Sum, in accordance with Section 4.2 below

§ 4.2 Stipulated Sum

§ 4.2.1 The Contract Sum is («ContractAmount»), subject to additions and deductions as provided in the Contract Documents.

§ 4.2.2 Alternates

§ 4.2.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
Alternate No. 1 – Energy Management Photovoltaic System	$0.00
Alternate No. 2 – Alerton Building Automation	$0.00

§ 4.2.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.2.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

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Item	Price

§ 4.2.4 Unit prices, if any:
(Identify the item and state the unit price, and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor including all supporting documentation reasonably requested of the Contractor by the Architect or the Construction Manager, and Certificates for Payment issued by the Construction Manager and Architect, the Owner shall, upon its determination that the Work or a portion of the Work, as applicable, has been completed in a manner consistent with the Contract Documents, make progress payments on account of the Contract Sum, to the Contractor, as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager not later than the «25th » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the «60 » days after receipt. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment of the amount certified shall be made by the Owner not later than «ninety» («90») days after the Construction Manager receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum

§ 5.1.4.1 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.4.2 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.4.3 In accordance with AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.4.3.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.4.3.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;

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.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to when the Work of this Contract is substantially complete, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

«Seven percent (7%) »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

«Upon approval from CHRO, retainage shall be reduced from 7% to 5% »

§ 5.2 Final Payment

§ 5.2.1 Final Payment Where the Contract Sum is Based on a Stipulated Sum

§ 5.2.1.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the Contractor satisfies all closeout requirements and documentation as required within the Contract Documents; and

.3 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect.

§ 5.2.1.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment.

§ 5.3 Any provision herein to the contrary notwithstanding, the Owner shall not be obligated to make any payment to the Contractor hereunder if any one or more of the following conditions exist:

.1 The Contractor is in default of any of its obligations hereunder or otherwise is in default under any of the Contract Documents;

.2 Any part of such payment is attributable to Work which, because of the fault or neglect of the Contractor, is defective or not performed in accordance with the Contract Documents; provided, however, such payment shall be made as to the part thereof attributable to the Work which is performed in accordance with the Contracts Documents and is not otherwise defective; or

.3 The Contractor has failed to make payments properly to the Contractor's subcontractors or for material or labor used in the Work for which the Owner has made payment to the Contractor.

§ 5.4 The Contractor shall use the sums advanced to it solely for the purpose of performance of the Work and the construction, furnishing, and equipping of the improvements in accordance with the Contract Documents. With the submission of each Application for Payment, beginning with the second Application for Payment, the Contractor shall furnish to the Owner a release and waiver of mechanics liens from Subcontractors and material suppliers for all previous payments made by the Owner.

§ 5.5 Upon completion of the Work, the Contractor shall furnish to the Owner or, at the Owner's direction, to the Architect, any of the documents used in construction ("Record Drawings"), according to the requirements of the Contract Documents. The Record Drawings shall consist of carefully drawn markings on a set of black and white prints of the drawings obtained especially for the purpose. The Contractor shall identify all changes and circle them. The Contractor shall indicate on the job set of drawings, at the time it occurs, each such field change, for transfer to the Record Drawings.

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ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Article 15 of AIA Document A232–2019, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

§ 6.2 Binding Dispute Resolution

The method of binding dispute resolution shall be as follows:

[« X »] Litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232–2019 or any other AIA document or provision, the reference refers to that document or provision as amended by the Owner and, if applicable, any other party to such document, or as amended and supplemented by other provisions of the Contract Documents.

Furnish all labor, material and equipment necessary to complete the work of Bid Package 1.XX - XX, all in accordance with the Contract Documents as listed in Rider A, copy attached.

Specifically included in this Contract are Scope Review Meeting Minutes dated xxx

Excluded from this Contract are:
CT State Sales Tax, except where required

?? Pollution Liability Insurance
?? Professional Liability Insurance

The following labor rates will be used for any Change Order work:
Xxxxx $/Hour

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

«Christopher Till, P.E.»
«Facilities Manager »
«Town of Manchester»
«P.O. Box 191, 321 Olcott Street»
«Manchester, CT 06045-0191»
«(860) 647-3145; ctill@manchesterct.gov»

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

«Contact»
«ToCompany»« »
«ToAddressLine1»« »
«ToAddressCity», «State», «Zip»

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

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§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A132™–2019, Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A232–2019, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed.

§ 8.7 Relationship of the Parties

The Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

§ 8.8 Other provisions:

§ 8.8.1 The Contractor shall promptly pay any amounts due any Subcontractor, whether for labor performed or materials furnished, when the labor or materials have been included in a requisition submitted by the Contractor and paid by the Owner. Pursuant to Connecticut General Statutes Section 49-41a, the Contractor must make such payments within 30 days of receipt of payment from Owner. Provided that the Owner shall have paid to the Contractor all amount properly due and owing under the Contract Documents, the Contractor shall indemnify and hold the Owner harmless from any liens, claims, security interests or encumbrances filed by the Contractor, any Subcontractor, or anyone claiming by, through or under them. Nothing herein shall alter the responsibility of the Contractor to make payments to Subcontractors or materialmen within the periods required elsewhere in the Contract Documents.

§ 8.8.2 Pursuant to Connecticut General Statute Section 49-41a; the Contractor shall require in its agreements with each Subcontractor that such Subcontractor shall, within 30 days of receipt of payment from Contractor, pay any amounts due any Sub-subcontractor, whether for labor performed or materials furnished, when the labor or materials have been included in a requisition submitted by the Subcontractor and paid by the Contractor. Nothing herein shall alter the responsibility of the Contractor to require Subcontractors to make payments to Sub-subcontractors within the periods required elsewhere in the Contract Documents.

§ 8.8.3 The wages paid on a hourly basis to any mechanic, laborer or workman employed upon the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund, as defined in subsection (h) of Section 31-53 of the General Statutes of Connecticut 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 such payment or contribution on behalf of such employees to any such employee welfare fund shall pay to each employee as part of their wages the amount of the payment of contribution for their classification on each pay day.

§ 8.8.4 To the extent consistent with any provision regarding residence requirements contained in a collective bargaining agreement to which the Contractor is a party, in the employment of labor to perform the work specified herein, preference shall be given to citizens of the United States, who are, and continuously for at least three months prior to the date hereof have been, residents of the labor market area, as established by the Labor Commissioner, in which such work is to be done, and if no such qualified person is available, then to citizens who have continuously resided in the county in which the work is to be performed for at least three months prior to the date hereof, and then to citizens of the state who have continuously resided in the state at least three months prior to the date hereof.

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ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition - Unless explicitly stated otherwise, in the event of a direct conflict between the provisions of this Agreement and the AIA Document A232 described in Section 9.1.2 hereof regarding the rights and responsibilities of the Contractor, the provisions of this Agreement shall govern.

.2 AIA Document A132™–2019, Exhibit A, Insurance and Bonds Exhibit

.3 AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition

.5 Drawings

Number	Title	Date
See attached Exhibit A – List of Documents		

.6 Specifications

Section	Title	Date	Pages
See attached Exhibit A – List of Documents			

.7 Addenda, if any:

Number	Date	Pages
Addenda included in this contract are indicated in Exhibit A – List of Documents (attached).		

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A232–2019 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

Exhibit A – List of Documents
Exhibit B – General Safety and Health
Exhibit C – Resident Contractor or Verified Contractor Status Certification
Exhibit D – Equipment and Material Stored Off-Site Billing Procedure
Exhibit E – Waivers Interim and Final
Exhibit F – Sample Certificate of Insurance
Exhibit F1 – Insurance and Bonds AIA A132 – 2019 Exhibit A
Exhibit G – Payment and Performance Bonds
Exhibit H – Project Schedule

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This Agreement is entered into as of the day and year first written above.

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
Town of Manchester By: Steve Stephanou, Acting General Manager	**«ToCompany»** By: Title: »« »
(Printed name and title)	*(Printed name and title)*

DRAFT

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AIA® Document C132™ – 2019

Standard Form of Agreement Between Owner and Construction Manager as Adviser

AGREEMENT made as of the day of May in the year 2020
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address, and other information)

Town of Manchester,
Scott Shanley, General Manager
41 Center Street
Manchester, CT 06045-0191

and the Construction Manager:
(Name, legal status, address, and other information)

O&G Industries, Inc.
112 Wall Street
Torrington, CT 06790

for the following Project:
(Name, location, and detailed description)

19/20-50 MPS Phase 2 CM Services
Buckley Elementary School

The Architect:
(Name, legal status, address, and other information)

TSKP Studio
One Hartford Square West, Bldg. 1-203
Hartford, CT 06106

The Owner and Construction Manager agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; and B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition. AIA Document A232™–2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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13 SCOPE OF THE AGREEMENT

ARTICLE 1 INITIAL INFORMATION

§ 1.1 This Agreement is based on the Initial Information set forth in this Section 1.1.

(Paragraph deleted)

§ 1.1.1 The Owner's program for the Project:

(Paragraph deleted)

As outlined in RFP No. 19/20-50 CM Services for MPS Phase 2 Elementary Renovations

§ 1.1.2 The Project's physical characteristics:

Buckley Elementary School - The purpose of this renovation project is to meet the education related space requirements and design, construct additions, and renovate an existing elementary school facility at 250 Vernon Street, Manchester, CT to satisfy the requirements of the Manchester Board of Education Specifications.

The project consists of renovations to the existing school building and additions to create additional classrooms, small group, special education, art, music, band, orchestra, pupil services and an expansion to the cafeteria. The renovations will include, but are not limited to site work, sclective demolition/abatement, additions, exterior envelope improvements including roofing and windows, interior partitions, finishes, MEP/FP systems, technology, FF&E and playgrounds.

The Town of Manchester appropriated $88M by a April 2019 referendum vote for 2nd Phase of the MPS 2025 Plan for Elementary School Renovation Projects consisting of the Buckley Elementary School, Bowers Elementary School, and Keeney Elementary School and the re-purposing of decommissioned schools Nathan Hale, Washington and Martin. This approval of project funding is based on "Renovation status" as defined by the State Office of School Construction Grants for all three projects.

Each of these projects must be constructed in accordance with the High Performance Building Construction Standards (HPBS) for State Funded Buildings as outlined in RCSA Section 16a-38k-1 through 16a-38k-9 and further defined by the Connecticut Building Standard Guidelines Compliance Manual for High Performance Buildings August 2009 Prepared For The Connecticut Office of Policy and Management by Northeast Energy Efficiency Partnerships.

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The renovated buildings will include features that minimize EUI (Energy Use Intensity) and the goal is to achieve Net Zero Energy Buildings through innovative design and best practices to the extent practical based on the limitations of the existing building construction and available financial resources.

§ 1.1.3 The Owner's budget for the Cost of the Work, as defined in Section 6.1:

Cost of the Work shall not exceed Total Project Cost of $. The Construction Manager's Article 11 Compensation is not based on the Cost of the Work.

§ 1.1.4 The Owner's anticipated design and construction milestone dates:

.1 Design phase milestone dates, if any:

Construction Document Estimate and Review – November 2020
Pre-construction services will be complete on or before 3/1/21

.2 Construction commencement date:

No later than July 1, 2021

.3 Substantial Completion date or dates:

On or before August 30, 2022 as a Temporary Certificate of Occupancy

.4 Other milestone dates:

Bid packages for trade contractors ready to advertise for public bidding on or before December 18, 2020

§ 1.1.5 The Owner intends the following procurement method for the Project:

Competitive public bidding of trade packages according to approved CHRO Plan from Construction Documents prepared by the Architect

§ 1.1.6 The Owner's requirements for accelerated or fast-track design and construction, multiple bid packages, or phased construction are set forth below:
(Paragraph deleted)
Multiple bid packages as required by approved CHRO Plan and Connecticut OSCGR conditions of approval

§ 1.1.7 The Owner's anticipated Sustainable Objective for the Project:

Compliance with the High Performance Building Construction Standards (HPBS) for State Funded Buildings as outlined in RCSA Section 16a-38k-1 through 16a-38k-9 and further defined by the Connecticut Building Standard Guidelines Compliance Manual for High Performance Buildings August 2009 Prepared For The Connecticut Office of Policy and Management by Northeast Energy Efficiency Partnerships.

Minimize EUI (Energy Use Intensity) and the goal is to achieve Net Zero Energy Buildings to the greatest extent practical based on the limitations of the existing building construction and available financial resources.

§ 1.1.7.1 If the Owner identifies a Sustainable Objective, the Owner and Construction Manager shall complete and incorporate AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, into this Agreement to define the terms, conditions and services related to the Owner's Sustainable Objective. If E235–2019 is incorporated into this Agreement, the Owner and Construction Manager shall incorporate the completed E235–2019 into the agreements with the consultants and contractors performing services or Work in any way associated with the Sustainable Objective.

§ 1.1.8 Other Project information:

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None

§ 1.1.9 The Owner identifies the following representative in accordance with Section 5.5:

Christopher Till, P.E., Facilities Manager
P.O. Box 191
321 Olcott Street
Manchester, CT 06045-0191
Telephone Number: 860 647-3145
Mobile Number: 860 463-3516
Email Address: ctill@manchesterct.gov

§ 1.1.10 The persons or entities, in addition to the Owner's representative, who are required to review the Construction Manager's submittals to the Owner are as follows:

Manchester Permanent Building Committee
MPS Superintendent of Schools

§ 1.1.11 The Owner shall retain the following consultants and Contractors:

.1
(Paragraphs deleted)
Commissioning Agent: To be determined

§ 1.1.12 The Construction Manager identifies the following representative in accordance with Section 2.5:

Mark Jeffko
Assistant Vice President, O&G Building Group
O&G Industries, Inc.
112 Wall St., Torrington, CT 06790
P: (860) 626-6432 | M: (203) 943-8067

§ 1.1.13 The Construction Manager's staffing plan as required under Section 3.3.3 shall include:
(Paragraph deleted)
Full time Project Manager and full time Lead Superintendent throughout Construction Phase and all other staffing as proposed within O&G Phase2_CM_StaffingAnalysisWorksheets 2020-03-26 FINAL.

§ 1.1.14 The Construction Manager's consultants retained under Basic Services, if any:

Construction Document Review – Company TBD, per Allowance in Fee Proposal

§ 1.1.15 The Construction Manager's consultants retained under Supplemental Services:

None

§ 1.1.16 Other Initial Information on which this Agreement is based:

OG Manchester ESs CM RFQP Response 3-26-20.pdf
Fee Proposal Package 2020-03-26 FINAL.pdf

§ 1.2 The Owner and Construction Manager may rely on the Initial Information. Both parties, however, recognize that the Initial Information may materially change and, in that event, the Owner and the Construction Manager shall appropriately adjust the Construction Manager's services, schedule for the Construction Manager's services, and the Construction Manager's compensation. The Owner shall adjust the Owner's budget for the Cost of the Work and the Owner's anticipated design and construction milestones, as necessary, to accommodate material changes in the Initial Information.

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§ 1.3 The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form.

§ 1.3.1 Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

§ 1.4 The term "Contractors" refers to persons or entities who perform Work under contracts with the Owner that are administered by the Construction Manager and Architect. The term "Contractors" is used to refer to such persons or entities, whether singular or plural. The term does not include the Owner's own forces, or Separate Contractors, which are persons or entities who perform construction under separate contracts with the Owner not administered by the Construction Manager and Architect.

ARTICLE 2 CONSTRUCTION MANAGER'S RESPONSIBILITIES

§ 2.1 The Construction Manager shall provide the services as set forth in this Agreement.

§ 2.2 The Construction Manager shall perform its services consistent with the skill and care ordinarily provided by construction managers practicing in the same or similar locality under the same or similar circumstances. The Construction Manager shall perform its services as expeditiously as is consistent with such skill and care and the orderly progress of the Project.

§ 2.3 The Construction Manager shall provide its services in conjunction with the services of an Architect as described in AIA Document B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition. The Construction Manager shall not be responsible for actions taken by the Architect.

§ 2.4 The Construction Manager shall coordinate its services with those services provided by the Owner, the Architect, the Contractors, and the Owner's other consultants and Separate Contractors. The Construction Manager shall be entitled to rely on, and shall not be responsible for, the accuracy and completeness of services and information furnished by the Owner, the Architect, and the Owner's other consultants and Separate Contractors. The Construction Manager shall provide prompt written notice to the Owner if the Construction Manager becomes aware of any error, omission, or inconsistency in such services or information.

§ 2.5 The Construction Manager shall identify a representative authorized to act on behalf of the Construction Manager with respect to the Project.

§ 2.6 The Construction Manager, as soon as practicable after execution of the Agreement, shall notify the Owner in writing of the names and qualifications of its proposed key staff members. Within 14 days of receipt of the names and qualifications of the Construction Manager's proposed key staff members, the Owner may reply to the Construction Manager in writing, stating (1) whether the Owner has reasonable objection to a proposed key staff member or (2) that the Owner requires additional time to review. Failure of the Owner to reply within the 14-day period shall constitute notice of no reasonable objection. The Construction Manager shall not staff any employees on the Project to whom the Owner has made reasonable and timely objection. The Construction Manager shall not change its key staff members without the Owner's consent, which shall not be unreasonably withheld or delayed.

§ 2.7 Except with the Owner's knowledge and consent, the Construction Manager shall not engage in any activity, or accept any employment, interest or contribution that would reasonably appear to compromise the Construction Manager's judgment with respect to this Project.

§ 2.8 The Construction Manager shall maintain the following insurance until termination of this Agreement.

§ 2.8.1 Commercial General Liability with policy limits of not less than One Million/Two Million ($ 1,000,000/$2,000,000) for each occurrence and in the aggregate, respectively for bodily injury, property damage, and product/completed operations liability.

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§ 2.8.2 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Construction Manager and hired vehicles with policy limits of not less than One Million ($ 1,000,000) per accident for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles, along with any other statutorily required automobile coverage.

§ 2.8.3 The Construction Manager shall maintain Five Million ($5.0M) umbrella or excess liability insurance in addition to the required coverages for Comprehensive General Liability and Automobile Liability.

The Construction Manager may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella liability insurance policies result in the same or greater coverage as the coverages required under Sections 2.8.1 and 2.8.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 2.8.4 Workers' Compensation at statutory limits and Employers Liability with policy limits as required per State Statute..

§ 2.8.5 Professional Liability covering negligent acts, errors and omissions in the performance of professional services with policy limits of not less than One Million Dollars ($ 1,000,000) per claim and in the aggregate.

§ 2.8.6 Additional Insured Obligations. To the fullest extent permitted by law, the Construction Manager shall cause the primary and excess or umbrella polices for Commercial General Liability and Automobile Liability to include the Owner as an additional insured for claims caused in whole or in part by the Construction Manager's negligent acts or omissions. The additional insured coverage shall be primary and non-contributory to any of the Owner's insurance policies and shall apply to both ongoing and completed operations.

§ 2.8.7 The Construction Manager shall provide certificates of insurance to the Owner that evidence compliance with the requirements in this Section 2.8.

§ 2.9 The Construction Manager shall retain all Project related documents and information it receives, and the Owner and Architect shall have access to the documents and information. The Construction Manager shall transmit the documents and information to the Owner at final completion.

(Paragraphs deleted)

ARTICLE 3 SCOPE OF CONSTRUCTION MANAGER'S BASIC SERVICES

§ 3.1 Definition

The Construction Manager's Basic Services consist of those described in this Article 3, and include usual and customary Preconstruction and Construction Phase Services. Services not set forth in this Article 3 are Supplemental or Additional Services. The Owner, Construction Manager, and Contractors may agree, in consultation with the Architect, for the Construction Phase to commence prior to completion of the Preconstruction Phase, in which case, both phases will proceed concurrently.

§ 3.2 Preconstruction, Solicitation and Award Phase

§ 3.2.1 The Construction Manager shall review the program furnished by the Owner and any evaluation of the Owner's program provided by the Architect, to ascertain the requirements of the Project and shall arrive at a mutual understanding of such requirements with the Owner and Architect.

§ 3.2.2 The Construction Manager shall provide a preliminary evaluation of the Owner's program, schedule and construction budget requirements, each in terms of the other.

§ 3.2.3 The Construction Manager shall prepare, and deliver to the Owner, for the Owner's approval, a written Construction Management Plan that includes, at a minimum, the following: (1) preliminary evaluations required in Section 3.2.2, (2) a Project schedule, (3) cost estimates, (4) recommendations for Project delivery method, and (5) Contractors' scopes of Work. The Construction Manager shall periodically update the Construction Management Plan, for the Owner's approval, over the course of the Project.

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§ 3.2.4 The Construction Manager shall prepare and periodically update the Project schedule included in the Construction Management Plan for the Architect's review and the Owner's acceptance. The Construction Manager shall obtain the Architect's approval for the portion of the Project schedule relating to the performance of the Architect's services. The Project schedule shall coordinate and integrate the Construction Manager's services, the Architect's services, other Owner consultants' services, and the Owner's responsibilities and highlight items that affect the Project's timely completion.

§ 3.2.5 The Construction Manager shall update the Project schedule to include the components of the Work, including phasing of construction, times of commencement and completion required of each Contractor, ordering and delivery of products, including those that must be ordered in advance of construction, obtaining the required reviews and approvals of authorities having jurisdiction over the Project, and the occupancy requirements of the Owner.

§ 3.2.6 Based on the preliminary design and information prepared or provided by the Architect and other Owner consultants, the Construction Manager shall prepare, for the Architect's review and Owner's approval, preliminary estimates of the Cost of the Work or the cost of program requirements using area, volume or similar conceptual estimating techniques, including the establishment of sufficient contingency to reasonably anticipate the development of the Project's design documents.

§ 3.2.7 The Construction Manager shall review design documents during their development and advise the Owner and Architect on proposed site use and improvements, selection of materials, building systems, and equipment. The Construction Manager shall also provide recommendations to the Owner and Architect, consistent with the Project requirements, on constructability; availability of materials and labor; sequencing for phased construction; time requirements for procurement, installation and construction; and factors related to construction cost including, but not limited to, costs of alternative designs or materials, preliminary budgets, life-cycle data, and possible cost reductions.

§ 3.2.8 The Construction Manager shall review recommendations for systems, materials, or equipment for the impact upon cost, schedule, sequencing, constructability, and coordination among the Contractors. The Construction Manager shall discuss its findings with the Owner and the Architect, and coordinate resolution, as necessary, of any such impacts.

§ 3.2.9 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall prepare and update, at appropriate intervals agreed to by the Owner, Construction Manager and Architect, an estimate of the Cost of the Work with increasing detail and refinement. The Construction Manager shall include in the estimate those costs to allow for further development of the design, bidding or negotiating, price escalation, and market conditions. The estimate shall be provided for the Architect's review and the Owner's approval. The Construction Manager shall inform the Owner and Architect in the event that the estimate of Cost of the Work exceeds the latest approved Project budget, and make recommendations for corrective action.

§ 3.2.10 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall consult with the Owner and Architect and make recommendations whenever the Construction Manager determines that the design, or details, adversely affect cost, scope, schedule, constructability, or quality of the Project.

§ 3.2.11 The Construction Manager shall provide recommendations and information to the Owner and Architect regarding the assignment of responsibilities for temporary Project facilities and equipment, materials and services for common use of the Contractors. The Construction Manager shall verify that such requirements and assignment of responsibilities are included in the proposed Contract Documents.

§ 3.2.12 The Construction Manager shall provide recommendations and information to the Owner regarding the allocation of responsibilities for safety programs among the Contractors.

§ 3.2.13 The Construction Manager shall provide recommendations to the Owner on the division of the Project into individual contracts for the construction of various categories of Work, including the method to be used for selecting Contractors and awarding Contracts for Construction. The Construction Manager shall review the Drawings and Specifications and make recommendations as required to provide that (1) the Work of the Contractors is coordinated,

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(2) all requirements for the Project are assigned to the appropriate Contract, (3) the likelihood of jurisdictional disputes is minimized, and (4) proper coordination is provided for phased construction.

§ 3.2.14 The Construction Manager shall make recommendations about, and coordinate the ordering and delivery of, materials in support of the schedule, including those that must be ordered in advance of construction.

§ 3.2.15 The Construction Manager shall assist the Owner in selecting, retaining, and coordinating the professional services of surveyors, geotechnical engineers, special consultants, and construction materials testing required for the Project.

§ 3.2.16 The Construction Manager shall provide an analysis of the types and quantities of labor required for the Project and review the availability of appropriate categories of labor required for critical phases. The Construction Manager shall make recommendations for actions designed to minimize adverse effects of labor shortages.

§ 3.2.17 The Construction Manager shall assist the Owner in obtaining information regarding applicable requirements for equal employment opportunity programs, and other programs as may be required by governmental and quasi-governmental authorities for inclusion in the Contract Documents.

§ 3.2.18 Following the Owner's approval of the Drawings and Specifications, the Construction Manager shall update and submit the latest estimate of the Cost of the Work and the Project schedule for the Architect's review and the Owner's approval.

§ 3.2.19 The Construction Manager, in consultation with the Owner, shall develop bidders' interest in the Project and establish bidding schedules. The Construction Manager shall assist the Owner and the Architect with the development of the Bidding Documents, which consist of bidding requirements and proposed Contract Documents. The Construction Manager, with the assistance of the Architect, shall issue Bidding Documents to bidders and conduct pre-bid conferences with prospective bidders. The Construction Manager shall issue the current Project schedule with each set of Bidding Documents. The Construction Manager shall assist the Architect with regard to questions from bidders and with the issuance of addenda.

(Paragraph deleted)

§ 3.2.21 The Construction Manager, with the assistance of the Architect, shall review bids, and prepare bid analyses, and make recommendations to the Owner for the Owner's award of Contracts for Construction or rejection of bids.

§ 3.2.22 The Construction Manager, with the assistance of the Architect, shall assist the Owner in preparing Contracts for Construction. The Construction Manager shall advise the Owner on the acceptability of Subcontractors and material suppliers proposed by Contractors.

§ 3.2.23 The Construction Manager shall assist the Owner in obtaining building permits and special permits for permanent improvements, except for permits required to be obtained directly by the Contractors. The Construction Manager shall verify that the Owner has paid applicable fees and assessments. The Construction Manager shall assist the Owner and Architect in connection with the Owner's responsibility for filing documents required for the approvals of governmental authorities having jurisdiction over the Project.

§ 3.2.24 If the Owner identified a Sustainable Objective in Article 1, the Construction Manager shall fulfill its Preconstruction Phase responsibilities as required in AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, attached to this Agreement.

§ 3.2.25 The Construction Manager shall coordinate budgets for individual trade contractors, FF&E/technology and playground equipment with Town Accounting staff to align with Munis financial management and budgets.

§ 3.2.26 The Construction Manager shall provide projections of anticipated soft costs and track throughout the project.

§ 3.2.26.1 The Construction Manager shall review monthly soft cost invoices and provide recommendations for payment to Building Committee for all project related non-trade project expenses.

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§ 3.3 Construction Phase

§ 3.3.1 The Construction Manager shall provide on-site administration of the Contracts for Construction in cooperation with the Architect as set forth below and in AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition. If the Owner and Contractor modify AIA Document A232–2019, those modifications shall not affect the Construction Manager's services under this Agreement unless the Owner and the Construction Manager amend this Agreement.

§ 3.3.2 Subject to Section 4.2 and except as provided in Section 3.3.30, the Construction Manager's responsibility to provide Construction Phase Services commences with the award of the initial Contract for Construction and terminates on the date the Architect issues the final Certificate for Payment.

§ 3.3.3 The Construction Manager shall provide a staffing plan to include one or more representatives who shall be in attendance at the Project site whenever the Work is being performed.

§ 3.3.4 The Construction Manager shall provide administrative, management and related services to coordinate scheduled activities and responsibilities of the Contractors with each other and with those of the Construction Manager, the Owner and the Architect. The Construction Manager shall coordinate the activities of the Contractors in accordance with the latest approved Project schedule and the Contract Documents.

§ 3.3.5 The Construction Manager shall review and analyze the construction schedules provided by the Contractors to update the Project schedule, incorporating the activities of the Owner, Architect, and Contractors on the Project, including activity sequences and durations, allocation of labor and materials, processing of Shop Drawings, Product Data and Samples, and delivery and procurement of products, including those that must be ordered in advance of construction. The Project schedule shall include the Owner's occupancy requirements showing portions of the Project having occupancy priority. The Construction Manager shall update and reissue the Project schedule as required to show current conditions. If an update indicates that the previously approved Project schedule may not be met, the Construction Manager shall recommend corrective action to the Owner and Architect.

§ 3.3.5.1 The Construction Manager shall incorporate Building Official and Fire Marshall inspections; commissioning services; FF&E delivery, staging, assembly & setup; Owner contents (teacher's boxes) move-in; coordination of final cleaning; and teacher room setup into the overall project schedule to meet the Owner's occupancy dates.

§ 3.3.6 The Construction Manager shall schedule and conduct weekly meetings to discuss matters such as procedures, progress, coordination, and scheduling of the Work, and to develop solutions to issues identified. This should include separate meetings for the trade contractor project managers/foreman "as needed", LEAN Weekly Planning Meetings, and Owner's project team (design team, code officials, owner's reps). The Construction Manager shall prepare and promptly distribute minutes to the Owner, Architect and Contractors.

§ 3.3.7 In accordance with the Contract Documents and the latest approved Project schedule, and utilizing information from the Contractors, the Construction Manager shall review, analyze, schedule and coordinate the overall sequence of construction and assignment of space in areas where the Contractors are performing Work.

§ 3.3.8 The Construction Manager shall coordinate all tests and inspections required by the Contract Documents or governmental authorities, observe the on-site testing and inspections, and arrange for the delivery of test and inspection reports to the Owner and Architect.

§ 3.3.9 The Construction Manager shall endeavor to obtain satisfactory performance from each of the Contractors. The Construction Manager shall recommend courses of action to the Owner when requirements of a Contract are not being fulfilled.

§ 3.3.10 The Construction Manager shall monitor and evaluate actual costs for activities in progress and estimates for uncompleted tasks and advise the Owner and Architect as to variances between actual costs and budgeted or estimated costs. If a Contractor is required to submit a Control Estimate, the Construction Manager shall meet with the Owner and Contractor to review the Control Estimate. The Construction Manager shall promptly notify the Contractor if there are any inconsistencies or inaccuracies in the information presented. The Construction Manager shall also report the Contractor's cost control information to the Owner.

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§ 3.3.11 The Construction Manager shall develop cash flow reports and forecasts for the Project and include them in the Construction Manager's progress reports.

§ 3.3.12 The Construction Manager shall maintain accounting records on authorized Work performed under unit costs, additional Work performed on the basis of actual costs of labor and materials, and other Work requiring accounting records.

§ 3.3.12.1 The Construction Manager shall develop and implement procedures for the review and processing of Applications for Payment by Contractors for progress and final payments.

§ 3.3.12.2 Not more frequently than monthly, the Construction Manager shall review and certify the amounts due the respective Contractors as follows:

.1 The Construction Manager shall, within seven days after the Construction Manager receives each Contractor's Application for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each Contractor; (2) prepare a Summary of Contractors' Applications for Payment by summarizing information from each Contractor's Application for Payment; (3) prepare a Project Application and Certificate for Payment; (4) certify the total amount the Construction Manager determines is due all Contractors collectively; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 3.3.12.3 The Construction Manager's certification for payment shall constitute a representation to the Owner, based on the Construction Manager's evaluations of the Work and on the data comprising the Contractors' Applications for Payment, that, to the best of the Construction Manager's knowledge, information and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractors are entitled to payment in the amount certified. The foregoing representations are subject to (1) an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion; (2) results of subsequent tests and inspections; (3) correction of minor deviations from the Contract Documents prior to completion; and (4) specific qualifications expressed by the Construction Manager. The issuance of a Certificate for Payment shall further constitute a recommendation to the Architect and Owner that the Contractor be paid the amount certified.

§ 3.3.12.4 The certification of an Application for Payment or a Project Application for Payment by the Construction Manager shall not be a representation that the Construction Manager has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, procedures, or sequences for a Contractor's own Work; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate each Contractor's right to payment; or (4) ascertained how or for what purpose that Contractor has used money previously paid on account of the Contract Sum.

§ 3.3.13 The Construction Manager shall obtain and review the safety programs developed by each Contractor solely and exclusively for purposes of coordinating the safety programs with those of the other Contractors and for making recommendations for any additional safety measures to be considered in the Work of the Contractors. The Construction Manager's responsibilities for coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 3.3.14 The Construction Manager shall determine in general that the Work of each Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. The Construction Manager shall have the authority to reject Work that does not conform to the Contract Documents and shall notify the Architect about the rejection. The failure of the Construction Manager to reject Work shall not constitute acceptance of the Work. The Construction Manager shall record any rejection of Work in its daily log and include information regarding the rejected Work in its progress reports to the Architect and Owner pursuant to Section 3.3.22.1. Upon written authorization from the Owner, the Construction Manager may require and make arrangements for additional inspection or testing of the Work in accordance with the provisions of the Contract Documents, whether or not the Work is fabricated, installed or completed, and the

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Construction Manager shall give timely notice to the Architect of when and where the tests and inspections are to be made so that the Architect may be present for such procedures.

§ 3.3.15 The Construction Manager shall advise and consult with the Owner and Architect during the performance of its Construction Phase Services. The Construction Manager shall have authority to act on behalf of the Owner only to the extent provided in this Agreement. The Construction Manager shall not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work of each of the Contractors, since these are solely the Contractor's rights and responsibilities under the Contract Documents. The Construction Manager shall not be responsible for a Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. However, the Construction Manager shall be responsible to document and report to the Architect and Owner a Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents in accordance with§ 3.3.14. The Construction Manager shall be responsible for the Construction Manager's negligent acts or omissions, but shall not have control over or charge of, and shall not be responsible for, acts or omissions of the Contractors, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 3.3.16 The Construction Manager shall transmit to the Architect requests for interpretations, and requests for information of the meaning and intent of the Drawings and Specifications, and provide its written recommendation. The Construction Manager shall assist in the resolution of questions that may arise.

§ 3.3.17 The Construction Manager shall review requests for changes, assist in negotiating Contractors' proposals, submit recommendations to the Architect and Owner, and, if the proposed changes are accepted or required by the Owner, prepare Change Orders or Construction Change Directives that incorporate the Architect's modifications to the Contract Documents.

§ 3.3.18 The Construction Manager shall assist the Initial Decision Maker in the review, evaluation and documentation of Claims, subject to Section 4.2.2.7.

§ 3.3.19 Utilizing the submittal schedules provided by each Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 3.3.20 The Construction Manager shall promptly review all Shop Drawings, Product Data, Samples, and other submittals from the Contractors for compliance with the submittal requirements of the Contract, coordinate submittals with information contained in related documents, and transmit to the Architect those that the Construction Manager recommends for approval. The Construction Manager's actions shall be taken in accordance with the Project submittal schedule approved by the Architect, or in the absence of an approved Project submittal schedule, with such reasonable promptness as to cause no delay in the Work or in the activities of the Contractors, the Owner, or the Architect.

§ 3.3.20.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractors by the Contract Documents, the Construction Manager shall review those submittals for sequencing, constructability, and coordination impacts on the other Contractors. The Construction Manager shall discuss its findings with the Owner and the Architect, and coordinate resolution, as necessary, of any such impacts.

§ 3.3.21 The Construction Manager shall keep a daily log containing a record of weather, each Contractor's Work on the site, number of workers, identification of equipment, Work accomplished, problems encountered, and other similar relevant data as the Owner may require.

§ 3.3.21.1 The Construction Manager shall collect, review for accuracy, and compile the Contractors' daily logs; and include them in the Construction Manager's reports prepared and submitted in accordance with section 3.3.21.2.

§ 3.3.21.2 The Construction Manager shall record the progress of the Project. On a monthly basis, or otherwise as agreed to by the Owner, the Construction Manager shall submit written progress reports to the Owner and Architect, showing percentages of completion and other information identified below:

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.1 Work completed for the period;
.2 Project schedule status;
.3 Submittal schedule and status report, including a summary of remaining and outstanding submittals;
.4 Request for information, Change Order, and Construction Change Directive status reports;
.5 Tests and inspection reports;
.6 Status report of nonconforming and rejected Work;
.7 Daily logs;
.8 Summary of all Contractors' Applications for Payment;
.9 Cumulative total of the Cost of the Work to date including the Construction Manager's compensation and reimbursable expenses at the job site, if any;
.10 Cash-flow and forecast reports;
.11 Photographs to document the progress of the Project;
.12 Status reports on permits and approvals of authorities having jurisdiction; and
.13 Any other items the Owner may require:
a) Site Safety and Applicable Permit Compliance.
b) Recommendations from the Permanent Building Committee

§ 3.3.21.3 In addition, the Construction Manager shall include the following additional information in its progress reports:

.1 Contractors' work force reports;
.2 Equipment utilization report;
.3 Cost summary, comparing actual costs to updated cost estimates; and
.4 Provide detailed summary of accounting for all allowances in each trade contract,
.5 Review monthly soft cost invoices and provide recommendations for payment to Building Committee for all project related non-trade project expenses.
.6 Any other items as the Owner may require:
a) Provide projections of anticipated soft costs and track throughout the project
b) Opinions regarding eligibility of work for grant reimbursement from CT OSF.

§ 3.3.22 Utilizing the documents provided by the Contractors, the Construction Manager shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form to the greatest extent practical or otherwise paper copy, available to the Owner, Architect, and Contractors. Upon completion of the Project, the Construction Manager shall deliver them to the Owner in an organized folder structure acceptable to the Owner.

§ 3.3.23 The Construction Manager shall arrange for the delivery, storage, protection and security of Owner-purchased materials, systems and equipment that are a part of the Project until such items are incorporated into the Work.

(Paragraph deleted)
§ 3.3.23.1 The Construction Manager shall coordinate the staging, assembly and distribution of FF&E with the work of the trade contractors to allow sufficient time and space for this work to be performed as required.

§ 3.3.23.2 The Construction Manager shall develop a schedule for all FF&E vendors work and conduct pre-installation coordination meeting(s) as necessary to ensure the requirements for the project are met by each of the vendors and their assembly subcontractors.

§ 3.3.23.3 The Construction Manager shall develop a schedule for the playground vendors and site contractor to properly coordinate the sequence of their respective work and minimize conflicts. The contractor shall conduct pre-installation coordination meeting(s) as necessary to ensure the requirements for the project are met by the playground equipment vendor and their installation subcontractors.**§ 3.3.24** With the Owner's Commissioning Agent and maintenance personnel, the Construction Manager shall observe the Contractors' final testing and start-up of utilities, operational systems and equipment and observe any commissioning as the Contract Documents may require.

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§ 3.3.25 When the Construction Manager considers each Contractor's Work or a designated portion thereof substantially complete, the Construction Manager shall, jointly with that Contractor, prepare for the Architect a list of incomplete or unsatisfactory items and a schedule for their completion. The Construction Manager shall assist the Architect in conducting inspections to determine whether the Work or designated portion thereof is substantially complete.

§ 3.3.26 When the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager shall prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion. The Construction Manager shall submit the executed Certificate to the Owner and Contractors. The Construction Manager shall coordinate the correction and completion of the Work. Following issuance of a Certificate of Substantial Completion of the Work or a designated portion thereof, the Construction Manager shall perform an inspection to confirm the completion of the Work of the Contractors and make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection. The Construction Manager shall assist the Architect in conducting the final inspection.

§ 3.3.27 The Construction Manager shall forward to the Owner, with a copy to the Architect, the following information received from the Contractors: (1) certificates of insurance ; (2) consent of surety or sureties, if any, to reduction in or partial release of retainage or the making of final payment; (3) affidavits, receipts, releases and waivers of liens or bonds indemnifying the Owner against liens; and (4) any other documentation required of the Contractors under the Contract Documents, including warranties and similar submittals.

§ 3.3.28 The Construction Manager shall coordinate receipt, and delivery to the Owner, of other items provided by the Contractors, such as keys, manuals, and record drawings. The Construction Manager shall forward to the Architect a final Project Application for Payment and Project Certificate for Payment, or a final Application for Payment and final Certificate for Payment, upon the Contractors' compliance with the requirements of the Contract Documents.

§ 3.3.29 Duties, responsibilities and limitations of authority of the Construction Manager as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Construction Manager, Architect, and Contractors. Consent shall not be unreasonably withheld.

§ 3.3.30 Upon request of the Owner, and prior to the expiration of one year from the date of Substantial Completion, the Construction Manager shall, without additional compensation, conduct a meeting with the Owner and Architect to review the facility operations and performance.

§ 3.3.31 The Construction Manager shall prepare AIA G701 Change Orders to include all Owner-approved Change Order Proposals (COP) and coordinate the execution by the trade contractors, design team and Owner.

§ 3.3.32 The Construction Manager shall prepare SCG 042CO State Change Orders to include all Owner-approved AIA G701 Change Orders and Change Order Proposals (COP) and coordinate the execution by the trade contractors, design team and Owner. The Construction Manager shall also prepare OSCGR Excel Summary of Contracts, Change Order Summary and Detail Change Order worksheets with reimbursement eligibility determination for each change order cost component.

§ 3.3.34 The Construction Manager shall review correspondence and responses from OSCGR regarding change orders and allowances by providing detailed explanations, supporting documentation and justifications to maximize eligibility of project expenditures.

§ 3.3.35 The Construction Manager shall cooperate and assist with the implementation of Net-Zero Goals as established by Owner, commissioning agent and design team.

§ 3.3.36 The Construction Manager shall coordinate and document compliance with all High Performance Building Standards (HPBS) measures with Architect and commissioning agent as required to achieve intended certification.

§ 3.4 Post-Occupancy and Warranty Phase

§ 3.4.1 The Construction Manager shall coordinate and monitor resolution of "punch list" items,

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§ 3.4.2 The Construction Manager shall coordinate, monitor, and resolve all warranty issues during the one-year general warranty period and beyond, where applicable,

§ 3.4.3 The Construction Manager shall ensure delivery and receipt of all O & M manuals and any preventative maintenance data required,

§ 3.4.4 The Construction Manager shall provide on-site staff to coordinate resolution of commissioning issues by trade contractors and vendors prior to 1st day of school and as required during first year of occupancy,

§ 3.4.5 The Construction Manager shall provide or coordinate all formal owner training of all systems,

§ 3.4.6 The Construction Manager shall schedule and conduct a "pre-end of warranty" walk-through.

§ 3.4.7 The Construction Manager shall assist in the preparation of all project documentation for close out of the project to comply with the Connecticut Office of School Construction Grants & Review (OSCGR) requirements,

§ 3.4.8 The Construction Manager shall assist in the preparation of any responses to requests from OSCGR for follow-up documentation on change orders, allowance reconciliation and other related financial project information up to and through completion of grant audit.

ARTICLE 4 SUPPLEMENTAL AND ADDITIONAL SERVICES

§ 4.1 Supplemental Services

§ 4.1.1 The services listed below are not included in Basic Services but may be required for the Project. The Construction Manager shall provide the listed Supplemental Services only if specifically designated in the table below as the Construction Manager's responsibility, and the Owner shall compensate the Construction Manager as provided in Section 11.2. Unless otherwise specifically addressed in this Agreement, if neither the Owner nor the Construction Manager is designated, the parties agree that the listed Supplemental Service is not being provided for the Project.
(Paragraph deleted)

Supplemental Services	Responsibility *(Construction Manager, Owner or not provided)*
§ 4.1.1.1 Measured drawings	
§ 4.1.1.2 Tenant-related services	
§ 4.1.1.3 Commissioning	*Owner*
§ 4.1.1.4 Development of a commissioning plan	*Owner*
§ 4.1.1.5 Sustainable Project Services pursuant to Section 4.1.3	
§ 4.1.1.6 Furniture, furnishings and equipment delivery, and installation coordination	
§ 4.1.1.7 Furniture, furnishings and equipment procurement assistance	
§ 4.1.1.8 Assistance with site selection	
§ 4.1.1.9 Assistance with selection of the Architect	
§ 4.1.1.10 Furnish land survey	
§ 4.1.1.11 Furnish geotechnical engineering services	
§ 4.1.1.12 Provide insurance advice	
§ 4.1.1.13 Provide supplemental Project risk analysis and mitigation strategies	
§ 4.1.1.14 Stakeholder relationships management	
§ 4.1.1.15 Owner moving coordination	
§ 4.1.1.16 Coordination of Owner's Separate Contractors	
§ 4.1.1.17 Other Supplemental Services	

§ 4.1.2 Description of Supplemental Services

§ 4.1.2.1 A description of each Supplemental Service identified in Section 4.1.1 as the Construction Manager's responsibility is provided below.

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None

§ 4.1.2.2 A description of each Supplemental Service identified in Section 4.1.1 as the Owner's responsibility is provided below.
Commissioning Agent - TBD

§ 4.1.3 If the Owner identified a Sustainable Objective in Article 1, the Construction Manager shall provide, as a Supplemental Service, the Sustainability Services required in AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, attached to this Agreement. The Owner shall compensate the Construction Manager as provided in Section 11.2.

§ 4.2 Construction Manager's Additional Services

§ 4.2.1 The Construction Manager may provide Additional Services after execution of this Agreement, without invalidating this Agreement. Except for services required due to the fault of the Construction Manager, any Additional Services provided in accordance with this Section 4.2 shall entitle the Construction Manager to compensation pursuant to Section 11.3.

§ 4.2.2 Upon recognizing the need to perform the following Additional Services, the Construction Manager shall notify the Owner with reasonable promptness and explain the facts and circumstances giving rise to the need. The Construction Manager shall not proceed to provide the following Additional Services until the Construction Manager receives the Owner's written authorization:

.1 Services necessitated by a change in the Initial Information, previous instructions or approvals given by the Owner, or a material change in the Project including size, quality, complexity, or the Owner's schedule. Services necessitated by sections 6.4 and 6.6 shall not be considered additional services;

.2 Services necessitated by the enactment or revision of codes, laws, regulations or official interpretations after the date of this Agreement;

.3 Preparation

(Paragraphs deleted)

for, and attendance at, a dispute resolution proceeding or legal proceeding, except where the Construction Manager is party thereto;

.4 Consultation concerning replacement of Work resulting from fire or other cause during construction and furnishing services required in connection with the replacement of such Work; or

§ 4.2.3 To avoid delay in the Construction Phase, the Construction Manager shall provide the following Additional Services, notify the Owner with reasonable promptness, and explain the facts and circumstances giving rise to the need. If, upon receipt of the Construction Manager's notice, the Owner determines that all or parts of the services are not required, the Owner shall give prompt written notice to the Construction Manager of the Owner's determination. The Owner shall compensate the Construction Manager for the services provided prior to the Construction Manager's receipt of the Owner's notice:

.1 Providing assistance to the Initial Decision Maker in evaluating an extensive number of Claims submitted by a Contractor or others in connection with the Work.

.2 Services required in an emergency to coordinate the activities of a Contractor or Contractors in the event of risk of personal injury or serious property damage, consistent with Section 3.3.15.

§ 4.2.4 Except for services required under Section 3.3.30, Preconstruction services shall be complcted by March 1, 2021 and Construction services (including 3 months of reduced staff for close-out) shall be completed in 17 months & no later than November 30, 2022. Services provided after these dates shall be compensated as Additional Services to the extent the Construction Manager incurs additional cost in providing those Preconstruction and Construction Phase Services if the failure to complete is either through no fault of the CM or no fault of the Owner.

(Paragraph deleted)

ARTICLE 5 OWNER'S RESPONSIBILITIES

§ 5.1 Unless otherwise provided for under this Agreement, the Owner shall provide information in a timely manner regarding requirements for and limitations on the Project, including a written program, which shall set forth the Owner's objectives; schedule; constraints and criteria; special equipment; systems; and site requirements.

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§ 5.2 The Owner shall establish the Owner's budget for the Project, including (1) the budget for the Cost of the Work as defined in Section 6.1; (2) the Owner's other costs; and (3) reasonable contingencies related to all of these costs. The Owner shall update the Owner's budget for the Project as necessary throughout the duration of the Project until final completion. If the Owner significantly increases or decreases the Owner's budget for the Cost of the Work, the Owner shall notify the Construction Manager and Architect. The Owner and the Architect, in consultation with the Construction Manager, shall thereafter agree to a corresponding change in the Project's scope and quality.

§ 5.3 The Owner acknowledges that accelerated, phased, or fast-track design and construction provides a benefit, but also carries with it the risk of additional costs. If the Owner selects accelerated, phased or fast-track scheduling, the Owner agrees to include in the budget for the Project sufficient contingencies to cover such costs.

§ 5.4 The Owner shall retain an Architect to provide services, duties and responsibilities as described in AIA Document B132–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition. The Owner shall provide the Construction Manager with a copy of the scope of services in the agreement executed between the Owner and Architect, and any further modifications to the Architect's scope of services in the agreement.

§ 5.5 The Owner shall identify a representative authorized to act on the Owner's behalf with respect to the Project. The Owner shall render decisions pertaining to documents the Construction Manager submits in a timely manner in order to avoid unreasonable delay in the orderly and sequential progress of the Construction Manager's services.

§ 5.6 Unless provided by the Construction Manager, the Owner shall furnish surveys to describe physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; designated wetlands; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries, and contours of the site; locations, dimensions, and other necessary data with respect to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All the information on the survey shall be referenced to a Project benchmark.

§ 5.7 Unless provided by the Construction Manager, the Owner shall furnish services of geotechnical engineers, which may include test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous materials, seismic evaluation, ground corrosion tests and resistivity tests, including necessary operations for anticipating subsoil conditions, with written reports and appropriate recommendations.

§ 5.8 The Owner shall provide the Supplemental Services designated as the Owner's responsibility in Section 4.1.1.

§ 5.9 If the Owner identified a Sustainable Objective in Article 1, the Owner shall fulfill its responsibilities as required in AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, attached to this Agreement.

§ 5.10 The Owner shall coordinate the services of its own consultants with those services provided by the Construction Manager. Upon the Construction Manager's request, the Owner shall furnish copies of the scope of services in the contracts between the Owner and the Owner's consultants. The Owner shall furnish the services of consultants other than those designated as the responsibility of the Construction Manager in this Agreement, or authorize the Construction Manager to furnish them as an Additional Service, when the Construction Manager requests such services and demonstrates that they are reasonably required by the scope of the Project. The Owner shall require that its consultants and contractors maintain insurance, including professional liability insurance, as appropriate to the services or work provided.

§ 5.11 The Owner shall furnish tests, inspections and reports required by law or the Contract Documents, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous materials.

§ 5.12 The Owner shall furnish all legal, insurance and accounting services, including auditing services, that may be reasonably necessary at any time for the Project to meet the Owner's needs and interests.

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§ 5.13 The Owner shall provide prompt written notice to the Construction Manager and Architect if the Owner becomes aware of any fault or defect in the Project, including errors, omissions or inconsistencies in the Architect's Instruments of Service or any fault or defect in the Construction Manager's services.

§ 5.14 The Owner reserves the right to perform construction and operations related to the Project with the Owner's own forces, and to award contracts in connection with the Project which are not part of the Construction Manager's responsibilities under this Agreement. The Construction Manager shall notify the Owner if any such independent action will interfere with the Construction Manager's ability to perform the Construction Manager's responsibilities under this Agreement. When performing construction or operations related to the Project, the Owner agrees to be subject to the same obligations and to have the same rights as the Contractors.

§ 5.15 The Owner shall communicate with the Contractors and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect.

§ 5.16 Before executing the Contracts for Construction, the Owner shall coordinate the Construction Manager's duties and responsibilities set forth in the Contracts for Construction with the Construction Manager's services set forth in this Agreement. The Owner shall provide the Construction Manager a copy of the executed agreements between the Owner and Contractors, including the General Conditions of the Contracts for Construction.

§ 5.17 The Owner shall provide the Construction Manager access to the Project site prior to commencement of the Work and shall obligate the Contractors to provide the Construction Manager access to the Work wherever it is in preparation or progress.

§ 5.18 Within 15 days after receipt of a written request from the Construction Manager, the Owner shall furnish the requested information as necessary and relevant for the Construction Manager to evaluate, give notice of, or enforce lien rights.

ARTICLE 6 COST OF THE WORK

The Construction Manager's compensation (Article 11) is not based on the Cost of the Work.

§ 6.1 For purposes of this Agreement, the Cost of the Work shall be the total cost to the Owner to construct all elements of the Project designed or specified by the Architect and shall include the Contractors' general conditions costs, overhead and profit. The Cost of the Work also includes the reasonable value of labor, materials, and equipment, donated to, or otherwise furnished by, the Owner. The Cost of the Work includes the compensation of the Construction Manager and Construction Manager's Consultants during the Construction Phase only, including compensation for reimbursable expenses at the job site, if any. The Cost of the Work does not include the compensation of the Architect; the costs of the land, rights-of-way, financing, or contingencies for changes in the Work; or other costs that are the responsibility of the Owner.

§ 6.2 The Owner's budget for the Cost of the Work is provided in Initial Information, and shall be adjusted throughout the Project as required under Sections 5.2 and 6.4. Evaluations of the Owner's budget for the Cost of the Work, and the estimates of the Cost of the Work prepared by the Construction Manager, represent the Construction Manager's judgment as a person or entity familiar with the construction industry. It is recognized, however, that neither the Construction Manager nor the Owner has control over the cost of labor, materials; or equipment; the Contractors' methods of determining bid prices; or competitive bidding, market, or negotiating conditions. Accordingly, the Construction Manager cannot and does not warrant or represent that bids or negotiated prices will not vary from the Owner's budget for the Cost of the Work, or from any estimate of the Cost of the Work, or evaluation, prepared or agreed to by the Construction Manager.

§ 6.3 If the Architect is providing cost estimating services as a Supplemental Service, and a discrepancy exists between the Construction Manager's cost estimates and the Architect's cost estimates, the Construction Manager and the Architect shall work together to reconcile the cost estimates.

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§ 6.4 If the Construction Manager's estimate of the Cost of the Work exceeds the Owner's budget for the Cost of the Work, the Construction Manager, in consultation with the Architect, shall make appropriate recommendations to the Owner to adjust the Project's size, quality, or budget for the Cost of the Work, and the Owner shall cooperate with the Construction Manager and Architect in making such adjustments.

§ 6.5 If the Construction Manager's estimate of the Cost of the Work exceeds the Owner's budget for the Cost of the Work, the Owner shall

.1 give written approval of an increase in the budget for the Cost of the Work;
.2 terminate in accordance with Section 9.5;
.3 in consultation with the Construction Manager and Architect, revise the Project program, scope, or quality as required to reduce the Cost of the Work; or
.4 implement any other mutually acceptable alternative.

§ 6.6 If the Owner chooses to revise the Project program, scope, or quality to reduce the Cost of the Work pursuant to Section 6.5.3, or if the bids or proposals received from the prospective Contractors, in the aggregate, exceed the Owner's budget for the Cost of the Work, and the Owner chooses to revise the Project program, scope, or quality to reduce the Cost of the Work , the Construction Manager shall cooperate with the Owner and Architect to develop the necessary revisions, update the cost estimate, and obtain additional bids. The Construction Manager will perform the services described in Sections 6.4 and 6.6 without additional compensation.

ARTICLE 7 COPYRIGHTS AND LICENSES

The Construction Manager and the Construction Manager's consultants, if any, shall not own or claim a copyright in the Instruments of Service. The Construction Manager, the Construction Manager's consultants, if any, and the Owner warrant that in transmitting Instruments of Service, or any other information, the transmitting party is the copyright owner of such information or has permission from the copyright owner to transmit such information for its use on the Project.

ARTICLE 8 CLAIMS AND DISPUTES

§ 8.1 General

§ 8.1.1 The Owner and Construction Manager shall commence all claims and causes of action against the other and arising out of or related to this Agreement, whether in contract, tort, or otherwise, in accordance with the requirements of the binding dispute resolution method selected in this Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Construction Manager waive all claims and causes of action not commenced in accordance with this Section 8.1.1.

§ 8.1.2 To the extent damages are covered by property insurance, the Owner and Construction Manager waive all rights against each other and against the contractors, consultants, agents, and employees of the other for damages, except such rights as they may have to the proceeds of such insurance as set forth in AIA Document A232–2019, General Conditions of the Contract for Construction. The Owner or the Construction Manager, as appropriate, shall require of the contractors, consultants, agents, and employees of any of them, similar waivers in favor of the other parties enumerated herein.

§ 8.1.3 The Construction Manager shall indemnify and hold the Owner and the Owner's officers and employees harmless from and against damages, losses and judgments arising from claims by third parties, including reasonable attorneys' fees and expenses recoverable under applicable law, but only to the extent they are caused by the negligent acts or omissions of the Construction Manager, its employees and its consultants in the performance of professional services under this Agreement. The Construction Manager's obligation to indemnify and hold the Owner and the Owner's officers and employees harmless does not include a duty to defend. The Construction Manager's duty to indemnify the Owner under this Section 8.1.3 shall be limited to the available proceeds of the insurance coverage required by this Agreement.

§ 8.1.4 The Construction Manager and Owner waive consequential damages for claims, disputes, or other matters in question, arising out of or relating to this Agreement. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination of this Agreement, except as specifically provided in Section 9.7.

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§ 8.2 Mediation

§ 8.2.1 Any claim, dispute or other matter in question arising out of or related to this Agreement shall be subject to mediation as a condition precedent to binding dispute resolution. If such matter relates to or is the subject of a lien arising out of the Construction Manager's services, the Construction Manager may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the matter by mediation or by binding dispute resolution.

§ 8.2.2 The Owner and Construction Manager shall endeavor to resolve claims, disputes and other matters in question between them by mediation, which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of this Agreement. A request for mediation shall be made in writing, delivered to the other party to this Agreement, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of a complaint or other appropriate demand for binding dispute resolution but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration proceeding is stayed pursuant to this section, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 8.2.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 8.2.4 If the parties do not resolve a dispute through mediation pursuant to this Section 8.2, the method of binding dispute resolution shall be the following:

[X] Litigation in a court of competent jurisdiction

(Paragraphs deleted)

If the Owner and Construction Manager do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, the dispute will be resolved in a court of competent jurisdiction.

§ 8.3 The provisions of this Article 8 shall survive the termination of this Agreement.

(Paragraphs deleted)

ARTICLE 9 TERMINATION OR SUSPENSION

§ 9.1 If the Owner fails to make payments to the Construction Manager in accordance with this Agreement, such failure shall be considered substantial nonperformance and cause for termination or, at the Construction Manager's option, cause for suspension of performance of services under this Agreement. If the Construction Manager elects to suspend services, the Construction Manager shall give seven days' written notice to the Owner before suspending services. In the event of a suspension of services, the Construction Manager shall have no liability to the Owner for delay or damage caused the Owner because of such suspension of services. Before resuming services, the Owner shall pay the Construction Manager all sums due prior to suspension and any expenses incurred in the interruption and resumption of the Construction Manager's services. The Construction Manager's fees for the remaining services and the time schedules shall be equitably adjusted.

§ 9.2 If the Owner suspends the Project, the Construction Manager shall be compensated for services performed prior to notice of such suspension. When the Project is resumed, the Construction Manager shall be compensated for expenses incurred in the interruption and resumption of the Construction Manager's services. The Construction Manager's fees for the remaining services and the time schedules shall be equitably adjusted.

§ 9.3 If the Owner suspends the Project for more than 90 cumulative days for reasons other than the fault of the Construction Manager, the Construction Manager may terminate this Agreement by giving not less than seven days' written notice.

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§ 9.4 Either party may terminate this Agreemcnt upon not less than seven days' written notice should the other party fail substantially to perform in accordance with the terms of this Agreement through no fault of the party initiating the termination.

§ 9.5 The Owner may terminate this Agreement upon not less than seven days' written notice to the Construction Manager for the Owner's convenience and without cause.

§ 9.6 If the Owner terminates this Agreement for its convenicnce pursuant to Section 9.5, or the Construction Manager terminates this Agrcement pursuant to Section 9.3, the Owner shall compensate the Construction Manager for services performed prior to termination, Reimbursable Expenses incurred, and costs attributable to termination, including the costs attributable to the Construction Manager's termination of consultant agreements.

§ 9.7 In addition to any amounts paid under Section 9.6, if the Owner terminates this Agreement for its convenience pursuant to Section 9.5, or the Construction Manager terminates this Agreement pursuant to Section 9.3, the Owner shall pay to the Construction Manager the following termination fee:

Based on actual work completed to date

(Paragraph deleted)

ARTICLE 10 MISCELLANEOUS PROVISIONS

§ 10.1 This Agreement shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules.

§ 10.2 Terms in this Agreement shall have the same meaning as those in AIA Document A232–2019, General Conditions of the Contract for Construction, except for purposes of this Agreement, thc term "Work" shall include the work of all Contractors under the administration of the Construction Manager and the Architect.

§ 10.3 The Owner and Construction Manager, respectively, bind themselves, their agents, successors, assigns, and legal representatives to this Agreement. Neither the Owner nor the Construction Manager shall assign this Agreement without the written consent of the other, except that the Owner may assign this Agreement to a lender providing financing for the Project if the lender agrees to assume the Owner's rights and obligations under this Agreemcnt, including any payments due to the Construction Manager by the Owner prior to the assignment.

§ 10.4 If the Owner requests the Construction Manager to execute certificates, the proposed language of such certificates shall be submitted to the Construction Manager for review at least 14 days prior to the requested dates of execution. If the Owner requests the Construction Manager to executc consents reasonably required to facilitate assignment to a lender, the Construction Manager shall execute all such consents that are consistent with this Agreement, provided the proposed consent is submitted to the Construction Manager for review at least 14 days prior to execution. The Construction Manager shall not be required to execute certificates or consents that would require knowledge, services, or responsibilities beyond the scope of this Agreement.

§ 10.5 Nothing contained in this Agreement shall create a contractual relationship with, or a cause of action in favor of, a third party against either the Owner or Construction Manager.

§ 10.6 Unless otherwise required in this Agreement, the Construction Manager shall have no responsibility for the discovery, presence, handling, removal or disposal of, or exposure of pcrsons to, hazardous materials or toxic substances in any form at the Project site.

§ 10.7 The Construction Manager shall have the right to include photographic or artistic representations of the design of the Project among the Construction Manager's promotional and professional materials. The Construction Manager shall provide professional credit for the Architect and the Contractors in the Construction Manager's promotional materials for the Project. The Construction Manager shall be given reasonable access to the completed Project to make such representations. However, the Construction Manager's materials shall not include the Owner's confidential or proprietary information if the Owner has previously advised the Construction Manager in writing of the specific information considered by the Owner to be confidential or proprietary. The Owner shall provide professional credit for

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the Construction Manager in the Owner's promotional materials for the Project. This Section 10.7 shall survive the termination of this Agreement unless the Owner terminates this Agreement for cause pursuant to Section 9.4.

§ 10.8 If the Construction Manager or Owner receives information specifically designated as "confidential" or "business proprietary," the receiving party shall keep such information strictly confidential and shall not disclose it to any other person except as set forth in Section 10.8.1. This Section 10.8 shall survive the termination of this Agreement.

§ 10.8.1 The receiving party may disclose "confidential" or "business proprietary" information after 7 days' notice to the other party, when required by law, arbitrator's order, or court order, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or to the extent such information is reasonably necessary for the receiving party to defend itself in any dispute. The receiving party may also disclose such information to its employees, consultants, or contractors in order to perform services or work solely and exclusively for the Project, provided those employees, consultants and contractors are subject to the restrictions on the disclosure and use of such information as set forth in this Section 10.8.

§ 10.9 The invalidity of any provision of the Agreement shall not invalidate the Agreement or its remaining provisions. If it is determined that any provision of the Agreement violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Agreement shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Agreement.

ARTICLE 11 COMPENSATION

The Construction Manager's compensation is not based on the Cost of the Work.

§ 11.1 For the Construction Manager's Basic Services described under Article 3, the Owner shall compensate the Construction Manager as follows:

§ 11.1.1 For Preconstruction, Solicitation and Award Phase Services in Section 3.2:

1)	**Design and Pre-Construction Phase Services**	
a.	Schematic Design Estimate	$
b.	Design Development Estimate	$
c.	Construction Documents Estimate	$
d.	All Other §V 1) Design and Pre-Construction Services	
e.	Construction Document Review (Allowance)	$
a thru e	**Subtotal - Design and Pre-Construction Phase Services**	$

2)	**Solicitation and Award Phase Services**	
a.	CPM Construction Schedule for Bid Packages	$
b.	Trade Contractor Bid Packages	$
c.	CHRO Plan & All PA 15-5 Related Services	
d.	Pre-bid conferences, review of bids & Scope Reviews	$
e.	All Other § V2) Solicitation and Award Phase Services	
a thru e.	**Subtotal - Solicitation and Award Phase Services**	$

§ 11.1.2 For Construction Phase Services in Section 3.3:

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3)	**Construction Phase Services**	
a.	Construction Phase Services (14-months)*	$
b.	Construction Phase Services (Additional monthly fee)	$
c.	Construction Reimbursible Estimate (per Task Matrix)	$
a+c	**Subtotal - Construction Phase Services**	$

§ 11.1.3 For Post-Occupancy and Warranty Phase Services in Section 3.4:

4)	**Post-Occupancy and Warranty Phase**	
a.	One year warranty & project closeout	$
b.	Post warranty period and OSCGR Grant Closeout	
a+b	**Subtotal - Post-Occupancy & Warranty Phase Services**	$

§ 11.2 For any Sustainability Services required pursuant to Section 4.1.3, the Owner shall compensate the Construction Manager as follows:
(Paragraphs deleted)
None - Included in Basic Services

§ 11.3 For Additional Services that may arise during the course of the Project, including those under Section 4.2, the Owner shall compensate the Construction Manager as follows:
(Paragraphs deleted)
As mutually agreed based on rates provided in the fee proposal.

§ 11.4 Compensation for Supplemental and Additional Services of the Construction Manager's consultants when not included in Sections 11.2 or 11.3, shall be the amount invoiced to the Construction Manager plus
(Paragraphs deleted)

§ 11.5 The hourly billing rates for services of the Construction Manager and the Construction Manager's consultants are set forth below. The rates shall be adjusted in accordance with the Construction Manager's and Construction Manager's consultants' normal review practices.
(Paragraphs deleted)
See attached hourly billing rates in fee proposal
(Table deleted)

§ 11.6 Compensation for Reimbursable Expenses

§ 11.6.1 Reimbursable Expenses are in addition to compensation for Basic, Supplemental, and Additional Services and include expenses incurred by the Construction Manager and the Construction Manager's consultants directly related to the Project, as follows:

.1 Field Office Trailer Installation/Rental/Removal
.2 Shed/Storage Trailer Rental
.3 Field Office maintenance & Repair
.4 Field Office Internet Connection & Maintenance
.5 Field Office Furniture
.6 Field Office Security System
.7 Stationery & Office Supplies
.8 Postage & Shipping
.9 Maintenance & Supplies for Multifunction

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.10 Office Utilities
.11 Drinking Water/Coffee Supplies
.12 First Aid & Safety Equipment Supplies
.13 Owner-requested Project Signage
.14 Records Storage & Approved Misc. Supplies
.15 Bid Document Printing
.16 Reproduce Contract Documents
.17 Temporary Water consumption
.18 Temporary Electrical - Consumption
.19 Temporary Heat - Field Consumption

§ 11.6.2 For Reimbursable Expenses 11.6.1.1-11.6.1.16 the compensation shall be the expenses incurred by the Construction Manager and the Construction Manager's consultants plus of the expenses incurred. For Reimbursable Expenses 11.6.1.17-11.6.1.19 the compensation shall be the direct costs without markup for payment of these utilities charges.

§ 11.7 Construction Manager's Insurance. If the types and limits of coverage required in Section 2.8 are in addition to the types and limits the Construction Manager normally maintains, the Owner shall pay the Construction Manager for the additional costs incurred by the Construction Manager for the additional coverages as set forth below.

Not applicable

§ 11.8 Payments to the Construction Manager
§ 11.8.1 Progress Payments
§ 11.8.1.1 Unless otherwise agreed, payments for services shall he made monthly in proportion to services performed. Payments are due and payablc upon presentation of the Construction Manager's invoice.

(Paragraphs deleted)
§ 11.8.1.2 The Owner shall not withhold amounts from the Construction Manager's compensation to impose a penalty or liquidated damages on the Construction Manager, or to offset sums requested by or paid to Contractors for thc cost of changes in the Work, unless the Construction Manager agrees or has been found liable for the amounts in a binding dispute resolution proceeding.

§ 11.8.1.3 Records of Reimbursable Expenses, expenses pertaining to Supplemental and Additional Services, and services performed on the basis of hourly rates shall be available to the Owner at mutually convenient times.

ARTICLE 12 SPECIAL TERMS AND CONDITIONS
Special terms and conditions that modify this Agreement are as follows:

None

ARTICLE 13 SCOPE OF THE AGREEMENT
§ 13.1 This Agreement represents the entire and integrated agreement between the Owner and the Construction Manager and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both the Owner and Construction Manager.

§ 13.2 This Agreement is comprised of the following documents identified below:
.1 AIA Document C132™–2019, Standard Form Agreement Between Owner and Construction Manager as Adviser
.2
(Paragraphs deleted)
Exhibits:
[X] AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, dated May ___, 2020

(Paragraphs deleted)
.3 Other documents:

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RFP 19/20-50 CM Services for MPS Phase 2 Elementary Renovations and Construction Manager's responses.

This Agreement is entered into as of the day and year first written above.

OWNER *(Signature)*	**CONSTRUCTION MANAGER** *(Signature)*
Scott Shanley, General Manager	Aaron L. Medwick - Vice President
(Printed name and title)	*(Printed name and title)*

APPROVED AS TO FORM
Timothy P. O'Neil
TIMOTHY P. O'NEIL
Administrative Staff Attorney
Manchester Town Attorney's Office

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SECTION 006113 - PERFORMANCE AND PAYMENT BONDS

1. GENERAL

A. Prior to the Construction Manager signing the contract agreement, he will require the trade contractor(s) to furnish separate performance and payment bonds covering the faithful performance of the trade contract agreement.

The performance bond and the payment bond shall each be made out in one hundred percent (100%) of the guaranteed maximum contract amount.

B. The Performance Bond and the Labor and Material Bond (Payment Bond) shall each be on the forms enclosed in this section.

The bonds shall be signed by an official of the bonding company and shall be accompanied by the bonding agent's written power of attorney.

Provide three (3) copies each of the bonds and the power of attorney in order that one (1) copy of each may be attached to each copy of the contract agreement.

C. The Contractor(s) shall include in his proposal amount the total premiums for the performance and payment bonds.

D. The Bonds will be executed by a Surety Company or Companies with an AM Best Rating of A-VII or better that are authorized to do business in the State of Connecticut and who are acceptable to the Construction Manager. The cost of these Bonds is to be paid for by the contractor and included in his bid.

AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)
Town of Manchester
41 Center Street
Manchester, CT 06045

CONSTRUCTION CONTRACT
Date:
Amount: $
Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

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

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

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§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, 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.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

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§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address:		Address:	

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User Notes: (1130704963)

AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)
Town of Manchester
41 Center Street
Manchester, CT 06045

CONSTRUCTION CONTRACT
Date:
Amount: $
Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL	**SURETY**
Company: *(Corporate Seal)*	Company: *(Corporate Seal)*
Signature: _____	Signature: _____
Name and Title:	Name and Title:

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

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

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

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§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, 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.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

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User Notes: (862809931)

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

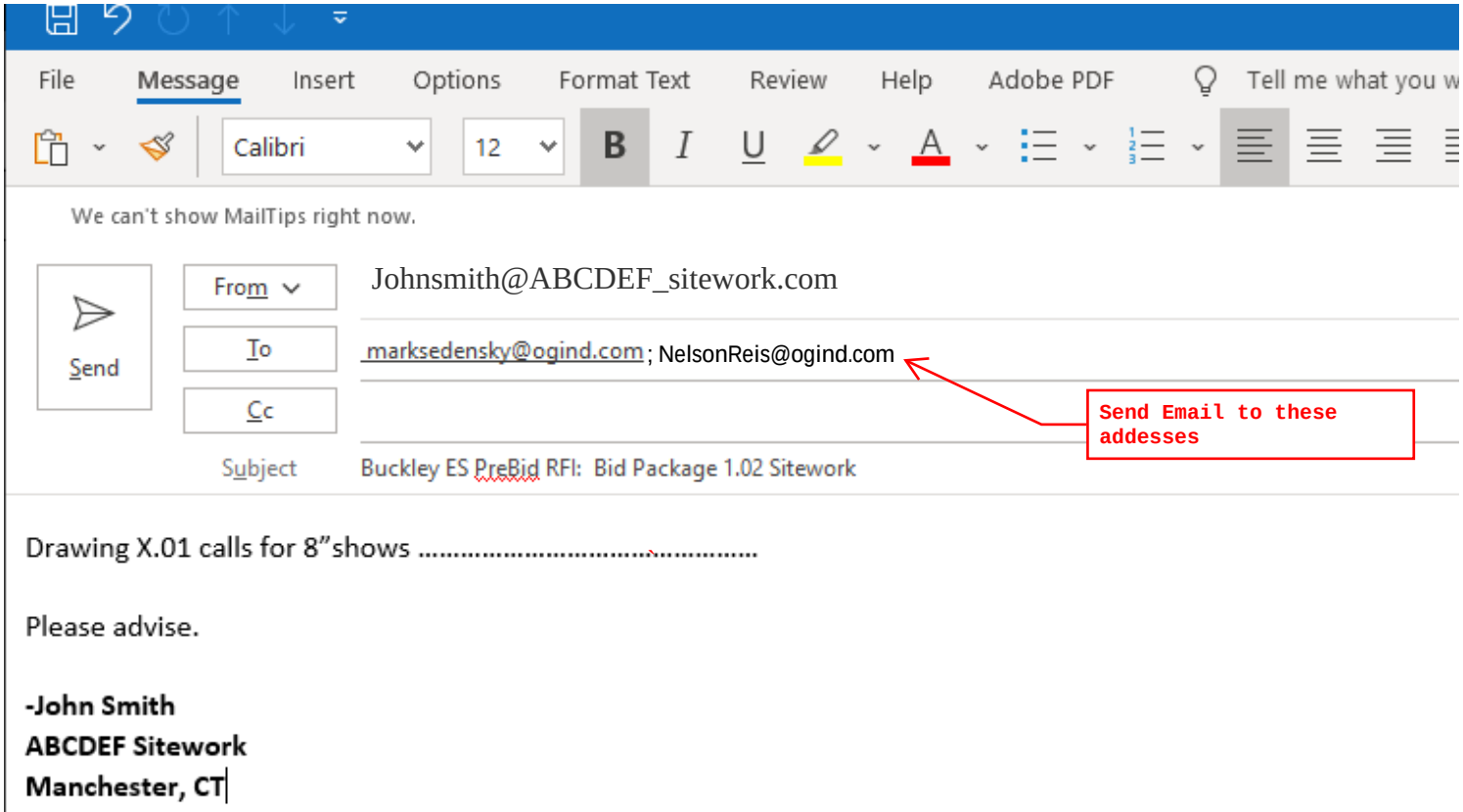
(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address:		Address:	

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Prebid RFI's shall be submitted in the email format below (with correct heading) and must be received within ten (10) calendar days of the bid due date.



AIA® Document A232™ – 2019

General Conditions of the Contract for Construction, Construction Manager as Adviser Edition

for the following PROJECT:
(Name, and location or address)

19/20-50 MPS Phase 2 CM Services
Buckley Elementary School

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

O&G Industries, Inc.
112 Wall Street
Torrington, CT 06790

THE OWNER:
(Name, legal status, and address)

Town of Manchester
41 Center Street
Manchester, CT

THE ARCHITECT:
(Name, legal status, and address)

Tai Soo Kim Partners, LLC
146 Wyllys Street
Hartford, CT

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.

§ 1.1.3 The Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Contractors, and by the Owner's own forces and Separate Contractors.

§ 1.1.5 Contractors. Contractors are persons or entities, other than the Contractor or Separate Contractors, who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

§ 1.1.6 Separate Contractors. Separate Contractors are persons or entities who perform construction under separate contracts with the Owner not administered by the Architect and Construction Manager.

§ 1.1.7 The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.8 The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.9 Instruments of Service. Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.10 Initial Decision Maker. The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

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§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections I.7 and I.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section I.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have heen duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building

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Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance
Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER
§ 2.1 General
§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements
§ 2.2.1 Prior to commencement of the Work, and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner
§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements,

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User Notes: (1882146101)

assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 The Owner shall retain a construction manager adviser lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.4 If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 2.3.5 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.6 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.7 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3.8 The Owner shall forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect, and the Construction Manager or Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction

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where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. The Construction Manager shall review the proposed alternative for sequencing, constructability, and coordination impacts on the other Contractors. Unless the Architect or the Construction Manager objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

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§ 3.3.2 The Contractor shall be responsihle to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or

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(2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

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§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces or Separate Contractors.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Construction Manager, Architect, and Owner, and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data, and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.10 through 4.2.12. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract

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Documents, in accordance with the Project submittal schedule approved by the Construction Manager and Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been reviewed and approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner, the Architect, and the Construction Manager shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Construction Manager shall review submittals for sequencing, constructability, and coordination impacts on other Contractors.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Construction Manager and Architect at the time and in the form specified by the Architect.

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§ 3.13 Use of Site

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner, Separate Contractors, or of other Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner, Separate Contractors, or by other Contractors except with written consent of the Construction Manager, Owner, and such other Contractors or Separate Contractors. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Separate Contractors, other Contractors, or the Owner, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner, Construction Manager, and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager, and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner, Architect, or Construction Manager. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

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§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 The Construction Manager is the person or entity retained by the Owner pursuant to Section 2.3.3 and identified as such in the Agreement.

§ 4.1.3 Duties, responsibilities, and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Construction Manager, Architect, and Contractor. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager known deviations from the Contract Documents and defects and deficiencies observed in the Work.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work.

§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Contractors in accordance with the latest approved Project schedule.

§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of, or be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

§ 4.2.6 Communications. The Owner shall communicate with the Contractor and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with other Contractors shall be

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through the Construction Manager. Communications by and with the Owner's own forces and Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents, and will notify each other about the rejection. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, upon written authorization of the Owner, whether or not the Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 Utilizing the submittal schedule provided by the Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from other Contractors, the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 4.2.10 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are other Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.11 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.13 The Construction Manager will prepare Change Orders and Construction Change Directives.

§ 4.2.14 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

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§ 4.2.15 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples, and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.16 The Construction Manager will assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.17 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.18 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of the Construction Manager, Owner, or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.19 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.20 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.21 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Contractors or Separate Contractors or the subcontractors of other Contractors or Separate Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

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§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces or Separate Contractors, the Owner shall provide for coordination of such forces and Separate Contractors with the Work of the Contractor, who shall cooperate with them.

§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner's own forces, Separate Contractors, Construction Manager and other Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractors or other Contractors that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractors or to other Contractors, because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces, Separate Contractors, or other Contractors.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or other Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner, Separate Contractors, and other Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, other Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor. A Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

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§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect, and Contractor, stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

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§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Construction Manager and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Construction Manager that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner, Architect, Construction Manager, or an employee of any of them, or of the Owner's own forces, Separate Contractors, or other Contractors; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section

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15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts and the Architect, based on the recommendation of the Construction Manager, determines justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and unless objected to by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, and releases of waivers of lien from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all

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Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Certificate for Payment, in the full amount of the Application for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

§ 9.4.2 Where there is more than one Contractor performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives all of the Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Contractor's application with information from similar applications for progress payments from the other Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 9.4.2.1 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Project Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Project Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.

§ 9.4.3 The Construction Manager's certification of an Application for Payment or, in the case of more than one Contractor, a Project Application and Certificate for Payment, shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.4 The Architect's issuance of a Certificate for Payment or, in the case of more than one Contractor, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.5 The representations made pursuant to Sections 9.4.3 and 9.4.4 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.6 The issuance of a Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality

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or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.3 and 9.4.4 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.2. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

.1 defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor or other Contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment or Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor

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fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager will prepare, and the Construction

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Manager and Architect shall execute, a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a notice that the Work is ready for final inspection and acceptance, and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager shall perform an inspection to confirm the completion of Work of the Contractor. The Construction Manager shall make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection, and shall then forward the Contractors' notices and Application for Payment or Project Application for Payment, to the Architect, who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), if required by the Owner, other data

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establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

.1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
.2 failure of the Work to comply with the requirements of the Contract Documents;
.3 terms of special warranties required by the Contract Documents; or
.4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;
.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor;
.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and
.4 construction or operations by the Owner, Separate Contractors, or other Contractors.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

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§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner, Construction Manager and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of

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tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Construction Manager and Construction Manager's consultants, and the Architect and Architect's consultants, shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

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§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform both the Contractor and the Construction Manager, separately and in writing, prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice directly to the Contractor, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants; (4) other Contractors and any of their subcontractors, sub-subcontractors, agents, and employees; and (5) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, other Contractors, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor, Architect, and Construction Manager for loss of use of the Owner's property, due to fire or other hazards however caused.

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§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Construction Manager, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Construction Manager, Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Construction Manager or Architect has not specifically requested to examine prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it in accordance with Section 2.5.

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§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner, Separate Contractors, or other Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Construction Manager, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear

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all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.4.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

.3 Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

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§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the Work because the Owner has repcatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to bc paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

- .1 that performance is, was, or would have bcen, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of this Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

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.1 cease operations as directed by the Owner in the notice;
.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

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§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties, the Construction Manager, and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

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§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days of receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

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§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

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 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	CONTACT NAME:	
Subcontractor's Agent Name and Address	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : AM Best Rated A-, VII or better	
INSURED	INSURER B : AM Best Rated A-, VII or better	
Subcontractor's Name and Address	INSURER C : AM Best Rated A-, VII or better	
	INSURER D : AM Best Rated A-, VII or better	
	INSURER E : AM Best Rated A-, VII or better	
	INSURER F : AM Best Rated A-, VII or better	

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 INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY	X	X	CG0001 12/07			EACH OCCURRENCE	$ 1,000,000
	☑ COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 50,000
	☐ CLAIMS-MADE ☑ OCCUR			CG2010 07/04			MED EXP (Any one person)	$ 5,000
				CG2037 07/04			PERSONAL & ADV INJURY	$ 1,000,000
							GENERAL AGGREGATE	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$ 2,000,000
	☐ POLICY ☑ PRO-JECT ☐ LOC			NO XCU EXCLUSIONS				$
	AUTOMOBILE LIABILITY	X	X	CA 9948 09/02			COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	☑ ANY AUTO			CA 2048			BODILY INJURY (Per person)	$
	☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ☐ NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
	☑ UMBRELLA LIAB ☑ OCCUR	X	X	FOLLOW FORM			EACH OCCURRENCE	$ 2,000,000
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$ 2,000,000
	DED ☐ RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY		X	WC000313			☑ WC STATU-TORY LIMITS ☐ OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N: N	N / A		USL&H if any			E.L. EACH ACCIDENT	$ 500,000
	If yes, describe under DESCRIPTION OF OPERATIONS below			INCLUDES EXEC. OFFICERS, SOLE PROP. APPLIES TO WC LAW IN CT, CT AS 3A STATE			E.L. DISEASE - EA EMPLOYEE	$ 500,000
							E.L. DISEASE - POLICY LIMIT	$ 500,000
	Professional Liability			IF WORK INCLUDES DESIGN			Each Claim/Agg $2,000,000/$2,000,000	
	Pollution Liability	X	X	IF WORK INCLUDES HAZMAT			Each Occ/Agg $5,000,000/$5,000,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Buckley Elementary School - Manchester CT

O&G Industries, Inc. and Town of Manchester are additional insureds under the General Liability, Auto Liability, Excess Liability and Pollution Liability policieson a primary and non-contributory basis. Each policy will be endorsed to provide 30 days notice of cancellation to O&G Industries, Inc. Allpolicies should also include a Waiver of Subrogation.

CERTIFICATE HOLDER	CANCELLATION
Town of Manchester 41 Center Street Manchester, CT 06045	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

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POLICY NUMBER: **COMMERCIAL GENERAL LIABILITY**
CG 20 10 07 04

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED - OWNERS, LESSEES OR CONTRACTORS - SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) Of Covered Operations
O&G Industries, Inc. and Town of Manchester	Buckley Elementary School - Manchester CT
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

SAMPLE

A. **Section II - Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

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POLICY NUMBER: **COMMERCIAL GENERAL LIABILITY**
CG 20 37 07 04

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED - OWNERS, LESSEES OR CONTRACTORS - COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location And Description Of Completed Operations
O&G Industries, Inc. and Town of Manchester	Buckley Elementary School - Manchester CT
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

Section II - Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

SAMPLE

POLICY NUMBER: **COMMERCIAL AUTO**
CA 20 48 02 99

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM
GARAGE COVERAGE FORM
MOTOR CARRIER COVERAGE FORM
TRUCKERS COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" under the Who Is An Insured Provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Endorsement Effective:	Countersigned By:
Named Insured:	(Authorized Representative)

SCHEDULE

Name of Person(s) or Organization(s): O&G Industries, Inc.,and Town of Manchester

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to the endorsement.)

Each person or organization shown in the Schedule is an "insured" for Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured Provision contained in **Section II** of the Coverage Form.

SAMPLE

COMMERCIAL AUTO
CA 99 48 03 06

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

POLLUTION LIABILITY – BROADENED COVERAGE FOR COVERED AUTOS – BUSINESS AUTO, MOTOR CARRIER AND TRUCKERS COVERAGE FORMS

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM
TRUCKERS COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

A. Liability Coverage is changed as follows:

1. Paragraph **a.** of the **Pollution** Exclusion applies only to liability assumed under a contract or agreement.

2. With respect to the coverage afforded by Paragraph **A.1.** above, Exclusion **B.6. Care, Custody Or Control** does not apply.

B. Changes In Definitions

For the purposes of this endorsement, Paragraph **D.** of the **Definitions** Section is replaced by the following:

D. "Covered pollution cost or expense" means any cost or expense arising out of:

1. Any request, demand, order or statutory or regulatory requirement that any "insured" or others test for, monitor, clean up, remove, contain, treat, detoxify or neutralize, or in any way respond to, or assess the effects of "pollutants"; or

2. Any claim or "suit" by or on behalf of a governmental authority for damages because of testing for, monitoring, cleaning up, removing, containing, treating, detoxifying or neutralizing, or in any way responding to or assessing the effects of "pollutants".

"Covered pollution cost or expense" does not include any cost or expense arising out of the actual, alleged or threatened discharge, dispersal, seepage, migration, release or escape of "pollutants":

a. Before the "pollutants" or any property in which the "pollutants" are contained are moved from the place where they are accepted by the "insured" for movement into or onto the covered "auto"; or

b. After the "pollutants" or any property in which the "pollutants" are contained are moved from the covered "auto" to the place where they are finally delivered, disposed of or abandoned by the "insured".

Paragraphs **a.** and **b.** above do not apply to "accidents" that occur away from premises owned by or rented to an "insured" with respect to "pollutants" not in or upon a covered "auto" if:

(1) The "pollutants" or any property in which the "pollutants" are contained are upset, overturned or damaged as a result of the maintenance or use of a covered "auto"; and

(2) The discharge, dispersal, seepage, migration, release or escape of the "pollutants" is caused directly by such upset, overturn or damage.

TRAVELERS

ONE TOWER SQUARE
HARTFORD, CT 06183

WORKERS COMPENSATION AND EMPLOYERS LIABILITY POLICY

ENDORSEMENT WC 00 03 13 (00) - 01

POLICY NUMBER: (VTC2HUB-2399A54-2-13)

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit any one not named in the Schedule.

SCHEDULE

DESIGNATED PERSON:

DESIGNATED ORGANIZATION:

ANY PERSON OR ORGANIZATION FOR WHICH THE INSURED HAS AGREED BY WRITTEN CONTRACT EXECUTED PRIOR TO LOSS TO FURNISH THIS WAIVER.

DATE OF ISSUE: 05-29-13 ST ASSIGN:

POLICY NUMBER: ISSUE DATE: - -

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED ENTITY – NOTICE OF CANCELLATION/NONRENEWAL PROVIDED BY US

This endorsement modifies insurance provided under the following:
ALL COVERAGE PARTS INCLUDED IN THIS POLICY

SCHEDULE

CANCELLATION: **Number of Days Notice of Cancellation:** 30

NONRENEWAL: **Number of Days Notice of Nonrenewal:**

PERSON OR ORGANIZATION:

Town of Manchester
41 Center Street
Manchester, CT 06045

ADDRESS:

SAMPLE

PROVISIONS:

A. If we cancel this policy for any statutorily permitted reason other than nonpayment of premium, and a number of days is shown for cancellation in the schedule above, we will mail notice of cancellation to the person or organization shown in the schedule above. We will mail such notice to the address shown in the schedule above at least the number of days shown for cancellation in the schedule above before the effective date of cancellation.

B. If we decide to not renew this policy for any statutorily permitted reason, and a number of days is shown for nonrenewal in the schedule above, we will mail notice of the nonrenewal to the person or organization shown in the schedule above. We will mail such notice to the address shown in the schedule above at least the number of days shown for nonrenewal in the schedule above before the expiration date.

IL T4 00 12 09 © 2009 The Travelers Indemnity Company Page 1 of 1

SECTION 007343 - WAGE AND HOUR RATES

1. GENERAL

1.1 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 the Connecticut General Statutes, 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 payday.

1.2 In accordance with Connecticut General Statutes 31-53 and 31-55a, all Contractors are required to complete and submit the enclosed forms:

A. Contractors Wage Certifications Form
B. Contracting Agency Certification Form
C. Payroll Certification For Public Works Projects - Weekly Payroll
Form WWS-CP1 and WWS-CP2

1.3 Contractors bidding on this project should be aware of the following Connecticut Public and Special Acts P.A. 02-69:

Public Act No. 02-69
Substitute Senate Bill No. 63
AN ACT CONCERNING ANNUAL ADJUSTMENTS TO PREVAILING WAGES.

Be it enacted by the Senate and House of Representatives in General Assembly convened:
Section 1. (NEW) (Effective October 1, 2002) 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 of the general statutes, 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 of the general statutes 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.

2. MINIMUM WAGE RATES

2.1 In accordance with Connecticut General Statute Title 31, Chapter 557, (Part III, State Contracts) Section 31-53 and as amended as of October 31, 2017 (PA 17-2), please note that current Connecticut Prevailing Wages will apply to the overall contractual obligations for this project.

2.2 The current wage and benefit rates are included in this section.

DEPARTMENT OF ADMINISTRATIVE SERVICES (DAS)
Office of School Construction Grants & Review (OSCG&R)

CURRENT PREVAILING WAGE RATES

FORM SCG-6000

IN COMPLIANCE WITH SECTION 31-53 OF THE CONNECTICUT GENERAL STATUTES (C.G.S.)

SHALL BE INSERTED

PRIOR TO RELEASE OF DOCUMENTS For BID or PROCUREMENT

ANNUAL ADJUSTMENT OF WAGE RATES

WILL BE AS REQUIRED

PER C.G.S. SECTION 31-55a

If you have questions regarding wages and workplace standards refer to the Department of Labor website: http://www.ctdol.state.ct.us or call 860-263-6000

N: Website migration\FORM SCG-6000\Prevailing Wage Rate holder page.DAS.doc
Rev. 04/24/2017 KD

SECTION 011200 - CM SUMMARY OF WORK

This Summary of Work is intended to supplement the preliminary construction schedule which is also part of the construction documents for this project. Neither the preliminary construction schedule, nor this Summary of Work, identify every work item. Both documents are intended to identify the major work items and the time period which the work is to be performed. Any work item that is not specifically identified is to be performed in the normal sequence of construction as it relates to the work activities that are identified in the schedule and/or Summary of Work.

Renovate as new project consists of complete renovations to existing 55,400 SF unoccupied school building. A 9,100 SF addition to the existing building will also be constructed. Sitework consists of replacement/upgrade of site utilities, parking areas as well as landscaping, fencing and sidewalk work will commence by July 1, 2021 and will be substantially complete on or before August 30, 2022.

A photovoltaic (Phase 5) contract will be bid in October 2021.

The Construction Manager requires each trade contractor to implement practices and procedures to meet the project's environmental performance goals. Specific project goals that may impact this area of work include: use of recycled-content materials; use of locally-manufactured materials; use of low-emitting materials; construction waste recycling; and the implementation of a construction indoor air quality management plan. The trade contractors shall ensure that the requirements related to these goals, as defined in the specification sections, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the trade contractors or their subcontractors, shall not be allowed if such changes compromise the stated High Performance Building Criteria.

All deliveries and construction personnel shall exit and enter the site through designated areas. The construction deliveries shall be made at the time listed in the Special Instructions. Emergency access out of the construction area are to be maintained at all times unless other agreements have been made with the local Fire Marshal.

Smoking will not be permitted on the project. Strict adherence to the smoking regulations will be enforced for the entire duration of the construction. There will be no radios allowed on the jobsite. Construction Manager will be issuing identification badges to all contractors who in turn will be required to have their employees wear the badges while onsite so all construction workers can be identified.

SECTION 01 2100 - ALLOWANCES

Allowance Schedule

1. Each trade contractor shall include in their base bid the allowances set forth in the following table as it relates to their respective bid package. These allowances are to be used only for work determined by the Construction Manager to be above and beyond work already shown on or inferred by the Contract Documents.

5.01 – PHOTOVOLTAIC				
Allowance No.	Unit Price Item No.	Description/Purpose of Allowance	Quantity	Unit
		TBD		

Procedure

1. When an allowance stipulates a given quantity, the allowance will be calculated as required by the unit price listed in the Form of Proposal. This unit price will be used to establish the allowance amount to be included in the Payment Application Schedule of Values and to adjust the allowance amount up or down by Change Order.

2. Overhead and profit for any and all allowances shall be included in the unit cost or unit labor rates used to derive the allowance value. The total cost of the allowance must be included in the base bid of the trade contractor responsible for the allowance.

3. The trade contractor shall include a separate line item for each allowance on their Schedule of Values and will be allowed to bill under these line items only when approved by the Construction Manager/Owner.

4. When the trade contractor is directed by the Construction Manager to perform work under one of the assigned allowances, the trade contractor shall perform this work on a time and material basis. Any Time and Material slip brought forth as a result of the aforementioned directive will only be considered when the work on the said slip has been previously authorized in writing by the Construction Manager. Each Time and Material slip is to be presented by the trade contractor to the Construction Manager on the **same** day the work was performed on the said slip. T&M slips submitted later than the day the work was performed will not be accepted. **There are no exceptions.** If the work requested spans a period greater than one day, then a separate T&M slip is required for each day.

5. When completing tickets for time and material work, the trade contractor shall not include line items for small tools. A small tool shall be defined as a tool with a replacement value of $1,000.00 or less and shall include tools used on a daily basis in the normal performance of their work, (e.g. extension cords, ladders, hoses, etc.). Any specific equipment rented for the time and material work can and must be identified on the time and material ticket in order to be included for compensation.

6. The trade contractor shall submit a PCO along with their pencil application for the billing period in which the work was done, or within 20 days of when the work was performed, whichever occurs first. PCO should have signed time and material sheets, and material and rental invoices associated with the work identified on the time and material ticket(s).

7. When completing the time and material PCO, the trade contractor shall not include costs for incidental items such as small tools, as-builts, cleanup, safety, etc. These items are to be included in the allowance unit cost.

8. A single change order will be issued at project close-out to credit any unused portion of the allowance and document the scope of work performed.

END OF SECTION

SECTION 013513 – GENERAL ADMINISTRATION PROCEDURES FOR THE PROJECT

1. GENERAL

a) Requirements set forth herein are in addition to and shall be considered as complementary to the General Conditions of the Contract and the entire Division 01.

b) All Contractors, Subcontractors, Sub-subcontractors, Vendors and the like are required to familiarize themselves with said provisions.

c) Definitions as apply to "Contractors", involved with the work of this Project are as follows: "The Contractor", "Contractor", "Trade Contractor" or "Respective Contractor" means that Contractor normally responsible for that work referenced unless specifically assigned otherwise.

d) It should be understood that the project will be executed under the direct control of a Construction Manager who will enter into a contract with each of the successful bidders (Trade Contractor) for each Bid Package. The Construction Manager will assist the Trade Contractors with the coordination of their work with other Trade Contractors.

2. CORRELATION OF DRAWINGS AND SPECIFICATIONS

a) In general, the Specifications will describe the "quality" of the work and the Drawings, the "extent" of the work. The Drawings and Specifications are cooperative and supplementary, however, each item of the work is not necessarily mentioned in both the Drawings and the Specifications. All work necessary to complete the project, so described, is to be included in this Contract.

b) Where a conflict occurs between or within Standards, Specifications and Drawings, the more stringent or higher quality requirements shall be assumed to apply, notwithstanding the Architect's final decision as to which stipulation will provide the best installation and will be most consistent with design intent.

3. CONTRACT

a) The Owner will award separate Trade Contracts for this project to complete all work as indicated and specified.

b) All Trade Contractors shall cooperate with the Contractors for any separate Contracts that the Owner may award.

4. CERTIFIED PAYROLLS

a) Each trade contractor shall submit certified payrolls and compliance statements for all of their workforce, including their subcontractors, compiled and submitted each month via Oracle+Aconex, to the Construction Manager. Monthly Pay Applications will not be processed or approved unless certified payrolls and compliance statements are current.

b) In accordance with applicable laws, certified payrolls and compliance statements are also required to be submitted monthly, either via US Mail or electronically (to be determined at contract award), by each trade contractor for all of their workforce, including their subcontractors, to the contracting agency.

c) Copies of OSHA 10 course completion cards for every employee performing labor at this project are to be submitted at the same time and in the same manner (electronically or via US mail) as the Payroll Certification for Public Works projects - Weekly Payroll. See Public Act and Informational Bulletin included in Section 00 7343 - Wage and Hour Rates.

5. BACKGROUND CHECK OF WORKERS

a) Upon receipt of the Limited Notice to Proceed, and as a condition of the execution of a contract with O & G Industries, Inc., the contractor shall provide the following information on ALL employees who will be on site for any reason during the Project. The specific form to be signed is attached in Specification Section 01 3513 - Special Project Requirements.

i) Company Name (vendor, subcontractor or contractor)
ii) Employee Legal Name
iii) Address
iv) Date of Birth
v) Social Security Number

b) This information is to be emailed or faxed by the contractor directly to GoodHire at support@goodhire.com or fax to 650-362-1933. It is suggested that the contractor send in the names all together. Contractor will be billed directly by GoodHire for a company set-up fee of $49.00 and $29.00 per employee. **Contractor shall include these costs for the security check in their base bid proposal**. Security check is for disclosure of any and all felony criminal convictions including but not limited to any sex offender registry postings; it is not a credit check. The Owner retains the exclusive right to reject a contractor's employee.

c) An O&G-issued ID badge is required to enter the project site. Employees who have not been issued a badge or who are not wearing their badge shall not be allowed on the site. Contractors should allow 14 calendar days after submitting the security check information and receiving the Owner review. Contractor is responsible for any delay due to not having sufficient and qualified personnel on the project as a result of not providing the required information in a timely manner.

6. CONTRACTOR REQUIRED SUPERVISION

a) All contractors shall maintain full-time supervision at the jobsite during any time in which their employees or subcontractors are on site or involved on the project. The Supervisor shall attend all coordination meetings as scheduled by the Construction Manager's field supervisor and shall have the authority to make decisions. This supervisor shall be equipped with a cellular phone for communication with O&G Industries and other trades.

b) Each trade contractor's field supervisor shall provide a copy of their Daily Field Report to the O&G Superintendent. The Daily Field Report shall indicate workforce manpower, quantities, equipment, scope of work and work completed as it relates to location of work, job schedule, job conditions, etc. This report will list each employee on site by name, where they worked and what tasks they performed. This report must be submitted no later than 10:00 a.m. on the workday directly following the day the work was performed. Failure to submit a report will result in a $100.00 fine.

c) Regarding sub-trade contractors, the Construction Manager may, at his sole discretion, refuse site access to a sub-trade contractor if their respective trade contractor's supervision is not on site *or* the Construction Manager may allow the subtrade contractor to work but the respective trade contractor will be charged a non-negotiable supervision charge of $120.00/hour for each hour the Sub-trade contractor is on site.

d) The successful bidder shall be responsible for purchasing any required sets of project documents. The Owner will not be providing any sets of project documents.

e) All contractors should note that the CADD files of drawings can be provided at no cost for shop drawings and/or as-built use by contractors if desired. The Architect/Engineer will require contractors to sign a release for use of these documents

f) All communication, oral or written, will be through the Construction Manager. There shall be no direct contact with the Owner, Architect or Engineer unless approved by the Construction Manager.

g) All materials being furnished for this project to be installed by another trade contractor shall be delivered to the jobsite at a location to be determined by the Construction Manager.

h) Each contractor shall be responsible for understanding the occupational classifications (refer to Department of Labor Informational Bulletin included in Section 00 73 43) of the work to be performed within their assigned scope and shall include all costs associated with employing the correct classification of worker and for paying the correct prevailing wage. For example, each trade contractor responsible for patching partitions/ceilings shall employ workers who specialize in this work to perform all required patching, e.g. mason to patch masonry, carpenter and taper to patch drywall and lathers to patch plaster.

7. PROJECT MEETINGS

a) Project meetings will be held at the jobsite weekly unless otherwise designated by the Construction Manager, Owner or by the Architect.

b) The trade contractors' project manager and field supervisor are required to attend all project meetings as directed by the Construction Manager. In addition, the subcontractors or vendors whose presence is deemed necessary by Construction Manager shall attend the job meeting as well as requested. Refer to other specification for other meeting attendance requirements.

c) All decisions, instructions and interpretations agreed upon at such meeting will be recorded by the Construction Manager and furnished to each trade contractor.

8. SAFETY

a) All Trade Contractors shall comply with the "General Safety and Health Procedural Regulations" included as Rider B in Section 00 5200 and O&G's Health and Safety Manual which is posted with the Bid Documents.

b) All Trade Contractors storing fuel on-site shall meet with the Town of Manchester Fire Marshal to review the conditions and requirements for storing these materials and strictly comply.

c) All contractors shall complete a Job Safety Task Analysis (JSTA) form on a daily basis for each task activity being performed on this project. JSTA's are to be turned in daily to the O&G superintendent by 7:30 AM. Failure to provide said forms daily will result in a $100.00 fine. Submission of the JSTA form shall be made either by email or by the project management platform (Oracle+Aconex) as determined by O&G at the start of the project.

d) During each phase of construction, the General Trades contractor shall provide fire extinguishers and stands at throughout the construction area to meet all OSHA and local Fire Marshal regulations and as directed by the Construction Manager. The fire extinguisher stands shall be constructed with 3/4" plywood mounted over 2x4 masts and integral bases and painted red. Each stand shall have a 5' mast with a pre-manufactured sign with the words "fire extinguisher", shall include an air horn,

and an 8-1/2" x 11" egress plan. The General Trades contractor shall also provide extinguishers, stands and signage adjacent at all flammable fuel storage areas, including propane and site equipment fueling areas. The General Trades contractor shall be responsible to maintain the extinguishers stands and signage throughout the duration of the project and relocate, recharge or replace the extinguishers as necessary.

e) The General Trades contractor shall provide 7" x 10" pre-manufactured signs with the word "EXIT" for primary and secondary egress paths from all areas of the contraction area. The General Trades contractor shall be responsible to maintain the extinguishers stands and signage throughout the duration of the project and relocate, recharge or replace the extinguishers as necessary.

9. WATER INSTRUSION AND MOLD PREVENTION AND MANAGEMENT

a) All trade contractors, and their subcontractors, involved in the construction, modification, repair, and/or renovation of a building(s) are responsible for preventing and protecting occupants, employees and property from the perils of water intrusion and for the remediation of water intrusion, mold, fungus, and mildew throughout the contract construction and warranty period, including all safe and acceptable work practices as it pertains to their work should intrusion occur. All trade contractors shall provide preventative and responsible measures as needed, and shall provide additional measures as directed by the onsite O&G project management team.

b) It is imperative all building materials be kept dry and protected from the elements. Materials received on site, whether immediately installed or stored for future installation are required to be inspected on a regular basis to insure they do not exhibit deleterious effects from the environment. Any material exhibiting such effects such as but not limited to rust, mold, fungus, etc. are subject to rejection by the O&G project management team.

c) Because mold spores are present everywhere and cannot be totally eliminated from the environment under normal circumstances, one key to preventing problematic mold growth in structures is to prevent the spores from contacting water. In the event water infiltrates the structure and/or materials to be used in the structure, it is incumbent upon that affected trade contractor to respond within 24 hours to manage the water intrusion and impacted material. If water is allowed to remain in contact with mold spores for longer than this period, problematic mold growth can occur. The responsible, causing or negligent contractor, as determined by the O&G project management team, shall be responsible for the immediate remediation, cleanup, drying and/or replacement of affected areas, materials and/or structures. The moisture controls to be utilized by the contractors during the various construction phases are to be reviewed and approved by O&G Industries**.**

10. PROJECT MANAGEMENT AND FIELD QUALITY CONTROL – Subscription Fee

a) All contractors shall be aware that Oracle+Aconex Project Management will be utilized for this project.

b) All trade contractors shall participate in Oracle+Aconex Field Management – a field documentation and quality control program established to increase the quality of work in place, increase field personnel productivity and expedite the project close-out phase through reduction of punch lists.

c) With Oracle+Aconex Field Management, trade contractors will:
- Access project documents from mobile devices
- Receive notification of work requiring completion or correction
- Notify the CM that work is ready for inspection

d) All trade contractors shall participate in Oracle+Aconex Project Management – Project Management program established to facilitate collaboration, communication and documentation with all team members to increase project efficiency and accountability.

e) With Oracle+Aconex Project Management, trade contractors will:
- Submit and receive all project communications through the Oracle+Aconex mail module
- Submit RFIs and review responses
- Submit trade contractor daily reports
- Submit all shop drawings, product data, close-out documentation and other required submittals
- Receive and submit requests for change, change order proposals and cost documents using O&G's standard forms
- Receive project notifications as deemed necessary
- Use any other Oracle+Aconex module as required by the Construction Manager
- Submit certified payroll records

f) There are no licensing or monthly service fees for using Oracle+Aconex Project Management. Internet access is required for access to Oracle+Aconex and mobile devices with internet access are required for access to Oracle+Aconex.

g) Each trade contractor shall have a full-time on-site representative who is equipped with an iOs or Android device, loaded with Oracle+Aconex. Each trade contractor shall be responsible for updating/upgrading their mobile device to ensure that all functions of Oracle+Aconex can be utilized. Each trade contractor shall sync with the Oracle+Aconex database daily to ensure up-to-date information is utilized.

h) All participants must have a valid e-mail address to access Oracle+Aconex. Trade contractor representatives who are participating in Oracle+Aconex will receive an e-mail notification when an issue has been assigned to their company. Trade contractors are required to respond to all issues within Oracle+Aconex and by the due date specified for each particular issue. Issues that are not resolved by the specified due date will be assessed as they relate to progress billings for the assigned trade contractor.

i) Using Oracle+Aconex will ensure high-quality work with minimized corrections which, in turn, will shorten the project close-out phase and expedite the release of retainage payments to trade contractors. Consequently, failure to actively participate when using the Oracle+Aconex, you may visit their website at https://help.aconex.com/ or contacting them at 1-888-5ACONEX.

11. SUBMITTAL PROCESS

a) Trade Contractors shall submit submittals to the Construction Manager via the Construction Manager's Oracle+Aconex Project Management program. The Construction Manager will return all submittals via the Construction Manager's Oracle+Aconex Project Management program.

b) Trade Contractors shall submit/package submittals according to their submittal schedule. Each submittal is required to have Construction Manager's Submittal Cover Page filled out properly. If submittal is not submitted/packaged per submittal schedule or does not include a properly completed Construction Manger's Submittal Cover Page, the submittal will be rejected by the Construction Manager and returned to the Trade Contractor for resubmission. Trade Contactor is responsible for any schedule impact that results from improper submission of submittals.

c) All shop drawings shall be submitted in PDF format. Three (3) hard copies shall also be submitted for all shop drawings with paper size larger than 11"x17". Trade Contractor shall provide two (2) hard copies of Record Shop Drawings for Shop Drawings larger than 11"x17" paper.

12. PAYMENT PROCESS – Subscription and Usage Fees

a) Unless otherwise directed or authorized in writing by the Construction Manager, all Applications for Payments and all supporting documents (including but not limited to lien waivers, sworn statements and the like) for the trade contractor shall be in electronic format and shall be submitted to the Construction Manager using Textura Construction Payment Management (CPM).

b) O&G has chosen Textura Corporation to facilitate invoicing with an easy-to-use automated payment processing service. Using Textura's service gives each trade contractor:
- Automatic generation of your AIA G702/703 invoices and lien waiver documents.
- E-mail notification as the draw progresses.
- Immediate feedback if your invoice is questioned.
- Notification when you will be paid.
- Faster, direct electronic payments – No need to go collect your check.
- Unlimited training and support for all users.

c) This service will decrease payment time, significantly ease the paperwork burden, eliminate rework and reduce requisition processing time. As your first draw date for submitting a requisition on this project approaches, you will receive an e-mail inviting you to join Textura. Simply follow the instructions in the e-mail to set-up your user name and password to activate your account.

d) **The trade contractor shall be responsible for the lump sum Usage fee to be paid directly to Textura.** The Usage fee is calculated as **0.22%** of the contract value, with a maximum fee of $3,750.00 per contract. **The Usage fee will be deducted from the trade contractor's initial Application for Payment.**

e) The benefits of this automated payment application generation and payment will significantly outweigh the costs. For more information, see the attached Textura CPM Overview. You can also find more information about Textura on their website at www.texturacorp.com or by calling 1-866-TEXTURA (866-839-8872).

f) Payment Application Procedures
   i) The documents required to be submitted are:
      (1) Schedule of Values (SOV)
      (2) Applications for Payment (Requisitions)
   ii) The following items are required to be submitted with each trade contractors pay application on a monthly basis. The contractor fully understands that their monthly payments will not be processed until such time as all items listed below are received and accepted by the Construction Manager:
      (1) Summary Log of all approved change proposals and pending change proposals.
      (2) Material Status Log (see attached form contained in Section 01 35 13).
      (3) Schedule update.
      (4) Updated As-Built set – required by the sitework and MEP trade contractors.
      (5) Updated Commissioning Report.

   iii) Each Trade Contractor shall establish an agreed to Schedule of Values (SOV) with the Construction Manager and enter it online as described within this specification section. This will be used each time a monthly pay application is submitted.

g) Each Trade Contractor shall establish an agreed to Schedule of Values (SOV) with the Construction Manager and enter it online as described in the payment section of Section 01 3513 - General Administrative Procedures for the Project. This will be used each time a monthly pay application is submitted. The trade contractor shall show separate line items for each item of work that can be deemed eligible or ineligible for reimbursement by the State Department of Education Bureau of School Facilities. The determination of whether an item is to be reported as eligible or ineligible will be made by the Architect and the Construction Manager when the trade contractor is preparing the initial schedule of values for approval. The trade contractor must then report costs attributable to eligible and ineligible items whenever they submit an application for payment. All allowances shall be listed separately on each Trade Contractor's SOV. The Architect and Construction Manager will determine what portion of the allowance payment amount shall be listed as eligible or ineligible on the Trade Contractor's requisition.

h) Each trade contractor will be required to provide a complete breakdown of material costs and indicate the source of supply for each material for High Performance Building tracking purposes. This shall be submitted with the trade contractor's first application for payment.

13. SCHEDULE OF VALUES

a) All Trade Contractors shall include individual line items in their Schedule of Values for the following items of work: Warranties; O&M Manuals; Shop Drawings and Submittals; Clean-up (interim/phase and final); Scheduling, Lean and Pull Planning; Coordination participation; and As-Built documents. No monies will be paid to the trade contractor for the line item until all requirements of the line items of work have been approved and accepted to the satisfaction of the Construction Manager or the approving authority.

b) All trade contractors shall indicate two line items in their Schedule of Values specifically for scheduling. The first line item shall be an amount determined to be the minimum calculated Schedule of Value per paragraph c below, or $5,000.00, whichever is greater. These funds will be released after this contractor's Level IV Baseline Schedule is accepted by the Construction Manager. If the schedule is not provided by this trade contractor within twenty days of the issuance of the Limited Notice to Proceed, the Construction Manager will create the schedule on behalf of the contractor and the Construction Manager will retain this Schedule of Value amount. The second Schedule of Value line item shall be established at $1,000.00 per month for providing the schedule update. Failure to update the schedule will result in the forfeiture of this monthly amount to the Construction Manager for completing the monthly update on their behalf.

c) A Minimum Calculated SOV (Schedule of Value) is a percentage of the trade contractor’s total value of their awarded contract. The trade contractor shall provide a separate line item for each of the following requirements: Warranties; O&M Manuals; Shop Drawings and Submittals; Scheduling, Lean and Pull Planning; As-Built documents. The value for each line item shall be based on the following sliding scale:

Value of Contract	Minimum Calculated Value of Line Item
Less than $1,000,000.00	.5% of total contract value
Over $1 mil. to $5 million	.375% of total contract value
Over $5 million	.25% of total contract value

d) All trade contractors are required to include a line item for Minimum Calculated SOV for clean-up (interim/phase and final) per calculation in Specification 01 74 13 – Project Cleanliness. All trade contractors shall refer to Specification 01 31 16 – Coordination Drawings for bid packages where BIM coordination participation is required. Identified contractors shall include a line item for Minimum Calculated SOV for coordination participation.

e) The trade contractor shall show separate line items for each item of work that can be deemed eligible or ineligible for reimbursement by the Department of Administrative Services, Office of School Construction Grants & Review**.** The determination of whether an item is to be reported as eligible or ineligible will be made by the Architect and the Construction Manager when the trade contractor is preparing the initial schedule of values for approval.

f) The trade contractor shall show separate line items for each allowance included in the contract total. The line item value shall be the value included in the contract, either as the application of the quantity and unit cost, or as a lump sum. The line item shall not include overhead or profit, overhead and profit must be accounted for elsewhere in the Trade Contractor's SOV.

g) Each trade contractor is reminded to increase the value of these line items if, in his opinion, the minimal value for payment purposes is insufficient to accomplish the work as herein stated.

14. EXTRA WORK

a) At times, a trade contractor may be directed to perform work on a time and material basis. This work may include but not be limited to allowance work, disputed work, additional scope items requested by the Owner for which a lump sum amount has not been agreed to, work that is back-chargeable to another trade contractor or additional work requested by the Construction Manager that is not billable to any other party.

b) Any Time and Material slip brought forth as a result of the aforementioned directive will only be considered when the work on the said slip has been previously authorized in writing by the Construction Manager. Each Time and Material slip is to be presented by the trade contractor to the Construction Manager on the **same** day the work was performed on the said slip. T&M slips submitted later than the day the work was performed will not be accepted. **There are no exceptions.** If the work requested spans a period greater than one day, then a separate T&M slip is required for each day.

c) Time and material slips need to include employee name and craft (apprentice if applicable). All ticket work must be priced and returned to the Construction Manager within **thirty (30) calendar days** of the work being performed. **Failure to submit pricing within this time frame will result in the time and material slip and associated pricing being subject to penalties, discounts and/or recalculation, commensurate with the loss of reimbursement the Municipality would have otherwise received had the pricing of the slip been submitted within the time period noted herein.**

d) Be warned, any work performed for which a Time and Material slip is completed by the Trade Contractor in which the Trade Contractor has not been expressly authorized to perform said work by the Construction Manager is done solely at the Trade Contractor’s expense as there will be no compensation for said slips or work.

e) Notwithstanding any language to the contrary either within the contract or noted on any Trade Contractor time and material/extra work order slip, the Construction Manager’s sign-off on a time and material slip is for the verification of time and material expended and does not constitute acceptance of a change in or an alteration to the contract until such time as said ticket is vetted for that purpose.

f) The cost of the payment and performance bond is not to be included in the individual change order request. Any additional bond payments requested by the trade contractor due to an increase in their trade contract sum must be submitted as a separate change order at the completion of the project as stipulated by the Department of Administrative Services, Office of School Construction Grants &

Review. The contractor must provide an original invoice from their bonding company identifying the increase in Bond costs as a result of the contract amount including all approved change orders. The information will used as the backup for a final change order. Overhead and profit is not allowed in the additional bond cost change order.

g) The cost of small tools is not to be included in change order requests, all costs for small tools are included in the overhead and profit percentages allowed by contract. A small tool shall be defined as a tool with a replacement value of $1,500.00 or less and shall consist of tools used on a daily basis in the normal performance of work, such as hand tools, extension cords, ladders, hoses, etc. Any specific equipment rented for time and material work can be billed based on invoices for the rental of the equipment. All contractors must submit the rental rate of equipment with a value over $1,500.00. Rental tickets from the rental company must accompany all extra work change proposals.

h) The trade contractor shall not include separate costs for incidental labor items such as as-built drawings, clean-up, safety, mobilization, or for office or field supervision i.e. superintendent, project manager, etc., in the change order request. These items are to be included in the allowed percentage for overhead and profit.

i) All change order requests shall be prepared and submitted using O&G Industries' standard change order proposal form. These forms shall be submitted to the Construction Manager within seven (7) calendar days of issuance of the Request for Proposal or RFI response. These time frames will allow for processing and submission to the architect to meet the requirements of Specification Section 01 26 00 and 01 31 00. Trade contractors are responsible for all other requirements included in these sections as they relate to the initiation, content and processing of requests for additional compensation.

j) At the sole discretion of the Construction Manager, all changes in the work identified and required to be completed immediately shall be performed on a time and material basis due to the time constraints of the work schedule.

k) Referencing Specification Section General Conditions, any reference to the term "Contractor" shall mean "Trade Contractor", to Subcontractor" it shall mean "Trade Sub-contractor" and to "Sub-subcontractor", it shall mean "Trade Sub-subcontractor". **Notwithstanding any language to the contrary here and elsewhere in the contract, the aggregate total of all overhead and profit on any given change when performed by a Trade Contractor and their respective subordinate trade contractors cannot exceed 15%.**

15. BENEFICIAL OCCUPANCY

a) The Owner reserves the right to occupy any portion of the building and/or site which is deemed suitable for occupancy as mutually agreed to by Owner, Architect, Construction Manager and the Authority Having Jurisdiction prior to the completion and acceptance of the project.

b) It shall be mutually understood and agreed that such occupancy does not relieve any Trade Contractor from completing the work within the time period specified. Further, such occupancy shall not determine that substantial completion and performance has been reached.

c) Prior to such occupancy, however, the Architect and the Construction Manager will inspect the portions of the building to be occupied and will prepare a punch list or omissions of materials, faulty workmanship or any items to be repaired, torn-out or replaced.

d) The Owner will assume responsibility for damage to any items not on said punch list when such damage is due to greater than normal wear and tear. In no such instance will the Owner assume responsibility for improper or defective workmanship or materials.

16. PROJECT CLOSE-OUT

a) Each Trade Contractor shall remedy all punchlist items within thirty (30) days of issuance of said list or in the time frame prescribed in the contract schedule, whichever is shorter. If a Trade Contractor is unable to remedy any item due to occupancy by the Owner, then those items must be remedied during non-occupancy hours, including, but not limited to, 2nd shift, 3rd shift, weekends and holidays. If any punchlist item is not remedied in accordance with the above provisions, the Construction Manager will provide notice, giving the Trade Contractor 48 hours from receipt of notice to remedy the incomplete items. All items remaining incomplete past the 48-hour provision noted herein will be completed by the Construction Manager, the cost of which will be deducted from any amounts due the Trade Contractor.

b) Notwithstanding any language to the contrary, no retainage will be reduced/released until all punchlist items are complete to the satisfaction of the Construction Manager.

c) The trade contractor shall identify on the submittal the quantity(ies) of attic stock required to be submitted per the technical specifications. All attic stock requirements are to be fulfilled with initial deliveries of materials for each phase of the project to ensure a consistent dye-lot is maintained.

d) Operations and Maintenance Manuals shall be submitted electronically and in accordance with Section 01 7823 and any applicable technical specification sections for review no later than sixty (60) days after receipt of approved submittal(s). An amount defined by the sliding scale shall be included on each contractor's Schedule of Values whose contract requires submission and acceptance of Operations and Maintenance Manuals. No monies will be paid to the trade contractor until all required Operations and Maintenance Manuals have been approved and accepted.

e) Warranties shall be submitted electronically for review no later than sixty (60) days after receipt of approved submittal(s). An amount defined by the sliding scale shall be included on each contractor's Schedule of Values whose contract requires submission and acceptance of Warranties. No monies will be paid to the trade contractor until all required Warranties have been approved and accepted.

f) Upon request of the Owner, and prior to the expiration of one year from the date of substantial completion for each phase, the trade contractor shall, without additional compensation, attend a meeting with the Construction Manager and the Owner to review the facility operations and performance.

17. WARRANTIES/GUARANTEES & MAINTENANCE

a) Warranties/Guarantees

Manufacturer’s warranties shall not start until the date of substantial completion of each particular phased area or, until all aspects of the commissioning of the respective system are complete and accepted by the Commissioning Agent and the Owner, whichever date is later. The HVAC and electrical contractors shall include in their base bid any additional cost for extending manufacturer’s warranties until the date of substantial completion of each particular phased area or, until all aspects of the commissioning of the respective system are complete and accepted by the Commissioning Agent and the Owner, whichever date is later.

Listed below is an outline of how the warranties/guarantees and equipment maintenance will be handled for this project:
For all major mechanical and electrical equipment including but not limited to boilers, circulation pumps, domestic hot water heating tanks, generators, fire pumps, switchgear, air-handlers, cabinet unit heaters, unit ventilators, fans, light fixtures and other electrical devices, the warranties and guarantees on these pieces of equipment will commence per completed phase after the equipment has been put into permanent operating mode, the Owner's training, if required, has been given and accepted, the operations and maintenance manuals have been submitted and approved, and finally, until all aspects of the commissioning of the respective system are complete and accepted by the Commissioning Agent and the Owner. The maintenance of these pieces of equipment will be the responsibility of the contractor for a period of one (1) year from the time warranties/guarantees commence.

i) Warranties and guarantees on the temperature control building management systems, fire alarm and security systems shall commence on the date of substantial completion of the entire project.
ii) All warranties on new roof areas shall not commence until all of the roof areas on the entire building are complete and the roof areas have been inspected by the roofing manufacturer for compliance with the manufacturer's warranty. The roofing contractor shall include in his bid any additional costs that may occur as a result of starting all of the roof warranties at the same time.
iii) The warranties and guarantees on all food service equipment shall commence when the Owner occupies the new Kitchen and Servery spaces. The Owner will be responsible for maintaining the equipment after the date of occupancy of the Kitchen and Servery.

b) Maintenance

Once equipment is turned on in the building per the schedule the contractor is responsible for the following:

i) All equipment installed under this contract having moving parts and requiring lubrication shall be properly liberated according to the manufacturer's recommendations prior to testing and operation. Any such equipment discovered to have been operated before lubrication by the contractor is subject to rejection and replacement at no additional cost to the Owner.
ii) The contractor shall provide the necessary skilled labor to assure the proper operation and to provide all required current and preventative maintenance for all equipment and controls until final acceptance of the building by the Owner. The contractor shall not assume acceptance of the building by the Owner until he receives written notification.
iii) The contractor shall receive calls for any and all problems experienced in the operation of the equipment provided under this contract and shall take steps to immediately correct any deficiencies that may exist.
iv) The contractor shall provide a check list and shall put a copy of it in the boiler or main mechanical room. The check list shall itemize each piece of equipment furnished under his contract.
v) The contractor shall verify on his check list that he has examined each piece of equipment and that, in his opinion, it is operating as intended by the manufacturer, it has been properly liberated, and that all necessary current and preventative maintenance has been performed as recommended by the manufacturer and by good and accepted practice.
vi) During construction the contractor shall ensure that all filters are in place on all equipment. If the equipment is not operated during construction, strict attention shall be paid to maintaining cleaning and effective filters and cleaning ductwork and equipment. Filters shall be new and/or clean when the system testing and balancing takes pace. The contractor shall bear the cost of all filters and media during construction until final acceptance by the Owner. This requirement shall apply equally to fluid filters and strainers.

END OF SECTION

Project Material and Equipment Status Report

Updated Monthly by Trade Contractors As Part Of Their Monthly Payment Application Process

Date: _____

(Used For Tracking Cr (Used For Tracking Critical Key Items Such As Long Lead, Specialized and Customized Items)

Project Name: _____ **Bid Package : Bid Package # & Name:** _____

Project Number: _____ **Prime Contra Prime Contractor Name:** _____

Item Description	Supplier's Name	Phone / Contact	Spec Section	Expected Submittal Submission	Submittal Release	Fabrication		SCHEDULE Delivery Date		
						Start	Complete	Scheduled	Last Promised	Actual Delivery

STATE OF CONNECTICUT
Contractor Verification
(in accordance with Public Act 16-67)

Directions to Contractor: Connecticut law requires that any contractor applying or bidding for a contract (including individuals who are independent contractors) with a local or regional board of education, a governing council of a state or local charter school, or interdistrict magnet school operator require any employee with the contractor who would be in a position involving direct student contact to supply the contractor with the information provided in this form. Information may be collected either through a written communication or telephonically.

In addition, pursuant to Connecticut General Statutes (C.G.S.) § 10-233c, the contractor is required to contact – either telephonically or through written communication – any current or former employer of an employee if such employer was a local or regional board of education, a governing council of a state or local charter school, or interdistrict magnet school operator or if the employment caused the employee to have contact with children, to request any information concerning whether there was a finding of abuse or neglect or sexual misconduct against the employee. If the contractor receives any information indicating such a finding, or otherwise has knowledge of such a condition, the contractor must immediately forward such information to any local or regional board of education with which the contractor is under contract.

Directions to Employee of Contractor: Pursuant to Connecticut state law, employees of a contractor who would be in a position involving direct student contact must supply all of the information provided in Section 2 of this form.

Section 1 – To be completed by Contractor

Name	
Street address	
City, State, Zip Code	
Contact person	
Telephone number/email address	

Section 2 – To be completed by Employee of Contractor

Part A. On a separate sheet of paper, please list the name, address and telephone number of each current or former employer, if such current or former employer was a local or regional board of education, a governing council of a state or local charter school, or interdistrict magnet school operator, or if such employment otherwise caused you to have contact with children.

Part B. Please complete the questions below in their entirety.

Have you ever:

Y N Been the subject of an abuse or neglect or sexual misconduct investigation by any employer, state agency or municipal police department (answer "no" if the investigation resulted in a finding that all allegations were unsubstantiated)?

Y N Been disciplined or asked to resign from employment or resigned from or otherwise separated from any employment while an allegation of abuse or neglect was pending or under investigation by the Department of Children and Families (the "department"), or an allegation of sexual misconduct was pending or under investigation or due to an allegation substantiated pursuant to section 17a-101g of abuse or neglect, or of sexual misconduct or a conviction for abuse or neglect or sexual misconduct?

Y N Had a professional or occupational license or certificate suspended or revoked or ever surrendered such a license or certificate while an allegation of abuse or neglect was pending or under investigation by the department or an investigation of sexual misconduct was pending or under investigation, or due to an allegation substantiated by the department of abuse or neglect or of sexual misconduct or a conviction for abuse or neglect or sexual misconduct?

Part C – Written Consent and Disclosure Authorization. I hereby authorize the entities I have listed in Section 2 of this form to release to the entity listed in Section 1 of this form the information required to be released by my previous employer pursuant to (C.G.S.) § 10-222c along with any related records. I hereby consent to and authorize disclosure by the State Department of Education of the information requested pursuant to C.G.S. § 10-222c, as amended by Public Act 16-67, and I hereby authorize the release by the State Department of Education of any related records. I further hereby release the above-named employer(s) and the State Department of Education from any and all liability of any kind that may arise from the disclosure or release of records requested pursuant to C.G.S. § 10-222c, as amended by Public Act 16-67.

_____ _____

Signature of Applicant Date

NOTES:

The terms provided below are currently defined in state law as follows. Please note that statutes may be amended from time to time.

Sexual Misconduct means – "any verbal, nonverbal, written or electronic communication, or any other act directed toward or with a student that is designed to establish a sexual relationship with the student, including a sexual invitation, dating or soliciting a date, engaging in sexual dialog, making sexually suggestive comments, self-disclosure or physical exposure of a sexual or erotic nature and any other sexual, indecent or erotic contact with a student." Connecticut General Statutes § 10-222c(k).

Abuse or neglect means – "abuse or neglect as described in Section 46b-120, and includes any violation of Sections 53a-70, 53a-70a, 53a-71, 53a-72a, 53a-72b or 53a-73a." Connecticut General Statutes § 10-222c(k).

The Connecticut State Department of Education is an affirmative action/equal opportunity employer and does not discriminate on the basis of race, color, religion, sex, gender identity or expression, sexual orientation, marital status, national origin, ancestry, age, criminal record, political beliefs, genetic information, intellectual disability, past or present history of mental disability, learning disability, or physical disability, including, but not limited to, blindness or any other basis prohibited by Connecticut state and/or federal nondiscrimination laws.

Contractor Disclosure, Authorization & Consent for the Procurement of Consumer Reports

Section I: Disclosure

O&G INDUSTRIES, INC. (the "Company") may request background information about you from a consumer reporting agency in connection with your contractor application and for contracting purposes. The report ordered is defined by the Fair Credit Reporting Act (FCRA) as a Consumer Report, and all inquiries are limited to information that affects contractor performance and the Company. It is conducted in accordance with applicable federal and state laws including the FCRA. The screening will be conducted by an outside agency — **GoodHire, LLC**. **– Address: P.O. Box 391403 Omaha, NE 68139 | Phone: 1-888-906- 7351 | Fax: 650-362-1933 | Email: support@goodhire.com**. As a result, GoodHire may obtain a Consumer Report on you as a contractor or during contracting.

A consumer report is a compilation of information that might affect your contract. The scope of the report **may** include information concerning your driving record, civil and criminal court records, credit, drug screening results, worker's compensation record, education, credentials, identity, past addresses, social security number, previous Companies and personal references.

Should an Company rely upon a consumer report for an adverse action, the FCRA mandates you be provided with a copy of the consumer report and a summary of your rights. An adverse action is defined as "a denial of an application for contracting or any other decision for contracting purposes that adversely affects any current or prospective contractor."

Section II: Authorization and Release

I have carefully read and understand this Candidate Disclosure, Authorization & Consent for the Procurement of Consumer Reports form and the attached summary of rights under the Fair Credit Reporting Act. By my signature below, I consent to the release of consumer reports and investigative consumer reports prepared by a consumer reporting agency, GoodHire, LLC., to the Company and its designated representatives and agents. I understand that if the Company accepts me, my consent will apply, and the Company may obtain reports, throughout my employment. I also understand that information contained in my job application or otherwise disclosed by me before or during my contracting, if any, may be used for the purpose of obtaining consumer reports and/or investigative consumer reports. By my signature below, I authorize law enforcement agencies, learning institutions (including public and private schools and universities), information service bureaus, credit bureaus, record/data repositories, courts (federal, state and local), motor vehicle records agencies, my past or present Company, the military, and other individuals and sources to furnish any and all information on me that is requested by the consumer reporting agency. By my signature below, I certify the information I provided on this form is true and correct and will be valid for any reports that may be requested by or on behalf of the Company.

☐ **I authorize GoodHire and its agents to contact my current employer if necessary to verify my current employment status.**

Contractor Name: _____ **Contractor Email: _____**

Contractor Signature: _____ **Date: _____**
MM/DD/YYYY

☐ If you are resident of, or performing jobs located in, California, Minnesota, Oklahoma, Massachusetts or New York, check this box to receive a free copy of any Consumer Report, Investigative Consumer Report or Credit Report from GoodHire electronically. For a paper copy, contact GoodHire at 1-888-906-7351 or support@goodhire.com.

Section III: Additional State Law Notices

If you reside in, or are seeking work in any of the following states, please review these additional notices:

California: You have the right to view your file that a Consumer Reporting Agency holds. By providing proper identification and duplication cost, you may obtain a copy of this information in person at the Consumer Reporting Agency's regular business hours and after providing reasonable notice for your request. Additionally, you can make the same request via mail or over request a summary of the file over the phone. The Consumer Reporting Agency can assist you in understanding your file, including coded information. You are allowed to have one additional person an Company you so long as they provide proper identification.

Maine: You have the right to ask and know whether a Company ordered a background check on you. You can request the name, address, and telephone number of the nearest Consumer Reporting Agency office. Your request will be processed and sent to you in 5 business days.

Massachusetts: You have the right to obtain a copy of any of your consumer reports that your Company has ordered on you by contacting the Consumer Reporting Agency for a free copy.

New York: By submitting a written request, you can learn whether a Company has run a background check on you. You are allowed to inspect and order a copy of the report by directly contacting the Consumer Reporting Agency. If you have been convicted of one or more criminal offenses, you can request the Company to provide a written statement declaring the reasons for the refusal of hire. This statement must be provided to you within 30 days of your request.

Washington State: After submitting a written request and waiting a reasonable amount of time after receiving the disclosure, you have the right to receive a complete and accurate disclosure of the nature and scope of any "investigative" consumer reports requested by an agency. The Washington Fair Credit Reporting Act requires Consumer Reporting Agencies to provide you a summary of your rights and remedies upon request. Any information requested by a Company that deals with credit worthiness, credit standing or capacity is justified in order for employers to evaluate whether you present a risk for theft or dishonest behavior for the job you are being considered for.

Section IV: A Summary of Rights Under The FCRA

Para información en español, visite www.consumerfinance.gov/learnmore o escribe a la Consumer Financial Protection Bureau, 1700 G Street N.W., Washington, DC 20552.

The federal Fair Credit Reporting Act (FCRA) promotes the accuracy, fairness, and privacy of information in the files of consumer reporting agencies. There are many types of consumer reporting agencies, including credit bureaus and specialty agencies (such as agencies that sell information about check writing histories, medical records, and rental history records). Here is a summary of your major rights under the FCRA. **For more information, including information about additional rights, go to www.consumerfinance.gov/learnmore or write to: Consumer Financial Protection Bureau, 1700 G Street N.W., Washington, DC 20552.**

- **You must be told if information in your file has been used against you.** Anyone who uses a credit report or another type of consumer report to deny your application for credit, insurance, or employment – or to take another adverse action against you – must tell you, and must give you the name, address, and phone number of the agency that provided the information.

- **You have the right to know what is in your file.** You may request and obtain all the information about you in the files of a consumer reporting agency (your "file disclosure"). You will be required to provide proper identification, which may include your Social Security number. In many cases, the disclosure will be free. You are entitled to a free file disclosure if:
- a person has taken adverse action against you because of information in your credit report;
- you are the victim of identity theft and place a fraud alert in your file;
- your file contains inaccurate information as a result of fraud;
- you are on public assistance;
- you are unemployed but expect to apply for employment within 60 days.

  In addition, all consumers are entitled to one free disclosure every 12 months upon request from each nationwide credit bureau and from nationwide specialty consumer reporting agencies. See www.consumerfinance.gov/learnmore for additional information.

- **You have the right to ask for a credit score.** Credit scores are numerical summaries of your credit-worthiness based on information from credit bureaus. You may request a credit score from consumer reporting agencies that create scores or distribute scores used in residential real property loans, but you will have to pay for it. In some mortgage transactions, you will receive credit score information for free from the mortgage lender.

- **You have the right to dispute incomplete or inaccurate information.** If you identify information in your file that is incomplete or inaccurate, and report it to the consumer reporting agency, the agency must investigate unless your dispute is frivolous. See www.consumerfinance.gov/learnmore for an explanation of dispute procedures.

- **Consumer reporting agencies must correct or delete inaccurate, incomplete, or unverifiable information.** Inaccurate, incomplete, or unverifiable information must be removed or corrected, usually within 30 days. However, a consumer reporting agency may continue to report information it has verified as accurate.

- **Consumer reporting agencies may not report outdated negative information.** In most cases, a consumer reporting agency may not report negative information that is more than seven years old, or bankruptcies that are more than 10 years old.

- **Access to your file is limited.** A consumer reporting agency may provide information about you only to people with a valid need -- usually to consider an application with a creditor, insurer, employer, landlord, or other business. The FCRA specifies those with a valid need for access.

- **You must give your consent for reports to be provided to employers.** A consumer reporting agency may not give out information about you to your employer, or a potential employer, without your written consent given to the employer. Written consent generally is not required in the trucking industry. For more information, go to www.consumerfinance.gov/learnmore.

- **You many limit "prescreened" offers of credit and insurance you get based on information in your credit report.** Unsolicited "prescreened" offers for credit and insurance must include a toll-free phone number you can call if you choose to remove your name and address from the lists these offers are based on. You may opt out with the nationwide credit bureaus at 1-888-5-OPTOUT (1-888-567-8688).

- **You may seek damages from violators.** If a consumer reporting agency, or, in some cases, a user of consumer reports or a furnisher of information to a consumer reporting agency violates the FCRA, you may be able to sue in state or federal court.

- **Identity theft victims and active duty military personnel have additional rights.** For more information, visit www.consumerfinance.gov/learnmore.

States may enforce the FCRA, and many states have their own consumer reporting laws. In some cases, you may have more rights under state law. For more information, contact your state or local consumer protection agency or your state Attorney General. For information about your federal rights, contact:

TYPE OF BUSINESS:	PLEASE CONTACT:
1.a. Banks, savings associations, and credit unions with total assets of over $10 billion and their affiliates b. Such affiliates that are not banks, savings associations, or credit unions also should list, in addition to the CFPB:	Consumer Financial Protection Bureau 1700 G Street, N.W. Washington, DC 20552 Federal Trade Commission: Consumer Response Center – FCRA Washington, DC 20580 (877) 382-4357
2. To the extent not included in item 1 above: a. National banks, federal savings associations, and federal branches and federal agencies of foreign banks b. State member banks, branches and agencies of foreign banks (other than federal branches, federal agencies, and Insured State Branches of Foreign Banks), commercial lending companies owned or controlled by foreign banks, and organizations operating under section 25 or 25A of the Federal Reserve Act c. Nonmember Insured Banks, Insured State Branches of Foreign Banks, and insured state savings associations d. Federal Credit Unions	a. Office of the Comptroller of the Currency Customer Assistance Group 1301 McKinney Street, Suite 3450 Houston, TX 77010-9050 b. Federal Reserve Consumer Help Center P.O. Box. 1200 Minneapolis, MN 55480 c. FDIC Consumer Response Center 1100 Walnut Street, Box #11 Kansas City, MO 64106 d. National Credit Union Administration Office of Consumer Protection (OCP) Division of Consumer Compliance and Outreach (DCCO) 1775 Duke Street Alexandria, VA 22314
3. Air carriers	Asst. General Counsel for Aviation Enforcement & Proceedings Aviation Consumer Protection Division Department of Transportation 1200 New Jersey Avenue, S.E. Washington, DC 20590
4. Creditors Subject to the Surface Transportation Board	Office of Proceedings, Surface Transportation Board Department of Transportation 395 E Street, S.W. Washington, DC 20423
5. Creditors Subject to the Packers and Stockyards Act, 1921	Nearest Packers and Stockyards Administration area supervisor
6. Small Business Investment Companies	Associate Deputy Administrator for Capital Access United States Small Business Administration 409 Third Street, S.W., 8th Floor Washington, DC 20416
7. Brokers and Dealers	Securities and Exchange Commission 100 F Street, N.E. Washington, DC 20549
8. Federal Land Banks, Federal Land Bank Associations, Federal Intermediate Credit Banks, and Production Credit Associations	Farm Credit Administration 1501 Farm Credit Drive McLean, VA 22102-5090
9. Retailers, Finance Companies, and All Other Creditors Not Listed Above	FTC Regional Office for region in which the creditor operates or Federal Trade Commission: Consumer Response Center – FCRA Washington, DC 20580 (877) 382-4357

Contractor Background Check Form

Company Name: _____**Date** _____

Employee Information

Full Name: _____
Last *First* *Middle*

Address: _____
Street Address *Apartment/Unit #*

_____
City *State* *ZIP Code*

Birth Date: _____ Driver's License #: _____
mm/dd/yyyy *State* *Number*

Employee Information

Full Name: _____
Last *First* *Middle*

Address: _____
Street Address *Apartment/Unit #*

_____
City *State* *ZIP Code*

Birth Date: _____ Driver's License #: _____
mm/dd/yyyy *State* *Number*

Employee Information

Full Name: _____
Last *First* *Middle*

Address: _____
Street Address *Apartment/Unit #*

_____
City *State* *ZIP Code*

Birth Date: _____ Driver's License #: _____
mm/dd/yyyy *State* *Number*

Employee Information

Full Name: _____
Last *First* *Middle*

Address: _____
Street Address *Apartment/Unit #*

_____
City *State* *ZIP Code*

Birth Date: _____ Driver's License #: _____
mm/dd/yyyy *State* *Number*

Employee Information

Full Name: _____
Last *First* *Middle*

Address: _____
Street Address *Apartment/Unit #*

_____
City *State* *ZIP Code*

Birth Date: _____ Driver's License #: _____
mm/dd/yyyy *State* *Number*

ORACLE Textura Payment Management

Oracle's Textura Payment Management: Work Faster and More Efficiently

What Is Textura (TPM®)?

Oracle's TPM is an Internet-based construction invoicing and payment solution. With the TPM system, subcontractors can electronically sign and submit their pay applications—including invoices, sworn statements, and conditional and/or unconditional lien waivers. Payments are made electronically via ACH (Automated Clearing House) resulting in faster access to your funds. In addition, TPM facilitates submission and tracking of compliance documents and sub-tier lien waivers. In short, TPM has revolutionized the construction payment process. Thousands of subcontractors currently use TPM to submit their pay applications every month.

Sign Pay Applications and Submit Electronically

TPM automatically generates the required Pay Application documents and transmits them to your GC electronically at the click of a button.

- Invoices are created by simply entering a percent complete or dollar value by line item of your budget
- Electronic submission of documents eliminates the expense and inconvenience of fax or hand delivery
- Invoice amounts are verified with lien waiver and payment amounts, reducing the risk of error

Receive Payments via ACH

TPM uses the secure ACH network for electronic deposit of funds to accelerate draw payments.

- ACH will deliver funds faster than a manual check. Payments are made through TPM directly by the GC and are subject to the terms of your contract.
- ACH works like direct deposit. Funds are immediately available, no waiting for checks to clear.
- TPM alerts you via email that payment has been disbursed.

Know What is Happening, When It Happens

TPM offers complete visibility throughout the draw process and notifies users of critical events.

- Receive real-time notifications when a draw is opened, change order issued, payment disbursed, etc.
- Receive email reminders to update expiring insurance documents and notification of non-compliance.
- Online invoice approval and rejection ensures that both parties are informed of final invoice amounts.

Manage Documents Online

Project documents created in or uploaded to the system are available for viewing, printing or downloading to your computer. TPM will store these documents for a minimum of ten years.

- Pay Application backup documents are submitted quickly and easily via an upload attachment feature.
- Electronic submission & tracking of legal documents such as insurance certificates reduces payment holds.
- Possibility for lost or delayed documents resulting in held payments is virtually eliminated

What Does It Cost to Use TPM?

0.22% of contract value*

- Maximum – $3,750
- Sub-tier subcontractors – $100

Payment Methods

- ACH (default) or Credit Card

**Plus applicable taxes*

Technical Requirements:

TPM is completely web-based- there is no software to install. Users need only:

- Internet access (high-speed recommended)
- Email access for each user
- Adobe Acrobat Reader 6.0 or higher (free download)

Free Training & Support:

Our Training Supports your training needs with:

- Free webinars
- Individual training by phone

Support representatives are available to answer your questions at 866 -TEXTURA (866-839-8872).

SECTION 01 5000 – CONSTRUCTION CONTROLS AND TEMPORARY FACILITIES

GENERAL

a. The Drawings, General Conditions, Supplementary General Conditions and Division l, General Requirements, are a part of this Section and shall be binding on the contractor and/or subcontractor who performs this work. Note also all Addenda.

SCOPE OF THE WORK

a. Trade contractors shall provide each and every manner of temporary structure and means of operation as required and herein specified to expedite construction phases properly and safely:

1. Temporary Field Office Buildings
2. Storage Facilities and Parking
3. Weather Protection
4. Temporary Water Service
5. Temporary Electrical Service
6. Temporary Sanitary Services
7. Temporary Heat and Ventilation
8. Temporary Telephone, Data and Internet Access Service
9. Temporary Fire Protection
10. Temporary Shoring
11. Scaffolding and Staging
12. Security
13. Lifting Devices and Hoisting Facilities
14. Project Sign
15. Site Logistics and Temporary Partitions Plans
16. Construction Controls
17. Survey
18. Fire Alarm and Fire Protection Maintenance
19. Familiarity of Site Responsibilities

1. <u>Temporary Field Office Buildings</u>

   a. The Construction Manager will provide a temporary trailer for his own use at the site.

   b. Each trade contractor shall provide his own temporary trailer (if required) on the project site at a location designated by the Construction Manager. Each trade contractor shall extend temporary electric service to his temporary field office and make all necessary connections. The installation of such electric service shall comply with all governing codes and regulations.

   c. Each trade contractor shall pay all expenses connected with his field office. This includes, but is not limited to, electrical service to the trailer and telephone/data to the trailer.

2. <u>Storage Facilities and Parking</u>

   a. Each trade contractor shall provide weathertight storage for materials requiring protection from the weather.

   b. Storage areas on the project site shall be in locations as directed by the Construction Manager and shall be relocated as necessary to maintain phased construction and schedule set by the Construction Manager.

c. Parking shall be in designated areas of the Owner's existing parking areas or in the Designated Contractor Parking area as indicated on the Site Logistics Plan. Each trade contractor will only be allowed a maximum of two vehicles to be parked on site, i.e., foreman trucks. The trade contractors are responsible for finding off-site parking for their workers.

3. Weather Protection

a. Each trade contractor shall provide protection against weather at all times so as to maintain all work, materials, apparatus and fixtures free from injury or damages. At the end of the day's work, all new work likely to be damaged shall be covered or otherwise protected as required. Wet work shall not be performed when temperature is below 40°F or is likely to go below 40°F within the ensuing forty-eight hours except when sufficient protective heat is provided and the CM's or Architect's approval in writing is obtained. Each trade contractor performing wet work is responsible to insure water does not pond or accumulate within the building, and to provide temporary drainage and/or pumping necessary to keep excavations, pits and trenches free of water and to prevent ponding of water within or adjacent to the structure or in traveled paths outside of the building.

b. If low temperatures make it impossible to continue operations safely in spite of cold weather precautions, each affected contractor shall cease work and shall so notify Construction Manager. Any lost time must be made up without additional cost to the Owner, in order to maintain the construction schedule. Open fires are not permitted on the site.

4. Temporary Water Service

a. (Memo#1) The sitework contractor shall obtain water needed to complete their sitework, eg. Dust control, compaction, etc. The existing building water service to be modified prior to entry of existing building for field construction usage, the existing water meter shall be re-used, provide blackflow preventer in a hotbox on the water service (by sitework contractor). The plumbing contractor shall provide temporary water to be used by all trade contractors within the building footprint as directed by the Construction Manager. Water consumption for the building construction will be paid for by the Owner. Refer to Section 01 5000 – Construction Controls and Temporary Facilities for additional information. The electrical contractor shall provide heat trace and thermal insulation for this line as necessary to protect it from freezing. The building abatement and demolition contractor shall obtain water for their own use.

b. The plumbing contractor shall provide and maintain the temporary construction water supply for his needs and that of all other trades, including the spray fireproofing, fire suppression, masonry and concrete contractors, for areas of work within the building.

c. Each trade contractor shall provide drinking water for his personnel at project site. The furnishing of paper cups is the responsibility of the individual trade contractors.

d. The plumbing contractor will make temporary provisions to provide domestic water hookups for use by all other trades with the exception of the building abatement and demolition contractor.

5. Temporary Electrical Service

a. The electrical contractor shall provide temporary lighting and power in accordance with this Section. All trade contractors are responsible for any electrical power needed for powering their equipment above 120-volt convenience power that is being provided for hand tools.

b. (Memo#1) Upon award of contract, the electrical contractor shall coordinate with Eversource, Frontier and the sitework contractor for the installation of the permanent and temporary service. The temporary construction power service shall be fed off the existing building utility transformer. The sitework contractor shall include a 24" wide, 3' deep trench, with sand bedding and backfill for the power and tele/data temporary service for the field office trailers. The trench starts at the new permanent transformer and continues to the O&G field office. The electrical contractor shall install a 400 amp 3-phase service with meter, distribution panel and breakers on temporary exterior power distribution board and or temporary enclosure with a step-down transformer as required for 120/280V for temporary construction services to the building.

c. The electrical contractor shall provide all work necessary for the temporary construction power for the building and power to the Construction Manager's field office. Until temporary service is energized, the electrical contractor shall provide a generator, connection and fuel to provide power to the Construction Manager's field office. Each trade contractor shall be responsible for the cost to connect electrical services to his own field office from the trade contractor field office sub-panel following the new services being energized. The Construction Manager will relocate his office trailer at the end of the Academic Phase, shown on the Site Logistics drawings. The electrical trade contractor shall disconnect and reconnect the Construction Manager’s office trailer as required.

d. The temporary electrical service is not to be used for hoists, cranes and welders. Should any contractor require electric service for these items, they must coordinate this with the Construction Manager and pay all costs. The electrical contractor shall provide for all other temporary construction electrical requirements and connections, including but not limited to, temporary heat equipment, elevator temporary power, abatement equipment and floor sanding and bead blasting equipment. The electrical contractor shall provide 3 phase power for the commissioning and final adjustments of the elevator, using a temporary service or generator if the permanent power has not been energized.

e. All temporary service routing must be approved by Construction Manager before installation.

f. The electrical contractor shall provide all temporary light and distribution equipment as required for his own work and work of all trades, with the exception of the abatement and demolition contractor, who is responsible for temporary lighting within the containment areas.

g. The electrical contractor shall provide and pay for all maintenance, servicing, operation and supervision of the services and distribution facilities, including lamps and wiring for all temporary construction lighting. Temporary power and light shall be made available for all trades 24 hours per day, 7 days per week without additional payment to the electrical contractor.

h. Until the permanent lights are installed, the electrical contractor shall provide temporary lighting to illuminate the work areas of all trade contractors per OSHA requirements. Any illumination levels required in excess of the OSHA requirements are the responsibility of the trade contractor requiring the additional lighting.

i. The electrical contractor shall coordinate with the local authority and Eversource for removal of the temporary transformer serving the existing building when it is no longer needed. The site contractor shall remove all temporary raceway and structures. Following the complete project substantial completion and trade contractor demobilization in the Spring 2023, the electrical contractor shall coordinate with the utility companies for their facility removal, remove all of their temporary equipment where possible and cap and abandon in place the raceways inaccessible due to gas and water service installations. The sitework contractor shall remove and dispose of all remaining temporary electric and telephone facilities.

j. When temporary electrical facilities within the building are no longer required, they shall be removed by the electrical contractor and he shall be responsible to restore to the original condition any part or parts of the grounds or buildings disturbed or damaged by such removal.

k. The electrical contractor shall install and maintain at each area of the work a feeder or feeders of sufficient capacity for requirements of the entire area and provide a sufficient number of outlets, located at convenient points, so that extension cords of not over 50 feet in length will reach all areas of the work requiring temporary light and power. Ground-fault protection shall be provided and meet all electrical codes and OSHA requirements.

l. Each trade contractor shall furnish all extension cords, sockets, lamps, motors, and accessories required for the execution of his work. Each trade contractor shall be responsible for electrical service for his own field office.

6. Temporary Sanitary Services (ADD#3)

a. All temporary sanitary services will be provided by the general trades contractor. The general trades contractor shall include an amount of *$105,000.00* Lump Sum in their base bid proposal specifically for providing temporary toilets and washing stations *CM Trailer cleaning/disinfecting and building wipe down/disinfecting*. Unused funds will be returned to the project. The Construction Manager shall determine the quantity and location of toilets that will be required for the duration of the project. The general trades contractor shall order the installation of the temporary toilets as directed by the Construction Manager. The general trades contractor shall be allowed a 10% markup on the direct costs for coordinating and insuring adequate facilities are available and maintained.

b. The general trades contractor shall have each temporary toilet unit cleaned and disinfected on a daily basis and supplies replenished as required. Each unit will be pumped out every other workday (max 3 times per week or as directed by the Construction Manager). The cost for the pumping service will be paid for from the lump sum value stated in 6a above. The daily cleaning and disinfecting will be performed by *a cleaning service acceptable to the owner.* The cost for this service will be paid for from the lump sum value stated in 6a above.

c. The general trades contractor shall provide temporary hand washing stations at a ratio of one per every five temporary toilet facilities. The general trades contractor will have each unit inspected daily with soap and paper towels replenished as required by the rental company. The daily cleaning and disinfecting will be performed by *a cleaning service acceptable to the owner.* The cost for this service will be paid for from the lump sum value stated in 6a above.

7. Temporary Heat and Ventilation

a. During the winter of 2021/2022, after the Academic Building is fully enclosed and following installation of a minimum of reinforced plastic at all window openings, it will be the responsibility of the HVAC contractor to provide temporary heating, ventilation and humidity control in the Academic Building.

b. (Memo#1) For the 2020/2021 temporary heat, the HVAC contractor shall provide vented, self-contained, liquid-propane heaters with individual space thermostatic control for maintaining the conditions in the Building.

c. The HVAC contractor may use the new HVAC equipment for temporary heat for the Assembly Wing during the 2022/2023 winter.

d. ***The HVAC contractor shall pay for propane fuel consumption out of an allowance for temporary heat fuel***. Except for electrical requirements, all installation and removal costs of the temporary heating system shall be included in the HVAC contractor's base bid.

e. Temporary Heat Equipment:

   i. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

   ii. Heating Units - Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

   iii. Units used to provide temporary heat to the building shall be units specifically designed, built and operated for temporary heating conditions. Any and all units need to be approved for use by the Construction Manager prior to delivery and set-up. The Construction Manager reserves the right to reject any unit it deems not suitable for use in a temporary heating environment.

   iv. Permanent HVAC System - If the Owner authorizes use of the permanent HVAC system for temporary use in the renovation areas during construction, the HVAC contractor shall provide a filter with a minimum MERV of 13 at each return air grille in the system and remove each filter at the end of construction. Following removal, the HVAC contractor shall provide a duct cleanliness inspection and report and cleaning if required by the Engineer or Owner.

f. (ADD#2) A minimum temperature of 55°F shall be maintained throughout the new structure and areas in the existing building during general construction. During the period of casework and millwork installations, maintain a minimum temperature of 60 degrees F and maximum temperature of 90 degrees F throughout the new structure and areas in the existing building. The HVAC contractor shall provide all temporary controls and/or stand by personnel necessary to meet the requirements of the local authorities (Building Department and Fire Department).

g. The HVAC contractor is responsible for heating, ventilation and humidity control in all areas of construction until they are substantially complete or accepted by the Owner for FF&E installation. The HVAC contractor shall have the option of providing temporary unit heaters and ventilators or using the permanent heating system on a temporary basis.

h. The HVAC contractor shall provide adequate ventilation and dehumidification in all areas of construction for material stored within the existing building at all times to prevent damage caused by humidity and moisture.

i. If new heating or ventilating systems are used for temporary requirements, such use shall not effect equipment warrantees. Warrantees shall commence as specified elsewhere in applicable sections of the specifications.

j. The enclosures and temporary heat for exterior masonry and cement board cladding, including installation of air vapor membranes and sealants, is the responsibility of the trade contractor requiring the temperature or environmental conditions.

8. Temporary Telephone, Data and Internet Access Service

    a. Each contractor shall provide his own temporary phone at his office trailer for use during construction. The Construction Manager's phones will not be available for the contractor's use.

    b. Each trade contractor shall include in his bid the cost of providing a smart phone for each of his supervisory personnel.

9. Temporary Fire Protection

    a. Each trade contractor shall provide and maintain in good operating condition suitable and adequate fire protection equipment and services, and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the work or by the local fire chief or Fire Marshal.

10. Scaffolding and Staging

    a. Each contractor shall furnish, erect and maintain staging and scaffolding (exterior and interior) for their use during construction activities. Staging shall be erected and removed by experienced staging builders, and shall conform to Federal, State and Local requirements. Each contractor is required to comply with all OSHA regulations for Scaffolding, reference Rider B contained in Section 00 52 00. Upon completion of his work, each contractor shall dismantle and remove his staging and scaffolding.

11. Temporary Shoring

    a. The sitework contractor shall provide the earth retention system shown on the Site Logistics Plan located along Column Lines AK and D10 during the Academic Wing Phase in order to excavate, place the concrete foundation and backfill adjacent to the existing school. The School will be in session. The sitework contractor shall be responsible for all design, construction and removal, if necessary, of the earth detention system.

12. Security

    a. Each trade contractor shall take all reasonable precautions necessary to prevent loss or damage caused by vandalism, theft, burglary, or pilferage of property located within the limit of work.

    b. The sitework contractor shall install, maintain and remove all temporary security fence and gates shown in the Site Logistics Plan included in this section. The fencing shall be minimum 2-inch, 9-gage, galvanized steel, chain-link fencing, minimum 8 feet high with driven galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails.

    c. The sitework contractor shall provide “No Trespassing” signs on all perimeter fencing at maximum 100' spacing.

13. Lifting Devices and Hoisting Facilities

    a. Each contractor shall provide cranes, hoists, and other lifting devices necessary for proper and efficient movement of his materials. Provide trained operating personnel required for the equipment. Provide proper guys, bracing, and other safety devices as required by Local and State Codes. Remove hoisting equipment when no longer needed.

14. Project Sign

    a. The general trades contractor shall furnish and install a project sign. The sign shall have a white background, shall have a rendering of the new school (artwork file provided by the Architect) and black lettering with same basic information included on the Project Sign sketch enclosed in this section. The exact layout of wording shall be approved by the Architect. Sign material shall be appropriate for the application of the artwork and exposure to the elements for a 30-month duration and if necessary, mounted to a 3/4" thick 4'x8' sheet of CDX plywood painted white. Sign shall be installed using two 4'x4' posts painted white.

15. Site Logistics and Temporary Partitions Plans

    a. Refer to the Site Logistics at the end of this section.

    b. The sitework contractor shall provide temporary paths as approved by the LAHJ out of any egress doors as required in order to provide smooth transition to existing grades, new grades or areas designated as areas of refuge.

16. Construction Controls

    a. All trade contractors shall perform their work in compliance with Section 01 81 20 - Construction Indoor Air Quality (IAQ) Management Program prepared by O&G Industries included in the bid documents. O&G Industries will conduct a pre-construction conference to explain this IAQ Program and familiarize all trade contractors of their duties for meeting the goals of the program during construction. The trades referenced herein are responsible for providing the following specific items:
        1. The HVAC contractor is responsible for section 01 81 20-6.1, 6.3b.1 and 6.3b.2.
        2. The drywall contractor is responsible for 01 81 20-6.3b.3 and is responsible to seal off and maintain separation between each construction area and the occupied areas, including providing air brakes (vestibules) at all entry points into the construction areas.
        3. The general trades contractor is responsible for 01 81 20-6.4 and shall provide sufficient quantity of negative air machines as determined by the Construction Manager to keep each interior construction areas under negative pressure.

17. Survey

    a. The sitework contractor will establish a base line and an elevation bench mark at the site for their work, the sitework contractor shall provide a survey containing the control points for this baseline and their relationship to the grid lines of the work. The concrete contractor shall provide all survey work and layout work from the control points for their work as outlined in the Special Instructions of Bid Package 1.03 - Concrete. Each trade contractor is responsible for their own surveying and layout as needed to complete their contractual scope of work. Two baselines (one in each direction N-S and E-W) will be provided as control for all layout to be based from. These baselines will also include vertical control.

    b. If, for any reason, monuments or control points established by the sitework contractor for the new addition are disturbed, it shall be the responsibility of the offending trade contractor to re-establish them, without cost to the Owner, either by hiring a licensed surveyor or by separate agreement with the sitework contractor, or as directed by the Architect/Construction Manager.

    c. Each trade Contractor shall be responsible for all layout/measurements that may be required for execution of their work to the exact position and elevation as prescribed in the specifications, shown on the drawings, or as the same may be modified at the direction of the Architect to meet changed conditions or as result of modification to the Contract.

d. The Architect/Construction Manager may require that construction work be suspended at any time when location and limit marks established by any trade contractor are not reasonably adequate to permit checking completed work or the work in progress.

18. Fire Alarm and Fire Protection Maintenance

a. Any trade contractor whose work disrupts the (Memo#1) new fire alarm, fire sprinkler or alarm monitoring services in the building is responsible for providing a fire watch as required by the Fire Marshal.

19. Familiarity of Site Responsibilities

a. It is the duty and responsibility of each Trade Contractor to visit the site and familiarize and verify all existing conditions.

b. Prior to application of materials included in the various sections so noted, the installer, the manufacturer's representative, and the trade contractor shall together examine the building and surfaces upon which materials are to be supplied.

c. The installer and the manufacturer's representative shall accept all surfaces and conditions affecting proper installation of their materials. The installer shall not proceed with the work until all conditions and surfaces are satisfactory to him. Proceeding with his work is an acknowledgment by the Trade Contractor of acceptance of the surface and condition of the substrate for application of their work.

d. Each respective Trade Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

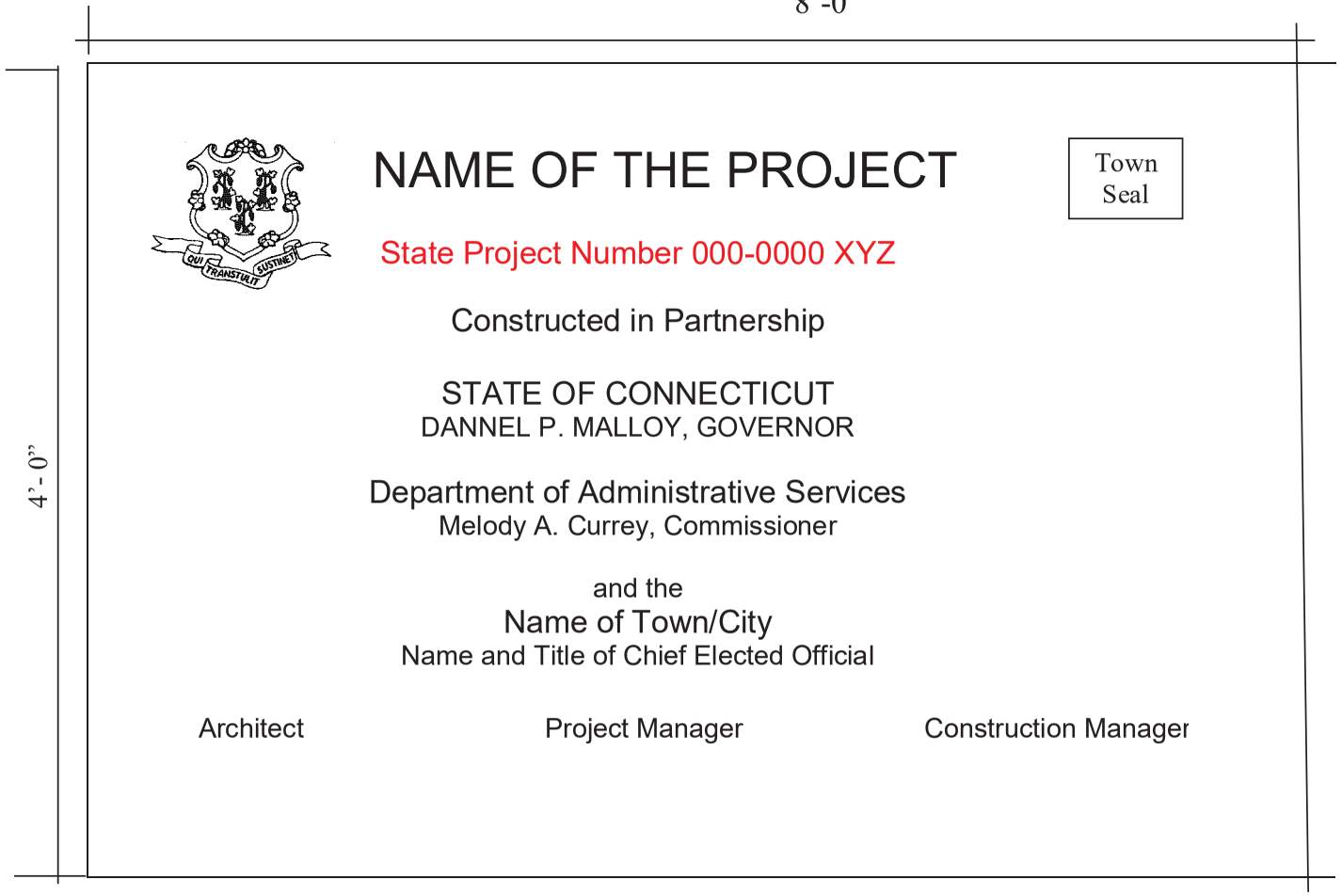
e. Each Trade Contractor shall ascertain the location of all electrical cables, conduit, utility lines, oil tanks, supply lines, sewer, water lines and drains whether or not exposed to view, and take proper precautions not to disturb any existing utilities that are to remain in use.

f. Should any utility line be discovered or uncovered during the work, the Trade Contractor shall promptly notify the Construction Manager in writing.

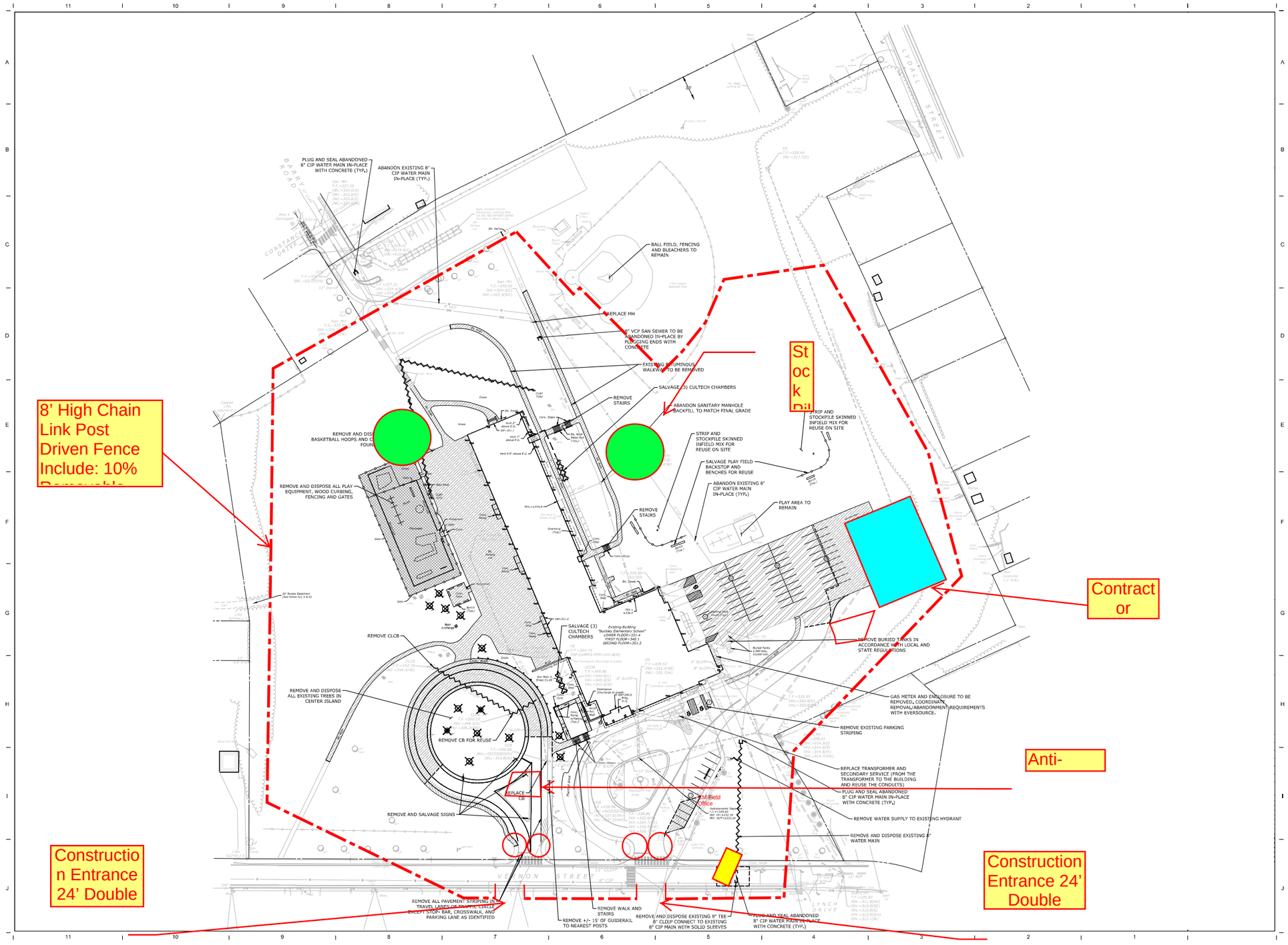
g. All Trade Contractors shall be held responsible for any utility lines damaged during the process of any of their respective work under the Contract.

END OF SECTION

DEPARTMENT OF ADMINISTRATIVE SERVICES (DAS)
Office of School Construction Grants & Review (OSCG&R)
Project Sign
FORM SCG-3021



SIGN PANEL: ¾" MDO-EXT-APA PLYWOOD SUPPORTED WITH (2) 4X4 TREATED WOOD COLUMNS AND SECURED 4' INTO GRADE. TOP OF SIGN AT 8'-0" ABOVE GRADE.
COLORS: ALL LETTERS AND SYMBOLS ARE TO BE ROYAL BLUE. THE BACKGROUND WILL BE WHITE ENAMEL. BACK OF PLYWOOD AND SUPPORT STRUCTURE SHALL BE PAINTED MATTE BLACK.
TYPEFACE: HELVETICA MEDIUM
LOCATION: SIGN MUST BE LOCATED TO BE CLEARLY VISIBLE TO THE PUBLIC.
TIMING: INSTALL AT THE START OF CONSTRUCTION AND REMOVE AT CONSTRUCTION COMPLETION.


8' High Chain Link Post Driven Fence Include: 10% Removable
Stock Pil
Contractor
Anti-
Construction Entrance 24' Double
Construction Entrance 24' Double
PLUG AND SEAL ABANDONED 8" CIP WATER MAIN IN-PLACE WITH CONCRETE (TYP.)
ABANDON EXISTING 8" CIP WATER MAIN IN-PLACE (TYP.)
BALL FIELD, FENCING AND BLEACHERS TO REMAIN
REPLACE MH
8" VCP SAN SEWER TO BE ABANDONED IN-PLACE BY PLUGGING ENDS WITH CONCRETE
EXISTING BITUMINOUS WALKWAYS TO BE REMOVED
SALVAGE (3) CULTECH CHAMBERS
REMOVE STAIRS
ABANDON SANITARY MANHOLE BACKFILL TO MATCH FINAL GRADE
STRIP AND STOCKPILE SKINNED INFIELD MIX FOR REUSE ON SITE
REMOVE AND DISPOSE ALL PLAY EQUIPMENT, WOOD CURBING, FENCING AND GATES
SALVAGE PLAY FIELD BACKSTOP AND BENCHES FOR REUSE
ABANDON EXISTING 8" CIP WATER MAIN IN-PLACE (TYP.)
PLAY AREA TO REMAIN
REMOVE STAIRS
SALVAGE (3) CULTECH CHAMBERS
REMOVE CLCB
REMOVE AND DISPOSE ALL EXISTING TREES IN CENTER ISLAND
REMOVE CB FOR REUSE
REMOVE BURIED TANKS IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS
GAS METER AND ENCLOSURE TO BE REMOVED, COORDINATE REMOVAL/ABANDONMENT REQUIREMENTS WITH EVERSOURCE.
REMOVE EXISTING PARKING STRIPING
REPLACE TRANSFORMER AND SECONDARY SERVICE (FROM THE TRANSFORMER TO THE BUILDING AND REUSE THE CONDUITS)
PLUG AND SEAL ABANDONED 8" CIP WATER MAIN IN-PLACE WITH CONCRETE (TYP.)
REMOVE WATER SUPPLY TO EXISTING HYDRANT
REMOVE AND DISPOSE EXISTING 6" WATER MAIN
REPLACE CB
REMOVE AND SALVAGE SIGNS
M Field Office
REMOVE ALL PAVEMENT STRIPING INCL. TRAVEL LANES, CROSSWALK, CURB, EXCEPT STOP- BAR, CROSSWALK, AND PARKING LANE AS IDENTIFIED
REMOVE WALK AND STAIRS
REMOVE +/- 15' OF GUIDERAIL TO NEAREST POSTS
REMOVE AND DISPOSE EXISTING 8" TEE & 8" CL(D)P CONNECT TO EXISTING 8" CIP MAIN WITH SOLID SLEEVES
PLUG AND SEAL ABANDONED 8" CIP WATER MAIN IN-PLACE WITH CONCRETE (TYP.)
VERNON STREET
LYNCH DRIVE
EVDALL STREET
CONSTANCE DRIVE
BERARD CIRCLE

SECTION 017413 - PROJECT CLEANLINESS

1. NARRATIVE

O & G Industries, Inc. takes pride in a neat and tidy jobsite. Cleanliness promotes an image that infers order and pride in ones work. A project that is clean and orderly is also a safer project for all. To this end, every trade contractor is required to participate and cooperate in effecting a clean, safe jobsite.

2. GENERAL REQUIREMENTS

The following are mandatory requirements for all trade contractors under this contract:

a. The General Trades contractor will be providing dumpsters for construction waste only. These dumpsters will be emptied each Friday afternoon (or more frequently if full).

b. All trade contractors while on site are responsible for and required to participate in routine daily cleaning. Construction debris generated by each trade contractor is to be deposited, *on a daily basis*, in the jobsite dumpster. The furnishing of jobsite dumpsters and their specific use are designated elsewhere in these contract documents. Refer to each bid package. The jobsite will be inspected at the end of each workday to assess compliance. Photographic evidence will be provided should, in the opinion of the Construction Manager, the offending trade contractor fail to comply with this contract requirement. The penalty for the first failure is a warning. The second warning will result in a $500.00 irrevocable fine plus a change order processing fee of $200.00.

   The site contractor shall, at a minimum weekly, and more often when directed, maintain and sweep clean all paved areas, roadways and streets adjacent to and throughout the project.

c. Each trade contractor is responsible for providing his own tools and equipment for cleaning. Tools and equipment shall include, but not necessarily be limited to shovels, pails, brooms, sweeping compound, wheelbarrows, hand trucks, etc. Use of any sweeping compound or cleaning agent must first be approved by the Construction Manager to insure its compatibility with flooring and other construction materials.

d. Once a week, for the duration of the project, the Construction Manager will designate a day where each trade contractor will participate in a “joint cleaning” of the entire project. With the exception of the general trades contractor, manpower provided by each trade contractor will be selected by the Construction Manager and be proportionate to the total manhours worked by that trade contractor during the previous week. Each trade contractor’s personnel will report to the Construction Manager's trailer on a date and time so designated for sign-in and a brief meeting to discuss general items and problem areas needing attention. Should Labor Union, Project Labor Agreements or Local or State labor laws, rules or regulations prohibit tradesmen from participating in the work under this section, then it shall be the responsibility of the trade contractor to contract directly with the appropriate Labor force to carry out said work.

e. The general trades contractor shall provide, specifically for the “joint cleaning” of the project, sufficient manpower to properly broom sweep the entire building. This task may carry over into the following day but shall in no way relieve the general trades contractor from completely sweeping the building.

f. *The general trades contractor shall provide cleaning and disinfecting of the Construction Manager's field office trailer two times per week from the date of the executed contract until project completion. This cleaning shall consist of dusting of all furniture and horizontal surfaces and sweeping and mopping the floor, cleaning/disinfecting all touch points throughout the interior and exterior of the trailer including door handles, railings, office equipment, etc.. Waxing of the floor shall be performed on a monthly basis.*

g. The general trades contractor shall provide 1/2 CY debris cart/hoppers, minimum three (3) per floor, for general construction debris. These containers are provided for construction debris generated by all trades. These containers shall be emptied by the general trades contractor as needed, minimum weekly into the project dumpsters so that at no time are they overfilled or unavailable to the trade contractors. Each trade contractor is responsible to place all debris in the hoppers. No trade contractor debris shall be allowed to remain on the floor at the completion of any workday. This includes the drywall contractor's stud and gyp board cutoff debris.

   The general trades contractor shall also provide 55-gallon capacity barrels marked "Trash" at contractors staging, trailer and parking areas. The general trades contractor shall empty each barrel as necessary so that at no time the barrels become overfilled. These 4x4 containers and barrels are to be used for paper and plastic rubbish only and are not to be used as receptacles for construction waste and debris. Improper use of the 4x4 containers and trash barrels will result in fines as stipulated in Section 4 of this specification.

h. Where permanent flooring has been completed, the general trades contractor shall provide ongoing floor cleaning by fine broom sweeping on a weekly basis. This effort is to continue until final cleaning commences.

i. Each trade contractor shall include in his base bid whatever cleaning costs it deems necessary to meet the requirements of its contract scope of work. For the purpose of valuing this effort and reimbursement for same, each trade contractor shall include in his Schedule of Values on the monthly pay application a single line item for both routine daily and joint weekly cleaning. The minimal value of that cleaning line item shall not be less than:

Value of Contract	Cleaning Line Item Minimum Value
Less than $100,000.00	5% of total contract value
$100,000.00 to $500,000.00	4% of total contract value
$500,000.00 to $5 million	3% of total contract value
Over $5mil. to $10 million	2% of the contract value
Over $10 million	1.5% of the contract value

   Each trade contractor is reminded to increase the value of this line item if, in his opinion, the minimal value for payment purposes is insufficient to accomplish the work as herein stated.

3. INTERIM & PHASE/FINAL CLEANING

Interim Phase/Final Cleaning shall include the removal of dust, dirt, grime and stains in and on all new, renovated and existing work affected either directly or indirectly by construction activities including, but not limited to plumbing, mechanical and electrical equipment and fixtures and cabinets, casework, millwork, windows, sills, doors, hardware, etc. and all other horizontal and vertical surfaces not specifically mentioned here.

Interim Phase/Final cleaning shall be scheduled and directed by the Construction Manager and will involve several mobilizations as dictated by the construction phasing. The following is the breakdown of responsibilities for Interim Phase/Final Cleaning:

a. At the completion of each Phase or project, the site contractor shall complete the following cleaning items related to site work:

   1. Clean project site and all adjoining walks to back of curb of all rubbish, litter, debris and other extraneous materials, whether existing or generated during the project.

2. Sweep all exterior paved areas to a fine broom cleaned condition. Remove stains and spills and graffiti.
3. Clean all storm drainage systems including catch basins and man holes on the project site of all sand, debris etc.
4. Remove marks, stains, etc. from finished, painted, decorated or stained surfaces of site furnishings and sidewalks.

b. The final cleaning contractor shall hire a contractor with a minimum of five years of experience for interim phase/final cleaning in the building, except where noted otherwise. This work shall include, but not necessarily be limited to, broom cleaning of interior pavements and concrete floors, final cleaning of resilient flooring and base as recommended by the manufacturer (note that this does not include stripping and waxing of these floors), vacuuming all carpet and power scrubbing all ceramic tile floors and walls. The final cleaning contractor shall be responsible for interim phase/final cleaning all areas of new construction and/or renovation work, including areas within the existing building that are used as access to and from new/renovated construction areas.

c. The window, entrance & curtainwall contractor shall be responsible for cleaning both the exterior and interior surfaces of all exterior windows, curtainwall and storefront systems, once after installation and one time prior to Owner occupancy as directed by the Construction Manager. If weather does not permit the cleaning of the exterior surface prior to Owner occupancy, the exterior surface of the windows will be cleaned at the earliest date agreed upon between the Construction Manager and the window, entrance & curtainwall contractor.

d. The flooring contractor will, at the Construction Managers direction, remove all temporary protective covering placed previously over sheet vinyl, carpet, VCT, ceramic tile and wood floor to prepare floors for interim phase/final cleaning, waxing and acceptance. Following the removal of the temporary protective covering, the flooring contractor will strip and wax all VCT and sheet vinyl floors, just prior to Owner's occupancy, all in accordance with the specifications and manufacturer's requirements. This contractor shall obtain specifics of the wax currently used by the Owner as they may have a preference going forward.

e. Interim Phase/Final cleaning of equipment in mechanical rooms provided by the fire protection contractor shall be the responsibility of the fire protection contractor. This Interim Phase/Final cleaning, as defined, shall be accomplished in and on all new and existing equipment affected by construction activities.

f. Interim Phase/Final cleaning of equipment in mechanical rooms provided by the plumbing contractor shall be the responsibility of the plumbing contractor. This Interim Phase/Final cleaning, as defined, shall be accomplished in and on all new and existing equipment effected by construction activities.

g. Interim Phase/Final cleaning of equipment in mechanical rooms provided by the HVAC contractor shall be the responsibility of the HVAC contractor. This Interim Phase/Final cleaning, as defined, shall be accomplished in and on all new and existing equipment effected by construction activities.

h. Interim Phase/Final cleaning of electrical panels, transformers, light fixtures and other equipment provided by the electrical contractor shall be the responsibility of the electrical contractor. This Interim Phase/Final cleaning, as defined, shall be accomplished in and on all new and existing equipment effected by construction activities.

i. *The General Trades contractor shall provide a cleaning service or laborer for four hours per day from 7/1/2021 to 7/1/2022 for every day the project site is open to provide cleaning/disinfecting services. These services shall include cleaning/disinfecting all project touch points throughout the site. This labor/service will be utilized to provide daily wipe down / disinfecting of portable toilets and wash*

stations detailed in 01 5000 "6. Temporary Sanitary Services". This shall include but not be limited to handrails, scaffolding, doors, etc. Contractor tools and equipment shall be cleaned by the trade who owns that equipment.

The cleaning/disinfectant product used must be compatible with the surfaces it is being applied to. The general trades contractor shall be responsible for any damage that may occur as a result of the cleaning product. Refer to O&G Industries Health & Safety Manual "Infectious Disease Response" for additional information.

This cleaning/disinfecting is in addition to any other cleaning requirements outlined in this specification section.

The general trades contractor shall document these cleaning efforts and submit a written report to O&G on a daily basis.

4. NON-PERFORMANCE

a. Failure to comply with any portion of this cleaning specification will subject the offending trade contractor to a $500.00 fine plus a change order processing fee of $200.00 and the withholding of monies due or about to become due against the cleaning line item as established in Item 6 per occurrence above.

b. Should the Construction Manager, at his sole discretion, find it necessary to act on behalf of the offending trade contractor in carrying out that trade contractor's cleaning obligations under this specification, it may do so after notifying the offending trade contractor, within 24-hours of the non-compliance. The cost of such action, plus a change order processing fee of $300.00, will be assessed against the offending trade contractor's contract. Notification will be deemed to be sufficient when sent in writing or electronically.

5. SUMMARY

a. It is not the intention of the Construction Manager to act punitively and adversarial in regards to jobsite cleanliness, but rather to strongly impart on each trade contractor the importance that O&G Industries and the Owner place on jobsite cleanliness and safety.

b. The cooperation of each trade contractor in fulfilling these project requirements are both appreciated and expected as the project is a reflection on all those who participate.

END OF SECTION

SECTION 017420 - CONSTRUCTION WASTE MANAGEMENT PLAN

1. NARRATIVE

This Construction Waste Management Plan will be implemented by O&G Industries, Inc. and its Trade contractors at the Buckley Elementary School project located in Manchester, Connecticut. The goal of this plan is to recycle and/or salvage a minimum of 50% with a target of at least 75% of the construction and demolition generated waste. The types of material that will be encountered and the procedures for handling them are outlined below.

Failure to adhere to the established waste separation procedures will adversely impact the project's CTHPBS certification. Should construction waste be placed in incorrect dumpsters, the Construction Manager will employ labor to separate the waste and backcharge the offending contractor(s) accordingly.

The Owner reserves the right to salvage items designated to be demolished prior to demolition.

2. RESPONSIBILITY FOR PROVIDING DUMPSTERS

All trade contractors shall note the requirements of Section 01 74 19 - Construction Waste Management and Disposal. It is critical that all contractors comply with this specification section and with the Construction Waste Management Plan prepared by the Construction Manager. The general trades contractor will be providing dumpsters for construction waste only. Note that this does not include demolition waste which is to be disposed of by the responsible contractor, per the next paragraph, who will separate their waste and provide documentation of the waste stream. It is imperative that all contractors separate their waste as described in the Construction Waste Management Plan so that the Construction Manager can obtain proper certification of the waste stream. The general trades contractor shall provide and maintain proper signage on all dumpsters so that materials being recycled can be placed in the correct dumpsters. Failure to adhere to the established waste separation procedures will adversely impact the project's CTHPBS certification. Should construction waste be placed in incorrect dumpsters, the Construction Manager will employ labor to separate the waste and backcharge the offending contractor(s) accordingly.

All trade contractors must separate their waste and place in the appropriate dumpster provided by the General Trades contractor. The General Trades contractor shall provide and maintain proper signage on all dumpsters so that materials being recycled can be placed in the correct dumpsters. All dumpsters required for the following trades shall be provided by the trade contractor generating the waste. Items not to be disposed of in the dumpsters provided by the general trades contractor are as follows:

- All building demolition and select demolition generated by the abatement and demolition contractor;
- All masonry demolition and masonry debris generated by the masonry contractor. Wood and plastic debris may be disposed of into the general trades dumpsters.

The following trade contractors shall dispose of the debris directly off the site. No laydown or on-site storage will be allowed:

- All sitework demolition and construction debris generated by the sitework contractor
- All roofing debris generated by the roofing contractor.

3. RECYCLING

One hundred percent of the materials listed below will be recycled. Each material type will have a dedicated labeled container. The General Trades contractor shall post a list of acceptable and unacceptable materials each container. Full containers will be emptied, and their contents will be delivered to a recycling facility. As an alternate method, to be used at the discretion of the General Trades contractor, a single dumpster may be provided and taken off site to a recycling facility that shall sort and weigh the subsequent waste material for reporting. The material types are as follows:

- Cardboard/Boxes
- Plastic Sheet and Film/Plastic Pails/ Polystyrene Packaging
- Wood
- Metals

4. DEMOLITION WASTE

Demolition waste will be processed according to the following guidelines:

a. Asphaltic Concrete Paving & Base Material - Upon removal, it will be taken off site and crushed to allow for future use.
b. Concrete, Reinforced Concrete Pipe, Masonry – Clean concrete and masonry will be separated and placed into dedicated masonry/concrete containers. Containers will be taken off site and crushed to allow for future use.
c. Site Fence, and Other Metals - Will be taken to a local scrap yard for recycling.
d. Site Clearing Waste - Trees and shrubs will be chipped on site or taken to a location off site where it can be chipped for use as mulch/wood chips

5. CONSTRUCTION WASTE

Construction waste will be collected in separate containers or, at the discretion of the General Trades contractor, a single dumpster may be provided and taken off site to a recycling facility that shall sort and weigh the subsequent waste material for reporting. All waste shall be processed according to the following guidelines:

a. Masonry, Drywall and Cardboard - Will be separated and placed into separate containers. Each container will be brought to a recycling facility when full.
b. Wood Products - Taken off site to a facility where they will be chipped/shredded for use as mulch/wood chips or as fuel for power generation.
c. Metals - There will be a container on site dedicated to the collection of clean metals. The container will be brought to a recycling facility when full.

6. HANDLING AND TRANSPORTATION PROCEDURES

The waste that is generated due to construction will be collected on site at various collection points. The collection points will be labeled clearly as to the acceptable and unacceptable materials that pertain to the individual container. Once the containers are full, the hauling company will pick them up. They will then be taken to an approved facility to recycle, salvage, or dispose of the material.

Each Trade contractor responsible for providing dumpsters and waste disposal shall provide O&G Industries copies of all weight tickets indicating the overall weight of the material in the container. Regardless of where these materials go, the trade contractor responsible for disposal must provide O&G Industries with weights of each container and its contents and shall provide a tracking

spreadsheet to report the weight of the materials exported on a monthly basis. In no circumstance shall the trade contractor dispose of materials at a waste recycling or management company without an agreement to provide this information.

7. WASTE MANAGEMENT CONFERENCE

A waste management conference will be held at the beginning of the job to discuss the implementation of the plan. Requirements for documenting quantities will be reviewed along with the individual requirements for each trade. This will include but not be limited to the locations of each collection point, the type of material that each collection point will accommodate, and the procedures pertaining to each type of material.

8. TRAINING

Training will be held on site to explain the waste management plan, procedures and purpose. This will include but not be limited to the location of each collection point, the type of material each collection point will accommodate and the procedures pertaining to each type of material. Every contractor that will be present on the job site will be given this training. This will include their project management team along with their actual field force.

9. COMPLIANCE

The following steps shall be taken to ensure compliance with this plan:

a. The O&G Project Superintendent shall coordinate the location of debris dumpsters and access for waste hauling equipment.
b. During demolition, materials will be sorted on site and hauled directly to recycling facilities as indicated in this section. During construction, the general trades contractor will provide segregated waste dumpsters to separate masonry, wood, scrap metal, drywall and cardboard from all other waste. One general waste dumpster will also be provided to be sorted at an off-site facility. The number of segregated dumpsters on site will be based on the current ongoing construction activities and the volume of debris to be expected.
c. O&G will monitor the implementation and documentation for this plan throughout this project.
d. All contractors generating debris shall ensure that field personnel are using the segregated waste dumpsters correctly.
e. Site inspections will be made on a monthly basis to review overall plan compliance.
f. O&G will track diverted wastes as a check for compliance with the project requirements for diverted material. O&G will promptly notify the offending contractor if it becomes apparent that diverted material goals are not being met and develop a plan to more aggressively pursue the recycling and salvage efforts on-site.
g. Photographs of compliance shall be submitted monthly by each Trade Contractor.
h. Each trade contractor providing debris dumpsters or removal shall provide a monthly progress report to O&G which will include the following:
    - Construction Waste Summary Report (cumulative through current month's submission)
    - Landfill Disposal Receipts
    - Recycling Receipts
    - Salvaged Material Documentation
    - Monthly Photographs

10. MONTHLY REPORTS

A waste reduction progress report will be submitted every month by the Abatement and demolition, General Trades and Sitework contractors with their application for payment. The report will include the following:

a. Generation Point of Waste
b. Total Quantity of Waste in Tons
c. Quantity of Waste Recycled - Estimated & Actual Tons for each type of material
d. Total Quantity of Waste Recycled - (Tons)
e. Total Quantity of Waste Recycled - (Percentage of Total Waste)

11. PROJECT COMPLETION

Before substantial completion, the calculated end of project rates for salvage, recycling and disposal as a percentage of total waste will be submitted. The trade contractors shall provide the following:

a. Recycling and processing facility records indicating receipt and acceptance of recyclable waste, manifests, receipts, and invoices will also be turned in.
b. Landfill and incinerator disposal records indicating receipt and acceptance of waste by landfills and incinerator facilities including manifests, weight tickets, receipts and invoices.
c. Letter provided and executed by the contractor indicating total waste material, quantities diverted and how it was diverted, and a statement that the requirements for the credit have been met.

END OF SECTION

SECTION 01 8120 - CONSTRUCTION INDOOR AIR QUALITY (IAQ) MANAGEMENT PLAN

1. OVERVIEW

EQ Credit 3.1 - Construction Indoor Air Quality Management Plan - During Construction – 1 Point

a. This Indoor Air Quality (IAQ) Management Plan is to be followed by all contractors and site personnel on Buckley Elementary School. The intent is to prevent indoor air quality problems resulting from the construction process and ensure the well-being and comfort level of the construction workers and building occupants.

b. The purpose of adopting this IAQ management plan is to control the pollutant sources, protect the HVAC system during construction and interrupt contamination pathways in the construction process. The proper scheduling and sequence of installation of certain materials is required to avoid contamination of absorptive materials such as carpeting, ceiling tile, gypsum board, insulation and wall coverings.

c. The requirements for this pre-requisite are:

1. Follow current Connecticut Department of Public Health guidelines for School Construction.
2. Protect stored on-site or installed absorptive materials from moisture damage.
3. If permanently installed air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 shall be used at each return air grille, as determined by ASHRAE 52.2-1999. Replace all filtration media immediately prior to occupancy.
4. Prohibit smoking inside the building and within 25 feet of building entrances once the building is closed.

d. The plan outlines the type and sources of pollutants that may be found on this project. Also the areas of the project that may be affected and activities that is likely to produce these pollutants.

e. O&G Industries, Inc. will follow recommendations as appropriate of the Sheet Metal and Air Conditioning National Contractors Association - IAQ Guideline for Occupied Buildings Under Construction (Second Edition). The project will follow as appropriate ASHRAE 52.2-1999 by using a filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 on air handlers during construction and a (MERV) of 13 at the end of construction. The project team will replace all filtration media prior to occupancy. The project team will protect stored on-site materials or absorptive materials from moisture and dust damage.

f. O&G Industries, Inc. will implement, monitor this IAQ plan throughout the construction process and will provide the relevant CTHPBS/LEED Letter Template and appropriate documentation regarding the development and implementation of this IAQ plan.

g. All subcontractors are required to submit their safety policy handbook and MSDS sheets for the products used on this project prior to starting any work on this project. These sheets should indicate the material, origination, contents, emergency overview, potential health effects, first aid measures, handling & storage, personal protection, transportation and disposal information.

2. POTENTIAL SOURCES OF AIRBORNE CONTAMINANTS OF ODOR AND DUST

a. The following is a list of potential sources of odor and dust contaminants within a building. These contaminants can result from building products and materials, equipment which produces combustion products, odor or dust from tie-ins to existing systems, and waste materials on site.

Source	Type
Adhesives	VOCs
Caulking	VOCs
Cleaning Agents	VOCs
Epoxy Additives	VOCs
Expansion and/or Control joint fillers	VOCs
Fuels	VOCs
Furniture-covering, adhesives, protective coats	VOCs
Grouting	VOCs
Glazing Compounds	VOCs
Painting	VOCs
Pesticides	VOCs
Pressed Wood Products	VOCs
Sealants	VOCs
Solvents	VOCs
Treated Wood Products	VOCs
Wall Coverings	VOCs
Waterproofing Systems	VOCs
Acoustical Ceiling	Particulates
Acoustical Wall Panels	Particulates, VOCs
Concrete & Concrete Sealers	Particulates, VOCs
Carpet, Carpet Tile	Particulates, VOCs
Casework	Particulates, VOCs
Epoxy Flooring/Finishes	Particulates, VOCs
Exterior Insulation & Finish System (EIFS)	Particulates, VOCs
Flooring – VCT, Resinous, Tile, Stone	Particulates, VOCs
Furnishings	Particulates, VOCs
Gypsum Board/Finish Process	Particulates, VOCs
Insulation-Duct, Wall, Fire Fiber	Particulates
Laboratory Equipment	Particulates, VOCs
Roofing Materials	Particulates, VOCs
Sprayed Fire-Resistive Materials	Particulates, VOCs
Automotive/Equipment Exhaust	Combustion Products
Bathrooms-Temp. & Final	
Cigarette Smoke	Combustion Products
Compressors	Combustion Products
Cutting Torches	Combustion Products
Dampness, Moisture, Water	
Food Products	
Forklifts	Combustion Products
Generators	Combustion Products
Portable Heaters	Combustion Products
Saws	Combustion Products
Soldering Guns	Combustion Products
Troweling Machines	Combustion Products
Welders	Combustion Products

b. Additional items may be flagged as potential sources for odor and dust along with work items as identified during the CTHPB submittal process.

3. AFFECTED AREAS

a. All areas of this building have the potential to be affected by contaminants. The surrounding areas around the construction site also have the possibility of contamination. Caution must be taken during site-related work activities to prevent air quality impacts that may contaminate the new and existing buildings with dust, fumes and other particulates.

4. ACTIVITIES LIKELY TO PRODUCE ODOR OR DUST

a. Construction activities may produce odor and dust within the building as well as everyday activities such as eating, local trash points and bathroom facilities. There will be designated areas for eating, trash collection and workers' bathroom facilities. There is no smoking on the construction site or the Buckley Elementary School grounds. This will be monitored, discussed and stressed during subcontractor coordination meetings.

b. The following activities may have the potential of emitting VOCs during their use in the construction process:
   1. Any Adhesives used
   2. Cleaning Supplies used
   3. Paints used during construction
   4. Sealants used during construction
   5. Solvents used during construction or cleaning

c. Dust might be produced during these construction activities:
   1. Chipping of concrete surfaces
   2. Cutting of construction materials
   3. Drilling of construction materials
   4. Sanding of construction materials
   5. Sawing of construction materials
   6. Sweeping of construction debris

d. The following construction activities may produce combustion products:
   1. Cutting using torches
   2. Man lifts (only electrical lifts in building)
   3. Sawing using demo saws and chainsaws
   4. Soldering
   5. Temporary heating
   6. Welding

e. All activities will be monitored daily by O&G personnel and violations will be issued to anyone not complying with the IAQ program.

5. CLASSIFICATION OF IAQ PROBLEMS

a. In accordance with Sheet Metal and Air Conditioning National Contractors Association IAQ Guideline for Occupied Buildings Under Construction the following three category classifications are given for sources of odor and dust:

   1. **Class 1** - These are air pollutants expected to have only a nuisance impact on exposed occupants. Health effects should only occur in the case of very sensitive individuals. Small amounts of dust and light dust disturbance such as sweeping activities as long as it does not involve any recognized hazards (asbestos, lead, etc.) are classified as Class 1.

2. **Class 2** - These are air pollutants, which could cause a moderate but temporary health impact in some occupants. The majority of the items and activities listed in Para 4 Activities Likely to Produce Odor or Dust produce pollutants, particulates and VOCs that are classified as Class 2.

3. **Class 3** - These are more hazardous air pollutants, which could cause severe, acute or chronic illness. The following is an example list of activities and pollutants that are classified as Class 3:

   Application of enamel paint
   Asbestos fibers
   Disturbance of products of combustion
   Heating of roof tar
   Mixing of epoxy resins
   Non-vented operation of gasoline or diesel-powered equipment

6. CONTROL OPTIONS AND MEASURES

a. There are five key elements to prevent, reduce and protect against indoor pollution. These items must be addressed in order to have a successful indoor air quality management plan and prevent the migration of potential pollutants to populated spaces:

1. Protection of the HVAC system. (And detection systems, smoke/fire alarms)
2. Source control of emitting products
3. Interrupting pathways of pollution
4. General housekeeping
5. Scheduling of work

6.1 Protection

a. **HVAC Protection** - All HVAC equipment must be protected from collecting dust and odor (which can stick to porous materials in the system and later be released). The design of each system must be evaluated to determine how it may be affected by dust and odor during the construction of this project.

b. All ductwork should arrive at the site clean and free from debris. The ends of the ductwork should be sealed with a plastic wrap until installed and ductwork that is open at the end of the day must be sealed also. The return grills must be sealed off so no dust or pollutants will be picked up during construction. The HVAC system should be turned off during the construction process. If the HVAC system is used, temporary air filters will be used during construction and replaced when the dusty phases are complete. During construction the project will follow ASHRAE 52.2-1999 by using a filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 on air handlers during construction and a (MERV) of 13 at the end of construction. The HVAC Contractor will replace all filtration media prior to occupancy. Natural ventilation through the use of windows and doors will be used whenever possible during construction process. Additional ventilation by the use of large fans will be used in areas where high emitting odor products are used.

c. **Return Side of HVAC** - The return side of the HVAC system is under negative pressure and thus capable of drawing in nearby construction dust and odor. Special attention must be paid to the location of all return vents, ducts, plenums and shafts when the HVAC is activated due to the ability of these returns to draw in various dust and odor.

d. All return system openings in or adjacent to the active construction areas are to be sealed with plastic. The return side systems are to be isolated from the surrounding environment as much as possible to prevent the induction of pollutants into the HVAC system. The mechanical rooms housing HVAC equipment are not to be used as construction or waste material storage areas.

e. **Central Filtration** - Where major dust loading is expected to impact operating HVAC systems, consideration should be given to upgrading filter efficiency. Where control options, such as for odor, are not deemed effective, consideration may be given to filtration with media such as activated charcoal or potassium permanganate.

f. **Supply Side** - When the system is off during construction, diffusers, grills, VAV boxes, ducts should be sealed. Before start-up of the HVAC equipment the ducts, diffusers and units should be inspected upon completion of the work for the amount of deposited particulate present and cleaned where needed. If minor dust deposits are observed in the system during construction and they are discharged during start-up, delay occupancy until the necessary clean up is completed.

g. **Duct Cleaning** - If the system becomes contaminated due to inadequate protection during the construction process, the ducts and associated equipment should be cleaned prior to turning over the HVAC system. To avoid contamination during construction the system should be shut down during periods of heavy dust or odor construction activities. Seal and check all system openings with plastic during construction weekly. Replace temporary filters bi-weekly if the system is in operation during construction. Keep waste materials and emitting materials away from all system intakes.

6.2 Source Control

a. **Source Control** - The most effective type of pollution control is generally at the source. There are many options available depending on the types of products and equipment used during the construction process. All of the following options should be looked at during the construction process for the most feasible to control the source of pollutants.

b. **Product Substitution** - Look for low emitting products during the purchasing and submittal process. Major areas to look at are in the carpets, adhesives, paints, caulks, cleaning solutions, wall coverings and furniture. Low emitting VOCs products should be used and enough time should be allowed for the material or product to “gas off” before occupancy of the building. All areas of the construction site that emit odor, fumes or dust should have additional ventilation by the use of fans. Ventilation may be provided by the building HVAC system to supply ventilation air as long as filtration media with MERV of 8 is provided.

c. **Modifying Equipment Operation** - The use of certain equipment may need to be restricted in order to meet the IAQ objectives. This means the use of electrical equipment instead of gas, diesel or bottled gas inside the building. An attempt must be made to eliminate the exposure of combustion gas emissions. Also, any hand equipment should be electrical instead of two cycle fuel engines. Equipment should be turned off when not in use. Also outside air intakes must be sealed to prevent heavy machinery exhaust from entering the building during construction.

d. **Change Work Practices** - Practicing environmentally safe working habits, site maintenance is promoted by use of environmentally safe products that are biodegradable, fragrance free and low or non-toxic. Spills and/or leaks are to be immediately cleaned on the job site and green dust control is to be used during sweeping operations. Wet sanding or vacuum sanding

should be used as well as plastic curtain walls to close off the area of work so dust does not travel to completed areas. Site watering is used to control dusting during dry periods at the construction site. Protective equipment is worn during construction when working with certain products along with the proper protective gear such as harnesses, earplugs, safety goggles and outerwear.

e. **Air Cleaning** - Where exhausting air out of the building is not feasible, local recirculation of air through a portable air cleaner may be effective. This might require the use of a charcoal or potassium permanganate filter for odors and a high efficiency filter for dust. These "Smoke Eaters" should be used whenever possible around a high emission activity. All smoking is prohibited within the building.

f. **Cover or Seal** - VOCs emissions are the result of evaporation, and therefore reduction of the exposed areas will reduce the emissions. Close all paints, sealant cans when not in use. Waste materials should be discarded in the appropriate waste receptacles. These waste containers should be dumped and cleaned weekly. Any standing water within building must be removed immediately to avoid the possibility of starting mold on building products, dry out wet conditions as soon as possible.

6.3 Pathway Interruption

a. One way of stopping contamination of the interior of the building is to prevent air movement from the work site to the occupied spaces. Erecting barriers such as dust curtains or plastic sheets can interrupt potential contaminant pathways or plastic sheets can prevent the unwanted air flow from dirty areas to clean areas, other strategies include sealing off intake areas for suction of contaminants and working with the building air balancing system to interrupt the airflow. All attempts will be made to stop unwanted migration of air pollutants into finish spaces. When the building is enclosed, walk-off mats will be placed at the building entrances, this will limit the amount of foreign debris from entering the building.

b. There are five different factors that can be manipulated to achieve environmental control in the workspace:

1. The first one is to depressurize the work area. If the work site can be exhausted at a rate at least 10% greater than the rate of supply in order to maintain an effective negative pressure, this will help interrupt the contaminant airflow into the space.

2. The second would be pressurizing the occupied space. Increasing supply air and/or reducing return/exhaust air in the building areas remaining occupied during construction will help exclude airborne dust and odors. Temporary air balancing would do this and re-balancing will have to be complete prior to owner move in.

3. The erection of barriers to contain construction areas is the third way of interrupting the airflow. Depending on the construction work activity the clean space should be sealed off from the potential dirty air or odor entering the clean space.

4. The fourth method of interrupting the airflow is by the relocation of the pollutant sources. Moving project equipment or an example like the roofing tar kettle away from the air intakes will help disrupt the airflow into the building.

5. The fifth method to interrupt the airflow would be to seal the building. All intakes, cracks, holes, doors and openings should be sealed off. This will create a stuffy condition inside the building, but would prevent contaminated airflow from entering the building.

6.4 Housekeeping

a. As dust accumulates at the construction site it will become airborne when disturbed by construction activity. Also, spills or excess application of products containing VOCs, solvents and particulates will increase odors within the building.

b. Suppressing dust with a wetting agent or sweeping compounds will help with the disruption of airborne dust. Increase the frequency of cleaning the construction area. The use of vacuums or wet mops will lessen the discharge of airborne particulates then conventional sweeping. Remove spills or excess applications of solvent-containing products as soon as possible.

c. Remove accumulated water and keep work areas as dry as possible. Vacuuming with a HEPA filtered vacuum cleaner prevents aerolization of settled dust. Protect porous materials such as insulation, ceiling tile, and wall coverings from exposure to moisture. Surface wipe and clean all new products and furnishings prior to entering the new building.

d. Stored materials shall be placed on pallets and wrapped or covered. This is to protect them from water damage. Before installation of stored materials, they should be checked for water or physical damage.

e. All subcontract employees will place their trash in designated containers as part of the LEED program.

6.5 Scheduling

a. Control of indoor air quality is also possible by the construction schedule. Scheduling emitting work activities before the installation of carpet, ceiling tile, wall fabric and furnishings is very important. Also, scheduling delivery of materials is important so the material stays dry and mold-free. Stored material must be sealed, kept dry and protected from damage.

b. Materials shall be checked when unloaded from trucks to make sure the protective packaging is in place and the material is not damaged. Materials shall arrive in the original factory sealed, unopened package, container or bundles. Contractors must reject any wet, moldy, or damaged materials. Storage areas must be dry and protective so the material does not get damaged. All contractors shall inspect stored material for plastic or tarpaulin leaks, condensation or visible mold and damage.

c. All contractors shall follow the manufacturer’s directions on storage of materials. All materials should be kept off ground to prevent wicking of water from the floor. There should be 4” of dunnage under bundles to allow airflow under and around the products. Tarpaulins to protect against any potential moisture damage shall cover the stored materials.

d. Materials that are designed to repel water, such as glass, metal panels, or vinyl shall not be allowed to remain wet during storage. Mold can grow on water resistive material or the dust and debris that accumulate on these materials.

e. Contractors must work with O&G Industries, Inc. regarding scheduling of work activities, work areas, emission controls to be taken, and monitoring the indoor air quality program.

7. BUILDING FLUSH-OUT CTHPB STRATEGY MEASURE 16a-38k-6 (b)(3)

a. Time may be left in the construction schedule to allow a minimum of a two-week building flush out with new filtration media at 100% outside air after the construction ends and prior to owner occupancy. This is a part of the CTHPB credit for Indoor Environmental Quality. Other means to achieve building flush out when time does not permit are at the discretion of the Construction Manager.

END OF SECTION

SECTION 011000 - SUMMARY

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.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work under separate contracts.
4. Future work.
5. Owner-furnished products.
6. Access to site.
7. Coordination with occupants.
8. Work restrictions.
9. Specification and drawing conventions.
10. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Additions and Renovations to Buckley Elementary School.

1. Project Location: 250 Vernon Street, Manchester, CT

B. Owner: Town of Manchester.

C. Architect: TSKP Studio, 146 Wyllys Street, Hartford, CT.

D. Construction Manager: O&G Building Group, 112 Wall Street, Torrington, CT.

1. Construction Manager has been engaged for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for Construction between Owner and each Contractor, according to a separate contract between Owner and Construction Manager.

E. Project Mechanical/Electrical Coordinator for Multiple Contracts:

1. HVAC Contractor shall act as mechanical/electrical coordinator.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Provide and install photovoltaic array system.

B. Type of Contract:

1. Project will be constructed under coordinated, concurrent multiple contracts. See Construction Manager's Project Manual for a description of work included under each of the multiple contracts and for the responsibilities of Project coordinator. The building will be unoccupied. The building and site will be under construction as PV array is installed.

1.5 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

B. Concurrent Work: Owner will perform the following construction operations at Project site. Those operations will be conducted simultaneously with Work under this Contract.

1. Renovations and Additions to the subject building and associated site work.

C. Subsequent Work: Owner will award separate contract(s) for the following additional work to be performed on site following Substantial Completion. Completion of that work will depend on successful completion of preparatory work under this Contract.

1. Outdoor Playscapes.
2. Furniture, fixtures and equipment.
3. Technology equipment.

1.6 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Driveways, Walkways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to emergency vehicles at all times. Do not use these areas for parking or storage of materials.

1.7 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.8 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.

C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption with Owner.

1. Notify Construction Manager not less than two days in advance of proposed disruptive operations.

D. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PRODUCTS (Not Used)

PART 2 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012500 - SUBSTITUTION PROCEDURES

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.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Division 01 Section "Allowances" for products selected under an allowance.
2. Division 01 Section "Alternates" for products selected under an alternate.
3. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 15 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 21 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Requested substitution provides sustainable design characteristics that specified product provided.
c. Substitution request is fully documented and properly submitted.
d. Requested substitution will not adversely affect Contractor's construction schedule.
e. Requested substitution has received necessary approvals of authorities having jurisdiction.
f. Requested substitution is compatible with other portions of the Work.
g. Requested substitution has been coordinated with other portions of the Work.
h. Requested substitution provides specified warranty.
i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience:

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.

c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Requested substitution provides sustainable design characteristics that specified product provided.
e. Substitution request is fully documented and properly submitted.
f. Requested substitution will not adversely affect Contractor's construction schedule.
g. Requested substitution has received necessary approvals of authorities having jurisdiction.
h. Requested substitution is compatible with other portions of the Work.
i. Requested substitution has been coordinated with other portions of the Work.
j. Requested substitution provides specified warranty.
k. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:

    a. Application for Payment forms with continuation sheets.
    b. Submittal schedule.
    c. Items required to be indicated as separate activities in Contractor's construction schedule.

2. Submit the schedule of values to Architect through Construction Manager at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content:

1. Identification: Include the following Project identification on the schedule of values:

    a. Project name and location.
    b. Contractor's name and address.
    c. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and Construction Manager and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use AIA Document G702/CMa and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Construction Manager will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Construction Manager by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. List of Contractor's principal consultants.
5. Copies of building permits.
6. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.

H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707-1994, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

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.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. Requests for Information (RFIs).
4. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:
1. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
2. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.
3. Division 01 Section "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.

2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
f. Indicate required installation sequences.
g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

1.7 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Date.
3. Name of Contractor.
4. RFI number, numbered sequentially.
5. RFI subject.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow 10 working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

D. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:

1. RFI number including RFIs that were returned without action or withdrawn.
2. RFI description.
3. Date the RFI was submitted.
4. Date Architect's response was received.

E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.8 TRADE CONTRACTOR PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Contractor is responsible for recording significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.
b. Phasing.
c. Critical work sequencing and long-lead items.
d. CT High Performance Schools requirements.
e. Owner's occupancy requirements.
f. Responsibility for temporary facilities and controls.
g. Procedures for moisture and mold control.
h. Procedures for disruptions and shutdowns.
i. Construction waste management and recycling.
j. Progress cleaning.

4. Minutes: Contractor will record and distribute meeting minutes.

C. Progress Meetings: Conduct progress meetings at biweekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.

2. Minutes: Contractor will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

D. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:

1. Division 01 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawing Plans for use in preparing Shop Drawings.

a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days business days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Construction Manager will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days business days for review of each resubmittal.

D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect and Construction Manager.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date.
c. Name of Contractor.
d. Name of subcontractor.
e. Name of supplier.
f. Name of manufacturer.
g. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

h. Number and title of appropriate Specification Section.
i. Drawing number and detail references, as appropriate.
j. Location(s) where product is to be installed, as appropriate.
k. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect or Construction Manager observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

    a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect and Construction Manager.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Architect and Construction Manager**,** containing the following information:

    a. Project name.
    b. Date.
    c. Name of Contractor.
    d. Name of firm or entity that prepared submittal.
    e. Names of subcontractor, manufacturer, and supplier.
    f. Category and type of submittal.
    g. Submittal purpose and description.
    h. Specification Section number and title.
    i. Specification paragraph number or drawing designation and generic name for each of multiple items.
    j. Drawing number and detail references, as appropriate.
    k. Location(s) where product is to be installed, as appropriate.
    l. Related physical samples submitted directly.
    m. Indication of full or partial submittal.
    n. Transmittal number, numbered consecutively.
    o. Submittal and transmittal distribution record.
    p. Other necessary identification.
    q. Remarks.

F. Options: Identify options requiring selection by Architect.

G. Deviations: Identify deviations from the Contract Documents on submittals.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's and Construction Manager's action stamp.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's and Construction Manager's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Submit electronic submittals via email as PDF electronic files.

    a. Architect, through Construction Manager, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Action Submittals: Submit five paper copies of each submittal unless otherwise indicated. Architect, through Construction Manager, will return two copies.
3. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect and Construction Manager will not return copies.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.

d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of applicable Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through Construction Manager**,** will return submittal with options selected.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three sets of Samples. Architect and Construction Manager will retain two Sample sets; remainder will be returned.

E. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

F. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

G. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

H. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

I. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

J. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

K. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

L. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

M. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

N. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit documents signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and Construction Manager.

3.2 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

A. Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager will forward each submittal to appropriate party.

C. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

D. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

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.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified

installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of three previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.

1.6 INFORMATIONAL SUBMITTALS

A. Trade Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Trade Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

1.7 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing

engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Trade Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
e. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed unless otherwise indicated.

K. Integrated Exterior Mockups: Construct integrated exterior mockup as indicated. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.

1.8 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

B. Trade Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

    a. Trade Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Architect**,** Commissioning Authority and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Commissioning Authority, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Architect, Commissioning Authority, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.9 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect, Commissioning Authority**,** and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect and Commissioning Authority with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 016000 - PRODUCT REQUIREMENTS

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.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Division 01 Section “Substitution Procedures" for requests for substitutions.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:

    a. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

    a. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

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.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.
7. Removal of manufacturer labels.
8. Correction of the Work.

B. Related Requirements:

1. Division 01 Section "Summary" for limits on use of Project site.
2. Division 01 Section "Submittal Procedures" for submitting surveys.
3. Division 01 Section "Closeout Procedures" for submitting final Project Record Documents.

1.3 QUALITY ASSURANCE

A. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before

fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Final Property Survey: Engage a land surveyor to prepare final record drawing(s) per Town of Manchester Public Improvement Standards Section 5.01.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with

other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Division 01 Section "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.9 REMOVAL OF MANUFACTURER LABELS

A. Remove all manufacturer labels from products exposed to view in occupied areas.

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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. This Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include the following:

1. Division 01 Section “IAQ Construction Plan”.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

C. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

D. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

E. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work.

1.5 SUBMITTALS

A. Waste Management Plan: Submit 3 copies of plan within 30 days of date established for commencement of the Work.

B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three copies of report. Include separate reports for demolition and construction waste. Include the following information:

1. Project title, name of company completing report, and dates of period covered by the report
2. Calculations and supporting documentation to demonstrate end-of–project recycling rates meeting the requirements for Construction Waste Management Plan above. The process for recording and assembling documentation shall be as follows:

a. Record and document the total weight (in tons) of all demolition and construction waste materials sent to the landfill. Monthly Waste Management Reporting Forms (sample included at the end of this section identified as Exhibit "B") shall be used as the basis for determining the total amount of waste landfilled for the project. The monthly reporting forms shall specify:

1. the number of dumpsters or other containers sent to the landfill for that month;
2. the volume (in cubic yards) of each dumpster or container sent to the landfill for that month;
3. the type of waste contained in each dumpster or container; and
4. the weight of the waste in each dumpster or container. If the weight of the waste is not directly measured for each dumpster or container, the following Solid Waste Conversion Factors shall be used to convert the volume of waste to weight:

Solid Weight Conversion Factors:

Mixed Waste	350 lbs/cubic yard
Wood	300 lbs/cubic yard
Cardboard	100 lbs/cubic yard
Gypsum Wallboard	500 lbs/cubic yard
Rubble	1,400 lbs/cubic yard

b. Record and document the total weight (in tons) of all demolition and construction waste materials recycled or salvaged. Monthly Waste Management Reporting Forms shall be used as the basis for determining the total amount of waste recycled or salvaged for the project. The monthly reporting forms shall specify:

1. the number of dumpsters or other containers of recycled or salvaged materials for that month;
2. the volume (in cubic yards) of each dumpster or container of recycled or salvaged materials for that month;
3. the type of recycled or salvaged material contained in each dumpster or container; and
4. the weight of the recycled or salvaged material in each dumpster or container. If the weight of the material is not directly measured for each dumpster or container, the Solid Waste Conversion Factors listed for landfill waste (see

above) shall be used, where applicable, to convert the volume of material to weight. For materials not contained in the Solid Waste Conversion Factors (e.g., metals, glass), the Contractor shall propose a conversion factor for review by the Owner and Architect.

In addition, the Contractor shall provide the name of the receiving facilities/companies that will be purchasing or accepting the recycled or salvaged materials.

c. Calculate the end-of-project recycling rate percentage by dividing the recycled and salvaged waste (in tons) by the total waste generated (recycled, salvaged, and landfilled waste – also in tons), and multiplying by 100.

FINAL CALCULATION OF C&D WASTE DIVERSION

- Final project-wide C&D waste diversion rate will be calculated as follows:

Total C & D Waste	x Tons	Total waste generated by land clearing, demolition, and construction
Total Recycled +	y Tons	Materials diverted from landfills, by salvage, reuse and recycling
Diversion Rate	y/x %	Percentage of project's waste diverted from landfills

C. Waste Reduction Calculations: Before request for Substantial Completion, submit three copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

H. Submittal: Submittal signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements of the management plan have been met.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.7 WASTE MANAGEMENT PLAN

A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Construction Waste Management Plan:
The Construction Waste Management Plan shall include, but not be limited to, the following components:

1. *Listing of Targeted Materials*: The contractor shall develop a list of the waste materials from the Project that will be targeted for reuse, salvage, or recycling. The following materials shall be accounted for (materials that will not be recycled shall be indicated as such):

a. Cardboard, paper, packaging
b. Clean dimensional wood, palette wood
c. Beverage containers
d. Land clearing debris
e. Concrete
f. Bricks
g. Concrete Masonry Units (CMU)
h. Asphalt
i. Metals from banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
j. Drywall
k. Carpet and pad
l. Paint
m. Rigid Foam
n. Glass

o. Plastics

B) *Landfill Information*: The contractor shall provide the name of the landfill(s) where trash will be disposed of and the applicable landfill tipping fee(s).

C) *Sorting Method*: The contractor shall provide a description of the proposed means of sorting and transporting the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site for off-site sorting).

D) *Packaging Waste*: The contractor shall provide an estimate of packaging materials generated, and note whether suppliers will eliminate or take back packaging.

E) *Field Conditions:* The contractor shall include provisions in the Construction Waste Management Plan for addressing conditions in the field that do not adhere to the CWM Plan, including provisions to implement a stop work order, or to rectify non-compliant conditions.

F) *Additional Information:* The contractor shall include any additional information deemed relevant to describe the scope and intent of the CWM Plan to the Owner and Architect.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement waste management plan as approved by Architect. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 RECYCLING CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.3 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Site-Clearing Wastes: Chip brush, branches, and trees on-site.

1. Comply with requirements in Division 32 Section "Plants" for use of chipped organic waste as organic mulch.

C. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.

3.4 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials on site.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

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.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:

1. Division 01 Section "Execution" for progress cleaning of Project site.
2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

B. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.

5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Advise Owner of changeover in heat and other utilities.

7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural

weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
i. Remove labels that are not permanent.
j. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
l. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

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.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Operation manuals for systems, subsystems, and equipment.
3. Product maintenance manuals.
4. Systems and equipment maintenance manuals.

B. Related Requirements:

1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
2. Division 01 Section "General Commissioning Requirements" for verification and compilation of data into operation and maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect and Commissioning Authority will comment on whether content of operations and maintenance submittals are acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.

    a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
    b. Enable inserted reviewer comments on draft submittals.

2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.

1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the

Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product,

list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared record Drawings in Division 01 Section "Project Record Documents."

F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017900 - DEMONSTRATION AND TRAINING

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.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For instructor.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.

b. Name and address of videographer.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Date of video recording.

2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
3. At completion of training, submit complete training manual(s) for Owner's use prepared in same format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

D. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.7 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.

2. Documentation: Review the following items in detail:

   a. Emergency manuals.
   b. Systems and equipment operation manuals.
   c. Systems and equipment maintenance manuals.
   d. Product maintenance manuals.
   e. Project Record Documents.
   f. Identification systems.
   g. Warranties and bonds.
   h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.
    f. Safety procedures.
    g. Instructions on stopping.
    h. Normal shutdown instructions.
    i. Operating procedures for emergencies.
    j. Operating procedures for system, subsystem, or equipment failure.
    k. Seasonal and weekend operating instructions.
    l. Required sequences for electric or electronic systems.
    m. Special operating instructions and procedures.

5. Adjustments: Include the following:

    a. Alignments.
    b. Checking adjustments.
    c. Noise and vibration adjustments.
    d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

    a. Diagnostic instructions.
    b. Test and inspection procedures.

7. Maintenance: Include the following:

    a. Inspection procedures.
    b. Types of cleaning agents to be used and methods of cleaning.
    c. List of cleaning agents and methods of cleaning detrimental to product.
    d. Procedures for routine cleaning.
    e. Procedures for preventive maintenance.
    f. Procedures for routine maintenance.
    g. Instruction on use of special tools.

8. Repairs: Include the following:

    a. Diagnosis instructions.
    b. Repair instructions.
    c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    d. Instructions for identifying parts and components.
    e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Construction Manager, with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.10 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode with vibration reduction technology.

1. Submit video recordings on CD-ROM or thumb drive.

2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:

    a. Name of Contractor/Installer.
    b. Business address.
    c. Business phone number.
    d. Point of contact.
    e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.

    a. Produce segments to present a single significant piece of equipment per segment.
    b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
    c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by audio narration. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Pre-produced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 017900

SECTION 018113.23 - SUSTAINABLE DESIGN REQUIREMENTS

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.

1.2 SUMMARY

A. Section includes general requirements and procedures for compliance with certain prerequisites for Project to comply with CT High Performance Building Construction Standards.

1. Specific requirements are also included in other Sections.
2. Some prerequisites and credits needed for compliance depend on product selections and may not be specifically identified as requirements. Compliance with requirements needed to obtain prerequisites and credits may be used as one criterion to evaluate substitution requests and comparable product requests.
3. A copy of the CT High Performance School Compliance checklist is attached at the end of this Section for information only.

    a. Some prerequisites and credits needed to obtain the indicated certification depend on Architect's design and other aspects of Project that are not part of the Work of the Contract.

1.3 DEFINITIONS

A. Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

B. Recycled Content: The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

1. "Postconsumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.
2. "Preconsumer" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials, such as rework, regrind, or scrap, generated in a process and capable of being reclaimed within the same process that generated it.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site. Review requirements and action plans for meeting requirements.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Submit documentation to the Cx and respond to questions and requests from the Cx regarding credits that are the responsibility of the Contractor, that depend on product selection or product qualities, or that depend on Contractor's procedures.

1.6 ACTION SUBMITTALS

A. General: Submit additional CT High Performance School submittals required by other Specification Sections.

B. CT High Performance School Documentation Submittals:

1. Comply with Section 017419 "Construction Waste Management and Disposal."
2. Product data for recycled content, indicating postconsumer and preconsumer recycled content and cost.
3. Product data for regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost for each regional material.
4. IAQ Plan:

    a. Construction indoor-air-quality (IAQ) management plan.
    b. Product data for temporary filtration media.
    c. Product data for filtration media used during occupancy.
    d. Construction Documentation: Six photographs at each of three different times during the construction period, along with a brief description of the SMACNA approach employed, documenting implementation of the IAQ management measures, such as protection of ducts and on-site stored or installed absorptive materials.

5. Laboratory test reports for the following products and systems installed inside the weatherproofing system, indicating compliance with requirements for low-emitting materials.

    a. Adhesives and sealants.
    b. Paints and coatings.

1.7 INFORMATIONAL SUBMITTALS

A. Project Materials Cost Data: Provide statement indicating total cost for materials used for Project. Costs exclude labor, overhead, and profit. Include breakout of costs for the following categories of items:

1. Electrical.
2. Specialty items, such as elevators and equipment.

B. CT High Performance School Action Plans: Provide preliminary submittals within 30 days of date established for the Notice of Award, indicating how the following requirements will be met:

1. Waste management plan complying with Section 017419 "Construction Waste Management and Disposal."
2. List of proposed materials with recycled content. Indicate cost, postconsumer recycled content, and preconsumer recycled content for each product having recycled content.
3. List of proposed regional materials. Identify each regional material, including its source, cost, and the fraction by weight that is considered regional.
4. List of proposed certified wood products. Indicate each product containing certified wood, including its source and cost of certified wood products.
5. Construction IAQ management plan.

C. CT High Performance School Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with sustainable design action plans.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Provide products and procedures necessary to obtain CT High Performance School credits required in this Section. Although other Sections may specify some requirements that contribute to these credits, the Contractor shall provide additional materials and procedures necessary to obtain credits indicated.

2.2 RECYCLED CONTENT OF MATERIALS

A. Building materials shall have recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content for Project constitutes a minimum of 10 percent of cost of materials used for Project.

1. Cost of postconsumer recycled content plus one-half of preconsumer recycled content of an item shall be determined by dividing the weight of postconsumer recycled content plus one-half of preconsumer recycled content in the item by the total weight of the item and multiplying by cost of the item.
2. Do not include furniture, plumbing, mechanical and electrical components, and specialty items, such as elevators and equipment in the calculation.

2.3 REGIONAL MATERIALS

A. Not less than 10 percent of building materials, by cost, shall be regional materials.

PART 3 - EXECUTION

3.1 NONSMOKING BUILDING

A Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

3.3 CONSTRUCTION WASTE MANAGEMENT

A. Comply with Section 017419 "Construction Waste Management and Disposal."

3.4 CONSTRUCTION IAQ MANAGEMENT

A. Comply with Section 015150 "Indoor Air Quality Construction Plan."

END OF SECTION 018113.23

SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SECTION INCLUDES

A. Commissioning Scope

B. Systems to be Commissioned

C. Responsibilities

D. Commissioning Team

E. Pre-Functional and Functional Check List Sample

1.3 RELATED SECTIONS

A. Division 1 – General Conditions and Requirements

B. Division 26 – Electrical

1.4 SCOPE

A. The work under this Section is subject to requirements of the Contract Documents including the Owner's General Conditions, Supplementary Conditions, and Division 1 – General Requirements.

1.5 DESCRIPTION OF WORK

A. The objective of commissioning is to provide documented confirmation that a facility fulfills the functional and performance requirements of the building owner, occupants, and operators. To reach this goal, it is necessary for the commissioning process to

establish and review the owner's criteria for system function, performance, and maintainability (Design Intent); and to also verify and document compliance with these criteria at start-up, and the initial period of operation. In addition, complete operation and maintenance (O&M) manuals, as well as training on system operation, should be provided to the building operators to ensure the building continues to operate as intended.

B. The Commissioning Agent (CA) shall be involved throughout the warranty phase. During construction, the CA develops and coordinates the execution of a testing plan, which includes observing and documenting all systems' performance to ensure that the systems are functioning in accordance with the owner's Design Intent (DI) requirements and the contract documents. The CA is not responsible for design or general construction scheduling, cost estimating, or construction management, but may assist with problem-solving or resolving non-conformance issues or deficiencies. The installing Contractors, TAB Sub and ATC Sub shall be required to provide support of the commissioning under their base Contracts.

C. The following is a summary of services provided for commissioning:
1. Develop commissioning plan
2. Develop pre-functional and functional test procedures
3. On-site reviews to confirm that systems are ready for commissioning
4. Witness piping and ductwork tests
5. Witness system flushing
6. Review system start-up reports
7. Maintain master deficiency and resolution log
8. Perform prefunctional and functional testing
9. Ensure O&M and commissioning documentation requirements are complete.
10. Coordinate Owner staff training
11. Final report and presentation to Owner
12. Follow up visits after occupancy to review building operations

D. Commissioning does not reduce responsibility of installing contractors to provide a finished and fully functioning product.

E. This section shall in no way diminish the responsibility of the Divisions 1, 07, 08, 21, 22, 23, 26, 27, 28 Contractors, Sub-contractors and Suppliers in performing all aspects of work and testing as outlined in the Contract Documents. Any requirements outlined in this section are in addition to requirements outlined in those divisions.

1.6 ABBREVIATIONS

A. The following are common abbreviations used in the Specifications. Definitions are found further in this Section.
1. A/E - Architect and Design Engineers
2. BAS - Building Automation System
3. CA - Commissioning Agent
4. CM - Construction Manager
5. CT - Commissioning Team
6. Cx - Commissioning
7. Cx Plan - Commissioning Plan
8. CC - Controls Contractor
9. EC - Electrical Contractor

10. FPT - Functional Performance Test
11. MC - Mechanical Contractor
12. OR - Owner's Representative
13. PC - Pre-functional Checklist
14. TAB - Test, Adjust and Balance
15. O&M - Operations & Maintenance
16. RFI - Request for Information

B. The following Standards shall be used where referenced by the following abbreviations:
1. AABC Associated Air Balance Council
2. ACGIH American Conference of Governmental Industrial Hygienists
3. ADC Air Diffusion Council
4. AGA American Gas Association
5. AIA American Institute of Architects
6. AMCA Air Moving and Conditioning Association
7. ANSI American National Standards Institute
8. API American Petroleum Institute
9. ARI Air Conditioning and Refrigeration Institute
10. ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers
11. ASME American Society of Mechanical Engineers
12. ASPE American Society of Plumbing Engineers
13. ASSE American Society of Sanitary Engineers
14. ASTM American Society of Testing and Materials
15. NIST National Institute of Standards and Technology
16. SBI Steel Boiler Industry (Division of Hydronics Institute)
17. SMACNA Sheet Metal and Air Conditioning Contractors National Association
18. UL Underwriters' Laboratories

1.7 DEFINITIONS

A. Acceptance Phase: Phase of construction after start-up and initial checkout when Functional Performance Tests, O&M documentation review and training occur.

B. Approval: Acceptance that a piece of equipment or system has been properly installed and is functioning in tested modes according to the Contract Documents.

C. Architect/Engineer (A/E): Prime consultant (architect) and subconsultants who comprise the design team, generally HVAC Mechanical Designer/Engineer and Electrical Designer/Engineer.

D. Basis of Design: Documentation of primary thought processes and assumptions behind design decisions made to meet design intent. Describes systems, components, conditions and methods chosen to meet intent.

E. Commissioning Agent (CA): Contracted to Owner. CA directs and coordinates day-to-day commissioning activities. CA reports directly to Owner.

F. Commissioning Plan: Overall plan developed after bidding that provides structure, schedule and coordination planning for commissioning process.

G. Construction Manager (CM): The prime contractor for this project. Generally refers to the CM's subcontractors as well. Also referred to as the Contractor in some contexts. The CM is hired by the Owner and is authorized to overseen fulfillment of all requirements of the Contract Documents.

H. Contract Documents: Documents binding on parties involved in construction of this project (drawings, specifications, change orders, amendments, contracts, etc.).

I. Control System: System and components associated with building automation system.

J. Deferred Functional Tests: Functional tests performed after substantial completion due to partial occupancy, equipment, seasonal requirements, design or other site conditions that disallow test from being performed.

K. Deficiency: Condition of a component, piece of equipment or system that is not in compliance with Contract Documents (that is, does not perform properly or is not complying with design intent).

L. Functional Performance Test Procedures: Commissioning protocols and detailed test procedures and instructions that fully describe system configuration and steps required to determine if the system is performing and functioning properly. These procedures shall be used to document Functional Performance Tests.

M. Functional Performance Test (FPT): Test of dynamic function and operation of equipment and systems. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, life safety conditions, power failure, etc. Systems are run through all specified sequences of operation. Components are verified to be responding in accordance with Contract Documents. Functional Performance Tests are executed after pre-functional checklists and start-ups are complete.

N. Monitoring: Recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or trending capabilities of control systems.

O. Overridden Value: Writing over a sensor value in control system to see response of a system (e.g., changing outside air temperature value from 72˚ F to 52˚ F to verify economizer operation). See also "Simulated Signal".

P. Pre-Functional Checklist (PC): A list of static inspections and elementary component tests that verify proper installation of equipment (e.g., belt tension, oil levels, labels affixed, gauges in place, sensors calibrated, etc.).

Q. Seasonal Performance Tests: Functional Performance Tests deferred until system(s) ambient conditions are closer to design conditions.

R. Simulated Condition: Condition created for testing component or system (e.g., applying heat to space temperature sensor to monitor response of VAV box).

S. Simulated Signal: Disconnecting sensor and using signal generator to send amperage, resistance or pressure transducer and/or DDC system to simulate value to BAS.

T. Specifications: Construction specifications of Contract Documents.

U. Start-up: The activities where systems or equipment are initially tested and operated. Start-up is completed prior to functional testing.

V. Sub-contractor: Contractors of CM, and their sub-contractors, who provide and install building components and systems.

W. Test Procedures: Step-by-step process, which must be executed to fulfill test requirements.

X. Test Requirements: Requirements specifying what modes and functions will be tested. Test requirements are not detailed test procedures and are identified in the Cx Plan.

Y. Trending: Monitoring using building control system.

Z. Vendor: Supplier of equipment.

AA. Warranty Period: Warranty period for entire project, including equipment components.

1.8 COORDINATION

A. Commissioning Team: Members of Commissioning Team (CT) will consist of:
1. Commissioning Agent (CA)
2. Owner's Representative(s) (OR)
3. Construction Manager (CM)
4. Architect and Design Engineers (A/E)
5. Mechanical Contractor (MC)
6. Electrical Contractor (EC)
7. Test and Balance Agency (TAB Agency)
8. Controls Contractor (CC)
9. Equipment Suppliers and Vendors

B. Management: Owner will contract services of the CA. The CA directs and coordinates commissioning activities and reports to OR. All members of the Commissioning Team shall cooperate to fulfill responsibilities and objectives of the Contract Documents.

C. Kick-off Meeting: Within 90 days of commencement of construction, CA will plan, schedule and conduct a commissioning kick-off meeting. Membership and responsibilities of the commissioning team will be clarified at this meeting. CA will distribute meeting minutes to all parties.

D. Scheduling:
1. A/E will work with commissioning team to establish required commissioning activities to incorporate in preliminary commissioning schedule. The CM will integrate commissioning activities into master construction schedule. Representatives of the commissioning team will address scheduling problems. Necessary notifications are to be made in a timely manner in order to expedite commissioning.

2. The CA will provide initial schedule of primary commissioning events at commissioning kick-off meeting. As construction progresses, more detailed schedules are developed by the commissioning team.

1.9 SUBMITTALS

A. Contractor shall provide CA with documentation required for commissioning work. At minimum, documentation shall include: Full sequences of operation, O&M data, performance data, any performance test procedures, control drawings and details, start-up reports. In addition, installation and checkout materials actually shipped inside equipment and actual field checkout sheet forms used by factory or field technicians shall be submitted to CA.

B. CA shall review submittals for conformance as it relates to commissioning. Review is primarily intended to aid in development of functional testing procedures and only secondarily to verify compliance with equipment specifications. The CA shall not be part of the A/E's submittal approval process.

1.10 START-UP PLAN

A. Sub-contractor responsible for purchase, installation and start-up of equipment develops and submits start-up plan by combining manufacturer's detailed start-up and checkout procedures with normally used field checkout sheets. Plan shall include checklists and procedures with specific boxes or lines for recording and documenting inspections of each piece of equipment.

B. A/E reviews submitted start-up plan for content and format. Primary role of A/E is to substantiate written documentation for each manufacturer-recommended procedure.

PART 2 PRODUCTS

2.1 TEST EQUIPMENT

A. Division contractors shall provide all specialized tools, test equipment and instruments required to execute start-up, checkout and functional performance testing of equipment under their contract.

B. Test equipment shall be of sufficient quality and accuracy to test and/or measure system performance with tolerances specified. A testing laboratory shall have calibrated test equipment within the previous 12 months. Calibration shall be NIST traceable. Equipment shall be calibrated according to manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

PART 3 EXECUTION

3.1 COMMISSIONING OVERVIEW

A. The following provides a brief overview of typical commissioning tasks during construction and general order in which they occur:

1. Commissioning prior to construction (where applicable) begins with the review of the pre-determined DD and CD sets of plans. The CA will review the respective plans, comment on them and return the comments to the appropriate parties and wait for a response.
2. Commissioning during construction begins with a kick-off meeting conducted by CA where membership of commissioning team is established and responsibilities reviewed.
3. A Commissioning Plan is written up based on the project requirements.
4. CA schedules subsequent meetings as necessary to plan, coordinate and schedule commissioning activities. Deficiencies and problem resolution will also be discussed at these meetings.
5. Sub-contractors develop and submit detailed start-up plans to Cx team.
6. CM develops, with cooperation of Sub-contractor/vendor, detailed training plan. Training plan is reviewed and approved by commissioning team.
7. CA develops specific pre-functional checklists and equipment and system Functional Performance Test procedures. Commissioning team members review procedures.
8. Sub-contractors inform CA when the pre-functional items are complete by phase. The CA executes and documents pre-functional checklists in phases such as setting equipment, piping equipment, insulating it, making up electrical connections, etc. The purpose is to execute the process as the work is being completed.
9. The Sub-contractors perform start-up and initial checkout. CA collects documentation completed according to approved plans. CA will witness start-up of selected equipment.
10. Functional Performance Tests are executed by Sub-contractors, under supervision of and documented by CA.
11. Items of non-compliance in material, installation or set-up will be corrected at Sub-contractors expense and system shall be retested.
12. CM coordinates training sessions and executes training plan. Specific training to be provided as specified in Divisions 1, 07, 08, 21, 22, 23, 26, 27 28 by Sub-contractor/vendor. CA will witness and document selected training sessions.

3.2 SYSTEMS TO BE COMMISSIONED

Please note that while some equipment/systems will be commissioned in full (100%) most will be commissioned by a percentage of equipment. A representative sample will be chosen for inspection/testing for most equipment. Specific percentages have been noted in the respective Commissioning Work Order. The commissioning process shall include but shall not be limited to the following disciplines and components. However, component types shall be according to the latest contract documents.

1. PV Array

3.3 RESPONSIBILITIES

A. Responsibilities of commissioning team members are:

1. Commissioning Agent (CA):
   a. Identify commissioning activities for inclusion into the project schedule by the CM.
   b. Develop detailed project specific pre-functional performance tests and Functional Performance Test procedures.
   c. Provide progress reports of commissioning status.
   d. Spot Check pre-functional checklists filled out by sub contractors
   e. Witness FPTs. Document test results and recommend system for acceptance.
   f. Review, track and coordinate resolution of non-compliance and deficiencies identified by commissioning team. Maintain records of all issues submitted by commissioning team.
   g. Review completed TAB reports.
   h. Review training plan developed by CM.
   i. Monitor completion and accuracy of project closeout documents and training.
   j. Provide final commissioning report, summarizing final disposition of building systems after functional testing.
   k. Oversee, review and aid in the development of systems manual for provision to Owner for CT HPB.
   l. Facilitate cooperation of CT in commissioning work.
   m. Attend and conduct commissioning team meetings.
   n. Witness seasonal or deferred testing and modify or update commissioning report as required.
   o. Participate in a warranty review of system/equipment performance.
2. Construction Manager (CM):
   a. Incorporate commissioning activities into the construction schedule.
   b. Periodically update commissioning activities in the construction schedule.
   c. Develop, with cooperation of A/E and Sub-contractor/vendor, detailed training plan.

d. CM coordinates training sessions and executes training plan through his sub-contractors.
e. Facilitate cooperation of Sub-contractors in commissioning work.
f. Submit copies of approved submittals, with manufacturer start-up criteria, contractor start-up checklists and operating and maintenance criteria to CA.
g. Verify equipment and systems are ready for execution of pre-functional checklists by the CA. Assures CA at each phase of installation equipment and systems are ready.
h. Insures resolution of non-compliance and deficiencies of construction related items identified by commissioning team. Obtains written documentation of completion from the appropriate Sub-contractors.
i. Coordinate Sub-contractor/vendor participation in training sessions. Provide workspace or conference room as needed. Ensure attendance at training is documented.
j. Schedule, coordinate and assist CT in seasonal or deferred testing.
k. Participate in warranty review of system/equipment performance.

3. Sub-contractors/Vendors:
   a. Review commissioning plan, pre-functional checklists, and FPT procedures.
   b. Ensure installation work and pre-functional test sheets are completed and that work is complete and is in compliance with Contract Documents and is ready for Functional Performance Testing.
   c. Assist in testing with provision of support for all Divisions containing commissioning
   d. Develop and submit detailed equipment start-up procedures to CT. Procedures shall include checklist to be completed by Sub-contractor/vendor.
   e. Perform testing in accordance with specification requirements and/or per the requirements of the local authority
   f. Notify CT that equipment and systems are ready for functional performance testing.
   g. Execute FPTs developed by CA as described in Contract Documents and commissioning plan, under direction of CA.
   h. Provide certified and calibrated instrumentation required to take measurements of system and equipment performance during functional performance testing.
   i. Assist CT with developing a comprehensive commissioning schedule.
   j. Attend commissioning kick-off meeting and other commissioning team meetings.
   k. Prepare training plans with CM and execute training as specified in Division 1, 07, 08, 21, 22, 23, 26, 27, 28 of these specifications.
   l. Execute seasonal or deferred functional performance testing as necessary.
   m. Make necessary amendments to O&M manuals and as-built drawings for applicable issue identified in season/deferred testing.
   n. Participate in a warranty review of system/equipment performance.

4. Controls Contractor (CC):
   a. Completely install and thoroughly inspect components, thoroughly start-up, test, adjust, calibrate and document systems and equipment under Building Automation/Controls Contract.

b. Provide laptop computer, software and training to accommodate TAB Contractor in system balancing.
c. Install software on CA's laptop and provide training to CA for off-site trend logging and monitoring "BMS".
d. Maintain database of control parameters submitted by TAB Contractor subsequent to field adjustments and measurements.
e. Provide on-site technician skilled in software programming and hardware operation to exercise sequences of operation and to correct control deficiencies identified during functional performance testing.
f. Provide instrumentation, computer, software and communication resources necessary to demonstrate total operation of building systems during functional performance testing of control system equipment.
g. Attend commissioning kick-off meeting and other commissioning team meetings.
h. Prepare training plans with CM and execute training as specified in Division 1, 07, 08, 21, 22, 23, 26, 27, 28 of these specifications.
i. Maintain comprehensive system calibration and checkout records. Submit records to CT.
j. Set up trend logs as requested by CT to substantiate proper systems operation.
k. Participate in a warranty review of system/equipment performance.
l. Provide computer generated reports and signed documentation indicating the commands listed below function as intended:
    1) All installed points receive and transmit the correct information prior to loading/activating the system software.
    2) ON/OFF commands from the workstation shall be performed in order to verify each binary output.
    3) Each binary input point is to be tested using the HOA (hand/off/automatic) selector switch on the associated motor control panel or by manually completing the circuit across the field device contacts.
    4) Each analog output points providing control shall be tested using a command from the workstation confirming the signals are properly sent and received
    5) Each analog input point is to be tested by comparing the reading obtained through the workstations to the value of an independent testing meter.
    6) All equipment programmed with a Sequence of Operations is to be verified; all heating/cooling modes, valves hot and chilled water, dampers, fans, energy recovery wheels, sensors, mechanical cooling, and all other associated equipment components are to be tested and checked out prior to CA functional testing.

5. Test, Adjust and Balance (TAB) Agency:
    a. Attend commissioning kick-off meeting and other commissioning team meetings.
    b. Submit TAB plan and forms describing methodology for execution of test and balance procedures specific to this project to CT for review.
    c. Cooperate with CC with execution of required work.
    d. Rebalance deficient areas identified during commissioning.

e. Provide on-site technician, as necessary, skilled in TAB procedures to provide verification of equipment and system performance and TAB reading during functional performance testing.
f. Participate in a warranty review of system/equipment performance.

3.4 COMMISSIONING TEAM (CT) MEETINGS

A. CT meetings will be held periodically as determined by CA with frequency increasing as construction advances and systems become operational. Attendance is mandatory. CA will record minutes and attendance. CA will chair CT meetings.

B. Discussions held in CT meetings shall include, but not be limited to system/equipment start-up, progress, scheduling, testing, documentation, deficiencies and problem resolution.

3.5 REPORTING

A. CA will provide regular status reports to CM and Owner, with increasing frequency as construction and commissioning progresses.

B. CA will regularly communicate with members of commissioning team, keeping them apprised of commissioning progress.

C. CA shall submit non-compliance and deficiency reports to Owner and CM.

D. CA shall provide a final summary report to Owner.

3.6 START-UP AND INITIAL CHECKOUT

A. Sub-contractor shall schedule equipment start-up with Commissioning Team. Sub-contractor shall execute equipment start-up.

B. CA reserves the right to witness any start-up or equipment testing.

C. Pre-functional checklists are provided and executed by CA. Prototypical examples of PFCs are included at the end of this specification section. Final copies of PFCs will be developed after issuance the Construction Documents and issued to the CT as part of the Commissioning Plan. CM and Sub-contractor shall review final construction documentation for applicable details and specifications related to equipment to be commissioned in order to fully ascertain all of the pre-functional checklist requirements.

3.7 FUNCTIONAL PERFORMANCE TESTING

A. Objectives and Scope:
1. The objective of Functional Performance Testing is to demonstrate each system is operating according to documented design intent and Contract Documents. Functional Performance Testing facilitates bringing system from a state of substantial completion to full dynamic operation. Additionally, during Functional Performance Testing, areas of deficient performance are identified and corrected, improving operation and functioning of systems.

2. Each system shall be operated through all modes of operation (occupied, unoccupied, warm-up, cool-down, etc.) where there is a specified system response. Verifying each sequence in the sequences of operation is required.

B. Development of Test Procedures:
1. The purpose of any given specific test is to verify and document compliance with stated criteria of acceptance given on test form. CA shall develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Sub-contractor responsible to execute test will provide assistance to CA in developing procedure (i.e., answering questions about equipment, operation, sequences, etc.) Prior to execution, CA shall provide a copy of test procedures to Sub-contractor. Sub-contractor will review tests for feasibility, safety and equipment warranty protection. Test procedure forms developed by the CA will include (but not be limited to) the following information:
   a. System and equipment or component name(s)
   b. Date
   c. Project name
   d. Specific sequence of operation or other specified parameters being verified
   e. Specific step-by-step procedures to execute test, in a clear, sequential and repeatable format
   f. A Yes/No checkbox to allow for clearly marking whether or not proper performance of each part of the test was achieved
   g. Section for comments
2. Prototypical examples of Functional Performance Test Checklists are included at the end of this specification section. Final copies of FPTs will be developed after issuance the Construction Documents and issued to the CT as part of the Commissioning Plan. CM and Sub-contractors shall review final construction documentation for applicable details and specifications related to equipment to be commissioned in order to fully ascertain all FPT requirements.

C. Coordination and Scheduling:
1. CM will provide sufficient notice to CA regarding completion of schedule for equipment and systems. CM will schedule Functional Performance Test with CT. CA shall witness and document functional testing of equipment and systems. Sub-contractor shall execute test under direction of CA.
2. Functional Performance Testing is conducted after system operation and checkout is satisfactorily completed. Air balancing and water balancing is completed and debugged before functional testing of air-related or water-related equipment or systems.

3.8 DOCUMENTATION, NON-COMFORMANCE AND APPROVAL OF TESTS

A. Documentation:
1. CA will witness and document results of FPT using specific Functional Performance Test developed for that purpose. Prior to testing, FPTs are provided to the Commissioning Team for review and approval. CA will include filled out FPTs in Commissioning Turnover Package.

B. Non-Conformance:

1. CA will record results of functional testing. Deficiency or non-conformance issues will be noted and reported to CM and Owner on standard non-compliance FPT form.
2. Corrections of minor deficiencies identified may be made during tests at discretion of CA. In such cases, deficiency and resolution will be documented on FPT form.
3. Every effort will be made to expedite testing and minimize unnecessary delays, while not comprising integrity of tests. CA shall not overlook deficient work or relax acceptance criteria to satisfy scheduling or cost issues unless directed to do by the Owner.
4. Deficiencies are handled in the following manner:
    a. When there is no dispute on deficiency and Sub-contractor accepts responsibility for remedial action:
        1) CA documents deficiency and Sub-contractors response and intentions and they go on to another test or sequence. CA submits deficiency report to CM and Owner. Copy is provided to Sub-contractor. Sub-contractor corrects deficiency, and verifies correction to CM. CM forwards response to CA.
        2) CM reschedules test with Sub-contractor.
    b. When there is a dispute about a deficiency, regarding whether it is a deficiency or who is responsible:
        1) CA documents deficiency and Contractors response and they go on to another test or sequence. CA submits deficiency report to CM and Owner. Copy is provided to Sub-contractor.
        2) CM facilitates resolution of deficiency. Other parties are brought into discussions as needed. Final interpretive authority is A/E. Final acceptance authority is with the Owner.
        3) CM documents resolution process.
        4) Once interpretation and resolution has been decided, appropriate party corrects deficiency, and verifies correction to CM. CM forwards response to CA. CM reschedules test and test is repeated until satisfactory performance is achieved.

C. Cost of Retesting:
1. Sub-contractor shall retest FPT, if they are responsible for deficiency at no additional cost.
2. Time for CA to direct any retesting required because a specific pre-functional checklist or start-up test items reported to have been successfully completed, but determined during Functional Performance Testing to be faulty, may be backcharged to Sub-contractor.

D. Approval:
1. CA notes each satisfactorily demonstrated function on test form. CA, A/E and Owner provide formal approval of FPT. CA recommends acceptance of each test to Owner.

3.9 COMMISSIONING DOCUMENTATION

A. Commissioning Turnover Package

1. CA is responsible to compile and organize commissioning records. CA shall deliver Cx records to the Owner in Commissioning Binders. Turnover Package to include the following:
   a. Commissioning Plan
   b. Commissioning Observation Reports
   c. Pre-functional Checklists
   d. Completed Functional Performance Test records
   e. Deficiency Reports
   f. Final Commissioning Report

B. Final Report Details
1. Final Commissioning Report will include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and general description of testing and verification methods. Recommendations for improvement to equipment or operations, future actions, etc., will also be listed. Each non-compliance issue will be referenced to specific FPT where deficiency is documented.

3.10 TRAINING OF OWNER PERSONNEL

A. Sub-contractors will provide complete training in start-up, operation and maintenance of all equipment under contract.

B. CM and Sub-contractors will be responsible for developing Owner training plan, scheduling of Owner training, execution of Owner training and documentation of completed Owner training.

C. A/E will be responsible for approving content and adequacy of Owner training.

D. CA will be responsible for monitoring completion of Owner training.

E. Sub-contractor will submit a written training plan to A/E and CA for review and approval with submission of shop drawings. Plan will cover the following elements:
1. Equipment (included in training)
2. Intended audience
3. Location of training
4. Objectives
5. Subjects covered
6. Duration of training on each subject
7. Instructor for each subject
8. Methods (classroom lecture, video, site walk-through, actual operational demonstrations, written handouts, etc.)
9. Instructors and qualifications

F. CM and sub-contractors schedule training with CA and Owner. CA develops criteria to determine training satisfactorily completed.

G. Professional videotaping shall be provided for training sessions as required by Division 1 and respective contractor.

3.11 SYSTEMS MANUAL

A. The CxA with other project team members shall develop a systems manual that gives future operating staff the information needed to understand and optimally operate the project's commissioned systems.

3.12 DEFERRED TESTING

A. Deferred Seasonal Testing:
1. During warranty period, seasonal testing (test delayed until weather conditions are closer to system's design) will be completed as part of this contract. CM will coordinate this activity. Tests will be executed, documented and deficiencies corrected by the appropriate sub-contractor(s), with CA witnessing. CA will incorporate final updates to Turnover Package as necessary.

B. Unforeseen Deferred Tests:
1. Any check or test not completed due to building structure, required occupancy condition, or other deficiency, may be delayed upon approval of Owner. These tests will be rescheduled as soon as possible.

NOTE: The prototypical Pre-Functional Checklists and Functional Performance Test procedures are enclosed.

END OF SECTION 019113

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SECTION 26 0000 - GENERAL PROVISIONS - ELECTRICAL

PART 1 - GENERAL

1.1 The Instructions to Bidders, General and Special Conditions, and all other contract documents shall apply to the Contractor's work as well as to each of his Sub Contractor's work. Each Contractor is directed to familiarize himself in detail with all documents pertinent to this Contract. In case of conflict between these General Provisions and the General and/or Special Conditions, the affected Contractor shall contact the Engineer for clarification and final determination.

1.2 Each Contractor shall be governed by any alternates, unit prices and Addenda or other contract documents insofar as they may affect his part of the work.

1.3 The work included in this division consists of the furnishing of all labor, equipment, transportation, supplies, material and appurtenances and performing all operations necessary for the satisfactory installation of complete and operating Electrical Systems indicated on the drawings and/or specified herein.

1.4 Any materials, labor, equipment or services not mentioned specifically herein which may be necessary to complete or perfect any part of the Electrical Systems in a substantial manner, in compliance with the requirements stated, implied, or intended in the drawings and specifications, shall be included as part of this Contract. The Contractor shall give written notice of any materials or apparatus believed inadequate or unsuitable; in violation of laws, ordinances, rules or regulations of authorities having jurisdiction; and any necessary items of work omitted a minimum of ten days prior to bid. In the absence of such written notice and by the act of submitting his bid, it shall be understood that the Contractor has included the cost of all required items in his bid, and that he will be responsible for the approved satisfactory functioning of the entire system without extra compensations.

1.5 It is not the intent of this section of the specifications (or the remainder of the contract documents) to make any specific Contractor, other than the Contractor holding the Prime Contract, responsible to the Owner, Architect and Engineer. All transactions such as submittal of shop drawings, claims for extra costs, requests for equipment or materials substitution, shall be done through the Contractor to the Architect (if applicable), then to the Engineer.

1.6 This section of the Specifications or the arrangement of the Contract Documents shall not be construed as an attempt to arbitrarily assign responsibility for work, material, equipment or services to a particular trade Contractor or Sub-Contractor. Unless stated otherwise, the subdivision and assignment of work under the various sections shall be the responsibility of the Contractor holding the Prime Contract.

1.7 It is the intent of this Contract to deliver to the Owners a "like new" project once work is complete. Although plans and specifications are complete to the extent possible, it shall be responsibility of the Contractors involved to remove and/or relocate or re-attach any existing or new systems which interfere with new equipment or materials to be installed by other trades without additional cost to the Owner.

1.8 In general, and to the extent possible, all work shall be accomplished without interruption of the existing facilities' operations. Each Contractor shall advise the Architect, Owner and Engineer in writing at least one week prior to the deliberate interruption of any services. The Owners shall be advised of the exact time that interruption will occur and the length of time the interruption will occur. Failure to comply with this requirement may result in complete work stoppage by the Contractors involved until a complete schedule of interruptions can be developed. Contractor will not be entitled to additional compensation due to work stoppage mandated by unscheduled interruption.

1.9 Whenever utilities are interrupted, either deliberately or accidentally, the Contractor shall work continuously to restore said service. The Contractor shall provide tools, materials, skilled journeymen of his own and other trades as necessary, premium time as needed and coordination with all applicable utilities, including payment of utility company charges (if any), all without requests for extra compensation to the Owner, except where otherwise provided for in the contract for the work. The Contractor shall abide by the requirements of the Special Conditions and the University’s outage request program.

1.10 Definitions and Abbreviations:

1. Prime Contractor - The Contractor who has been engaged by the Owner in a contractual relationship to accomplish the work.
2. Electrical Contractor - Any Contractor whether bidding or working independently or under the supervision of a General Contractor, that is: the one holding the Prime Contract and who installs any type of Electrical work, such as: power, lighting, television, telecommunications, data, fiber optic, intercom, fire detection and alarm, security, video, underground or overhead electrical, etc.

3. Electrical Sub-Contractor - Each or any Contractor contracted to, or employed by, the Electrical Contractor for any work required by the Electrical Contractor.
4. Engineer - The Consulting Mechanical-Electrical Engineer either consulting to the Owner, Architect, or Other, etc. In this case: CMTA, Inc., Consulting Engineers.
5. Architect - The Architect of Record for the project.
6. Contract Documents - All documents pertinent to the quality and quantity of work to be performed on this project. Includes, but not limited to: Plans, Specifications, Instructions to Bidders, General and Special Conditions, Addenda, Alternates, Lists of Materials, Lists of Sub-Contractors, Unit Prices, Shop Drawings, Field Orders, Change Orders, Cost Breakdowns, Schedules of Value, Periodical Payment Requests, Construction Contract with Owner, etc.
7. Bidder/Proposer - Any person, agency or entity submitting a proposal to any person, agency or entity for any part of the work required under this contract.
8. The Project - All of the work required under this Contract.
9. Furnish - Deliver to the site in good condition and turn over to the Contractor who is to install.
10. Provide - Furnish and install complete, tested and ready for operation.
11. Install - Install equipment furnished by others in complete working order.
12. Indicated - Listed in the Specifications, shown on the Plans or Addenda thereto.
13. Basis of Design (BOD): Documentation of primary thought processes and assumptions behind design decisions made to meet design intent. Describes systems, components, conditions and methods chosen to meet intent.
14. Monitoring: Recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or trending capabilities of control systems.
15. Start-up: The activities where systems or equipment are initially tested and operated. Start-up is completed prior to functional testing.
16. Vendor: Supplier of equipment.
17. Typical or Typ- Where indicated repeat this work, method or means each time the same or similar condition occurs whether indicated or not.
18. ADA - Americans with Disabilities Act.
19. ANSI - American National Standards Institute.
20. ASA – American Standards Association.
21. ASTM – American Society for Testing Materials.
22. ASHRAE - American Society of Heating, Refrigeration and Air Conditioning Engineers.
23. BAS – Building Automation System.
24. BICSI – Building Industry Consulting Services International
25. CM – Construction Manager
26. EE – Electrical Contractor
27. FCC – United States Federal Communications Commission
28. GC – General Contractor
29. IECC – International Energy Conservation Code
30. IEEE – Institute of Electrical and Electronics Engineers.
31. ISO – International Standards Organization.
32. OBC - Ohio Building Code.
33. NEC – National Electrical Code (NFPA 70).
34. NECA – Standards for Installation.

35. NEMA - National Electrical Manufacturers Association.
36. NESC – National Electrical Safety Code.
37. NFPA - National Fire Protection Association.
38. OSHA - Office of Safety and Health Administration.
39. TIA – Telecommunications Industry Association
40. RFI – Request for Information
41. ROI – Rough-in Only
42. UL - Underwriters Laboratories, Inc.
43. UON – Unless otherwise noted.
44. Contract Documents - All documents pertinent to the quality and quantity of all work to be performed on the project. Includes, but not limited to: Plans, Specifications, Addenda, Instructions to Bidders, (both General and Sub-Contractors), Unit Prices, Shop Drawings, Field Orders, Change Orders, Cost Breakdowns, Construction Manager's Assignments, Architect's Supplemental Instructions, Periodical Payment Requests, etc.

1.11 Note: Any reference within these specifications to a specific entity, i.e., "Electrical Contractor" is not to be construed as an attempt to limit or define the scope of work for that entity or assign work to a specific trade or contracting entity. Such assignments of responsibility are the responsibility of the Contractor or Construction Manager holding the prime contract, unless otherwise provided herein.

1.12 Required Notices: Ten days prior to the submission of a proposal, each proposer shall give written notice to the Engineer of any materials or apparatus believed inadequate or unsuitable; in violation of laws, ordinances, rules or regulations of authorities having jurisdiction; and any necessary items of work omitted. In the absence of such written notice, Proposers signify that they have included the cost of all required items in the proposal and that the Proposer will be responsible for the safe and satisfactory operation of the entire system.

1.13 SYSTEM COMMISSIONING

A. Section 019113 requires the engagement of a Commissioning Authority to document the completion of the Mechanical, Fire Protection, Plumbing, Electrical, Electronic Safety and Security, and associated Control Systems for the project. Section 019113 defines the roles and responsibilities of each member of the commissioning team.

B. Comply with the requirements of Section 019113 for the commissioning of the various building systems.

1.14 INTENT

A. It is the intent of these specifications and all associated drawings that the Contractor provide finished work, tested, and ready for operation. Wherever the word "provide" is used, it shall mean "furnish and install complete, tested and ready for operation."

B. Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

1.15 ELECTRICAL DRAWINGS AND SPECIFICATIONS

A. The drawings are diagrammatic only and indicate the general arrangement of the systems and are to be followed insofar as possible. If deviations from the layouts are necessitated by field conditions, detailed layouts of the proposed departures shall be submitted in writing to the Engineer for approval before proceeding with the work. The Contract Drawings are not intended to show every vertical or horizontal offset which may be necessary to complete the systems. Contractors shall, however, anticipate that additional offsets may be required and submit their bid accordingly.

B. The drawings and specifications are intended to supplement each other. No Contractor or supplier shall take advantage of conflict between them, or between parts of either, but should this condition exist, the Contractor or supplier shall request a clarification of the condition at least ten days prior to the submission of bids so that the condition may be clarified by Addendum. In the event that such a condition arises after work is started, the interpretation of the Engineer shall be the determining factor. In all instances, unless modified in writing and agreed upon by all parties thereto, the Contract to accomplish the work shall be binding on the affected Contractor.

C. The drawings and specifications shall be considered to be cooperative and complimentary and anything appearing in the specifications which may not be indicated on the drawings or conversely, shall be considered as part of the Contract and must be executed the same as though indicated by both.

D. This Contractor shall make all his own measurements in the field and shall be responsible for correct fitting. He shall coordinate this work with all other branches of work in such a manner as to cause a minimum of conflict or delay.

E. The Engineer shall reserve the right to make minor adjustments in location of conduit, fixtures, outlets, switches, etc., where he considers such adjustments desirable in the interest of concealing work or presenting a better appearance.

F. Each Contractor shall evaluate ceiling heights called for on Architectural Plans. Where the location of Electrical equipment may interfere with ceiling heights, the Contractor shall call this to the attention of the Engineer in writing prior to making the installation. Any such changes shall be anticipated and requested sufficiently in advance so as to not cause extra work on the part of the Contractor or unduly delay the work.

G. Should overlap of work between the various trades become evident, this shall be called to the attention of the Engineer. In such event neither trade shall assume that he is to be relieved of the work which is specified under his branch until instructions in writing are received from the Engineer.

H. The Electrical drawings are intended to show the approximate location of equipment, materials, etc. Dimensions given in figures on the drawings shall take precedence over scaled dimensions and all dimensions whether given in figures or scaled shall be verified in the field. In case of conflict between small and large scale drawings, the larger scale drawings shall take precedence.

I. The Electrical Contractor and his Sub-Contractors shall review all drawings in detail as they may relate to his work (structural, architectural, site survey, mechanical, etc.). Review all drawings for general coordination of work, responsibilities, ceiling clearances, wall penetration points, chase access, fixture elevations, etc. Make any pertinent coordination or apparent conflict comments to the Engineers at least ten (10) days prior to bids, for issuance of clarification by written addendum.

J. Where on any of the drawings a portion of the work is drawn out and the remainder is indicated in outline, or not indicated at all, the parts drawn out shall apply to all other like portions of the work. Where ornament or other detail is indicated by starting only, such detail shall be continued throughout the courses or parts in which it occurs and shall also apply to all other similar parts of the work, unless otherwise indicated.

K. Special Note: Always check ceiling heights indicated on Drawings and Schedules and insure that these heights may be maintained after all mechanical and electrical equipment is installed. If a conflict is apparent, notify the Engineer in writing for instructions.

1.16 EXAMINATION OF SITE AND CONDITIONS

A. Each Contractor shall inform himself of all of the conditions under which the work is to be performed, the site of the work, the structure of the ground, the obstacles that may be encountered, the availability and location of necessary facilities and all relevant matters concerning the work. All Contractors shall carefully examine all Drawings and Specifications and inform themselves of the kind and type of materials to be used throughout the project and which may, in any way, affect the execution of his work.

B. Each Contractor shall fully acquaint himself with all existing conditions as to ingress and egress, distance of haul from supply points, routes for transportation of materials, facilities and services, availability of temporary or permanent utilities, etc. The Contractor shall include in his work all expenses or disbursements in connection with such matters and conditions. Each Contractor shall verify all work shown on the drawings and conditions at the site, and shall report in writing to the Engineer ten days prior to bid, any apparent omissions or discrepancies in order that clarifications may be issued by written addendum. No allowance is to be made for lack of knowledge concerning such conditions after bids are accepted.

C. The Electrical Contractor is required to provide coordination drawings, data and collaboration for all aspects of his work in accordance with the general and special conditions – Divisions 20, 22, and 23 and the Construction Manager's procedures.

1.17 EQUIPMENT AND MATERIALS SUBSTITUTIONS OR DEVIATIONS

A. When any Contractor requests review of substitute materials and/or equipment, and when under an approved formal alternate proposal, it shall be understood and agreed that such substitution, if approved,

will be made without additional cost regardless of changes in connections, spacing, service, mounting, etc. In all cases where substitutions affect other trades, the Contractor offering such substitutions shall advise all such Contractors of the change and shall reimburse them for all necessary changes in their work. Any drawings, Specifications, Diagrams, etc., required to describe and coordinate such substitutions or deviations shall be professionally prepared at the responsible Contractor's expense. Special Note: Review of Shop Drawings by the Engineer does not absolve the Contractor of this responsibility.

B. References in the specifications to any article, device, product, material, fixture, form, or type of construction by name, make, or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. Each Contractor, in such cases, may, at his option, use any article, device, product, material, fixture, form, or type of construction which in the judgment of the Engineer is equivalent to that specified, provided the provisions of Paragraph 5.1 immediately preceding are met. Substitutions shall be submitted to the Engineer a minimum of ten (10) days prior to bid date for approval to bid in written form through addenda or other method selected by the Engineer. If prevailing laws of cities, towns, states or countries are more stringent than these specifications regarding such substitutions, then those laws shall prevail over these requirements.

C. Wherever any equipment and material is specified exclusively only such items shall be used unless substitution is accepted in writing by the engineers.

D. Each Contractor shall furnish along with his proposal a list of specified equipment and materials which he proposes to provide. Where several makes are mentioned in the Specifications and the Contractor fails to state which he proposes to furnish, the Engineer shall have the right to choose any of the makes mentioned without change in price.

1.18 SUPERVISION OF WORK

A. Each Contractor and Sub-Contractors shall personally supervise the work or have a competent superintendent on the project site at all times during progress of the work, with full authority to act for him in matters related to the project.

1.19 CODES, RULES, PERMITS, FEES, REGULATIONS, ETC.

A. The Contractor shall give all necessary notices, obtain and pay for all permits, government sales taxes, fees, and other costs including utility connections or extensions, in connection with his work. As necessary, he shall file all required plans, utility easement requests and drawings, survey information on line locations, load calculations, etc., prepare all documents and obtain all necessary approvals of all utility and governmental departments having jurisdiction; obtain all required certificates of inspection for his work and deliver same to the Engineer before request for acceptance and final payment for the work.

B. Ignorance of Codes, Rules, regulations, utility company requirements, laws, etc., shall not diminish or absolve Contractor's responsibilities to provide and complete all work in compliance with such.

C. The Contractor shall include in the work, without extra cost, any labor, materials, services, apparatus or drawings required in order to comply with all applicable laws, ordinances rules and regulations, whether or not shown on drawings and/or specified.

D. All materials furnished and all work installed shall comply with the current edition of the National Electrical Codes, National Fire Codes of the National Fire Protection Association, the requirements of local utility companies, and with the requirements of all governmental agencies or departments having jurisdiction.

E. All material and equipment for the electrical systems shall bear the approval label, or shall be listed by the Underwriters' Laboratories, Incorporated. Listings by other testing agencies may be acceptable with written approval by the Engineer.

F. All electrical work is to be constructed and installed in accordance with plans and specifications which have been approved in their entirety and/or reflect any changes requested by the University Fire Marshal, as applicable or required. Electrical work shall not commence until such plans are in the hands of the Electrical Contractor.

G. The Contractor shall insure that his work is accomplished in accord with OSHA Standards and any other applicable government requirements.

H. Where conflict arises between any code and the plans and/or specifications, the code shall apply except in the instance where the plans and specifications exceed the requirements of the code. Any changes required as a result of these conflicts shall be brought to the attention of the Engineer at least ten working days prior to bid date, otherwise the Contractor shall make the required changes at his own expense. The provisions of the codes constitute minimum standards for wiring methods, materials, equipment and

construction and compliance therewith will be required for all electrical work, except where the drawings and specifications require better materials, equipment, and construction than these minimum standards, in which case the drawings and specifications shall be the minimum standards.

1.20 COST BREAKDOWNS

A. Within thirty days after acceptance of the Contract, each Contractor is required to furnish to the Engineer one copy of a detailed cost breakdown on each respective area of work. These cost breakdowns shall be made on forms provided or approved by the Engineer or Architect. Payments will not be made until satisfactory cost breakdowns are submitted.

B. The breakdown shall be minimally as follows. Material and labor shall be listed separately. Pay special attention to required withholding percentages for startup, testing, documentation, acceptance, owner training, etc.:

1. Permitting
2. Mobilization
3. Shop Drawings/Submittals
4. Temporary Power
5. Electrical Distribution (Panelboards) Materials & Labor
6. Feeders Materials & Labor
7. Photovoltaic Equipment Materials & Labor
8. Owner Training & Acceptance
9. As-Built/Record Drawings & Acceptance
10. O&M Manuals & Acceptance
11. Warranty
12. Demobilization

1.21 GUARANTEES AND WARRANTIES

A. Each Contractor shall unconditionally guarantee all equipment, apparatus, materials, and workmanship entering into this Contract to be the best of its respective kind and shall replace all parts at his own expense, which fail or are deemed defective within one year from final acceptance of the work by the Engineer. The effective date of completion of the work shall be the date each or any portion of the work is accepted by the Engineer and Owner as being substantially complete.

B. Items of equipment which have longer guarantees, as called for in these specifications or as otherwise offered by the manufacturer, such as generators, engines, batteries, transformers, etc., shall have warranties and guarantees completed in order, and shall be in effect at the time of final acceptance of the work by the Engineer. The Contractor shall present the Engineer with such warranties and guarantees at the time of final acceptance of the work. The Owner reserves the right to use equipment installed by the Contractor prior to date of final acceptance. Such use of equipment shall in no way invalidate the guarantee except that Owner shall be liable for any damage to equipment during this period due to negligence of his operator or other employee.

C. The Warranties specified in this and other Articles shall not deprive the Owner of other rights the Owner may have under provisions of the Contract Documents and shall be in addition to, and run concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

1.22 INSPECTION, APPROVALS AND TESTS

A. Before requesting a final review of the installation from the Architect and/or Engineer, the Contractor shall thoroughly inspect his installation to assure that the work is complete in every detail and that all requirements of the Contract Documents have been fulfilled. Failure to accomplish this may result in charges from the Architect and/or Engineers for unnecessary and undue work on their part.

B. The Contractor shall provide as a part of this contract electrical inspection by a competent Electrical Inspection Agency, licensed to provide such services. The name of this agency shall be included in the list of materials of the Form of Proposal by the Contractor. All costs incidental to the provision of electrical inspections shall be borne by the Electrical Contractor.

C. The Contractor shall advise each Inspection Agency in writing (with an information copy of the correspondence to the Architect and/or Engineer) when he anticipates commencing work. Failure of the Inspection Agency to inspect the work in the stage following and submit the related reports may result in the Contractor's having to expose concealed work not so inspected. Such exposure will be at the expense of the responsible Contractor.

D. Inspections shall be scheduled for rough as well as finished work. The rough inspections shall be divided into as many inspections as may be necessary to cover all roughing-in without fail. Report of each such inspection visit shall be submitted to the Architect, Engineer and the Contractor within three days of the inspection.

E. Approval by an Inspector does not relieve the Contractor from the responsibilities of furnishing equipment having a quality of performance equivalent to the requirements set forth in these plans and specifications. All work under this contract is subject to the review of the Architect and/or Engineer, whose decision is binding.

F. Before final acceptance, the Contractor shall furnish three (3) copies of the certificates of final approval by the Electrical Inspector (as well as all other inspection certificates) to the Engineer with one (1) copy of each to the appropriate government agencies, as applicable. Final payment for the work shall be contingent upon completion of this requirement.

G. The Contractor shall test all wiring and connections for continuity and grounds before equipment and fixtures are connected, and when indicated or required, demonstrate by Megger Test the insulation resistance of any circuit or group of circuits. Where such tests indicate the possibility of faulty insulation, locate the point of such fault, pull out the defective conductor, replacing same with new and demonstrate by further test the elimination of such defect.

1.23 CHANGES IN ELECTRICAL WORK

A. REFER TO GENERAL AND SPECIAL CONDITIONS.

1.24 CLAIMS FOR EXTRA COST

A. REFER TO GENERAL AND SPECIAL CONDITIONS.

1.25 SURVEYS, MEASUREMENTS AND GRADES

A. The Contractor shall lay out his work and be responsible for all necessary lines, levels, elevations and measurements. He must verify the figures shown on the drawings before laying out the work and will be held responsible for any error resulting from his failure to do so.

B. The Contractor shall base all measurements, both horizontal and vertical from established bench marks. All work shall agree with these established lines and levels. Verify all measurements at site and check the correctness of same as related to the work.

C. Should the Contractor discover any discrepancy between actual measurements and those indicated, which prevents following good practice or the intent of the drawings and specifications, he shall notify the Engineer thru normal channels of job communication and shall not proceed with his work until he has received instructions from the Engineer.

1.26 TEMPORARY SERVICES

A. The Contractor shall arrange for temporary electrical and other services which he may require to accomplish his work. In the absence of other provisions in the contract, the Contractor shall provide for his own temporary services of all types, including the cost of connections, utility company fees, construction, removal, etc., in his bid.

B. All temporary services shall be removed by Contractor prior to acceptance of work.

1.27 RECORD DRAWINGS

A. The Contractor shall insure that any deviations from the design are being recorded daily, as necessary, on record drawings being maintained by the Contractor. Dimensions from fixed, visible permanent lines or landmarks shown in vertical and horizontal ways shall be utilized. Compliance shall be a requirement for final payment. Pay particular attention to the location of underfloor or underground exterior in-contract or utility-owned or leased service lines, main switches and other appurtenances important to the maintenance and safety of the Electrical System. Deliver these record drawings to the Engineer at the completion of the work.

B. All underground utilities/piping installed as part of this project shall be surveyed by a land surveyor licensed in the State of Ohio. This shall include underground electrical primary, communications, vaults. The survey shall include actual duct bank depths to top of conduit every 100 feet in length. The survey shall also include benchmarks dimensions relative to above grade, fixed structures. The survey shall be furnished on a compact disc in AutoCad ".dwg" format and ".pdf" format. Provide a GPS coordinate of each geothermal well and indicate on the as-built drawing. The survey information shall be included in the closeout documentation.

1.28 MATERIALS AND WORKMANSHIP

A. All electrical equipment, materials and articles incorporated in the work shall be new and of comparable quality to that specified. All workmanship shall be first-class and shall be performed by electricians skilled and regularly employed in their respective trades. The Contractor shall determine that the equipment he proposes to furnish can be brought into the building(s) and installed within the space available. All equipment shall be installed so that all parts are readily accessible for inspection, maintenance, replacement, etc. Extra compensation will not be allowed for relocation of equipment for accessibility or for dismantling equipment to obtain entrance into the building(s).

B. All conduit and/or conductors shall be concealed in or below walls, below floors or above ceilings, unless otherwise noted. All fixtures, devices and wiring required shall be installed to make up complete systems as indicated on the drawings and specified herein. Raceways shall not be placed within foundation walls and footings.

C. All materials, where applicable, shall bear Underwriters' Laboratories label or that of another Engineer approved testing agency, where such a standard has been established.

D. Each length of conduit, wireway, duct, conductor, cable, fitting, fixture and device used in the electrical systems shall be stamped or indelibly marked with the makers mark or name.

E. All electrical equipment shall bear the manufacturer's name and address and shall indicate its electrical capacity and characteristics.

F. All electrical materials, equipment and appliances shall conform to the latest standards of the National Electric Manufacturers Association (NEMA) and the National Board of Fire Underwriters (NBFU) and shall be approved by the Owner's insuring agency if so required.

G. Comply with National Electrical Contractors Association (NECA) performance standards that are published as National Electrical Installation Standards (NEIS).

H. All applicable equipment and devices provided shall meet all FCC requirements and restrictions.

1.29 QUALIFICATIONS OF WORKMEN

A. All electrical contractors bidding this project must have been a licensed company for a minimum of three (3) years to qualify to bid this project. Individual employee experience does not supercede this requirement.

B. All subcontractors bidding the electrical work must have completed one project of 70% this subcontract cost size and two projects of 50% this subcontract cost size.

C. All electrical work shall be accomplished by qualified workmen competent in the area of work for which they are responsible. Untrained and incompetent workmen as evidenced by their workmanship shall be relieved of their responsibilities in those areas. The Engineer shall reserve the right to determine the quality of workmanship of any workman and unqualified or incompetent workmen shall refrain from work in areas not satisfactory to him. Requests for relief of a workman shall be made through the normal channels of responsibility established by the Architect or the contract document provisions.

D. All electrical work shall be accomplished by Journeymen electricians under the direct supervision of a licensed Electrician. All applicable codes, utility company regulations, laws and permitting authority of the locality shall be fully complied with by the Contractor.

E. Special electrical systems, such as Fire Detection and Alarm Systems, Telecommunications or Data Systems, Video Systems, Special Electronic Systems, Control Systems, etc., shall be installed by workmen normally engaged or employed in these respective trades. As an exception to this, where small amounts of such work are required and are, in the opinion of the Engineer, within the competency of workmen directly employed by the Contractor involved, they may be provided by this Contractor.

1.30 CONDUCT OF WORKMEN

A. The Contractor shall be responsible for the conduct of all workmen under his supervision. Misconduct on the part of any workmen to the extent of creating a safety hazard, or endangering the lives and property of others, shall result in the prompt relief of that workman. The consumption or influence of alcoholic beverages, narcotics or illegally used controlled substances on the jobsite is strictly forbidden.

1.31 COOPERATION AND COORDINATION BETWEEN TRADES

A. The Contractor is expressly directed to read the General Conditions and all detailed sections of these specifications for all other trades and to study all drawings applicable to his work, including Architectural, Mechanical, Structural and other pertinent Drawings, to the end that complete coordination between trades will be affected.

B. Refer to Coordination Among Trades, Systems Interfacing and Connection of Equipment Furnished by Others section of these Specifications for further coordination requirements. The Contractor is responsible for the correct location of all rough-in and connections at every piece of equipment. Work not correctly located shall be relocated at the Contractor's expense.

1.32 PROTECTION OF EQUIPMENT

A. The Contractor shall be entirely responsible for all material and equipment furnished by him in connection with his work and special care shall be taken to properly protect all parts thereof from damage during the construction period. Such protection shall be by a means acceptable to the Engineer. All rough-in conduit shall be properly plugged or capped during construction in a manner approved by the Engineer. Equipment damaged while stored on site either before or after installation shall be repaired or replaced (as determined by the Engineer) by the responsible Contractor.

1.33 WELDING

A. The Contractor shall be responsible for quality of welding done by his organization and shall repair or replace any work not done in accordance with the Architect's or structural Engineer's specifications for such work. If required by the Engineer, the responsible Contractor shall cut at least three welds during the job for X-raying and testing. These welds are to be selected at random and shall be tested as a part of the responsible Contractor's work. Certification of these tests and X-rays shall be submitted, in triplicate, to the Engineer. In case a faulty weld is discovered, the Contractor shall be required to furnish additional tests and corrective measures until satisfactory results are obtained.

1.34 RESTORATION OF NEW OR EXISTING SHRUBS, PAVING, ETC.

A. The Contractor shall replace to their original condition all paving, curbing surfaces, drainage ditches, structures, fences, shrubs, existing or new building surfaces and appurtenances, and any other items damaged or removed by his operations. Replacement and repairs shall be in accordance with good construction practice and shall match materials employed in the original construction of the item to be replaced. All repairs shall be to the satisfaction of the Engineer, and in accord with the Architect's standards for such work, as applicable. Patchwork on new construction will not be accepted.

1.35 MAINTENANCE OF EXISTING UTILITIES AND LINES

A. The locations of all piping, conduits, cables, utilities and manholes existing, or otherwise, that come within the contract construction site, shall be subject to continuous uninterrupted maintenance with no exception unless the Owner of the utilities grants permission to interrupt same temporarily, if need be. Provide one week's written notice to Engineer, Architect and Owner prior to interrupting any utility service or line. Also see Part 1 - General, this section.

B. Known utilities and lines as available to the Engineer are shown on the drawings. However, it is additionally required that, prior to any excavation being performed, each Contractor ascertain and mark all utilities or lines that would be endangered by the excavation. Contractor shall bear costs of repairing damaged utilities.

C. If the above mentioned utilities or lines occur in the earth within the construction site, the Contractor shall first probe and make every effort to locate the lines prior to excavating in the respective area.

D. Cutting into existing utilities and services shall be done in coordination with and as designated by the Owner of the utility. The Contractor shall work continuously to restore service(s) upon deliberate or accidental interruption, providing premium time and materials as needed without extra claim to the Owner.

E. The Contractor shall repair to the satisfaction of the Engineer any surface or subsurface improvements damaged during the course of the work, unless such improvement is shown to be abandoned or removed.

F. Machine excavation shall not be permitted within ten feet of existing gas or fuel lines. Hand excavate only in these areas, in accord with utility company, agency or other applicable laws, standards or regulations.

G. Protect all new or existing lines from damage by traffic, etc. during construction.

H. Protect existing trees, indicated to remain with fencing or other approved method. Hold all new subsurface lines outside the drip line of trees, offsetting as necessary to protect root structures. Refer to planting or landscaping plans, or in their absence, consult with the Architect.

1.36 CUTTING AND PATCHING

A. Unless otherwise indicated or specified, the Contractor shall provide cutting and patching necessary to install the work specified in this Division. Patching shall match adjacent surfaces to the satisfaction of the Engineer and shall be in accord with the Architect's standards for such work, as applicable.

B. No structural members shall be cut without the approval of the Structural Engineer and all such cutting shall be done in a manner directed by him.

1.37 WEATHERPROOFING

A. Where any work pierces waterproofing, including waterproof concrete, the method of installation shall be as approved by the Architect and/or Engineer before work is done. The Contractor shall furnish all necessary sleeves, caulking and flashing required to make openings absolutely watertight.

B. Wherever work penetrates roofing, it shall be done in a manner that will not diminish or void the roofing guarantee or warranty in any way. Coordinate all such work with the roofing installer.

1.38 OPERATING INSTRUCTIONS

A. Upon completion of all work and all tests, each Contractor shall furnish the necessary skilled labor and helpers for operating his systems and equipment for a period of three days of eight hours each, or as otherwise specified. During this period, instruct the Owner or his representative fully in the operations, adjustment, and maintenance of all equipment furnished. Give at least one week's written notice to the Owner, Architect and Engineer in advance of this period. The Engineer may attend any such training sessions or operational demonstrations. The Contractor shall certify in writing to the Engineer that such demonstrations have taken place, noting the date, time and names of the Owner's representative that were present.

B. Unless specified otherwise in Division 1, each Contractor shall furnish three (3) complete bound sets for approval to the Engineer of typewritten and/or blueprinted instructions for operating and maintaining all systems and equipment included in this contract. All instructions shall be submitted in draft, for approval, prior to final issue. Manufacturer's advertising literature or catalogs will not be acceptable for operating and maintenance instructions.

C. Unless specified otherwise in Division 1, each Contractor, in the above mentioned instructions, shall include the maintenance schedule for the principal items of equipment furnished under this contract and a detailed, easy to read parts list and the name and address of the nearest source of supply.

1.39 CLEANING

A. The Contractor shall, at all times, keep the area of his work presentable to the public and clean of rubbish caused by his operations; and at the completion of the work, shall remove all rubbish, all of his tools, equipment, temporary work and surplus materials, from and about the premises, and shall leave the work clean and ready for use. If the Contractor does not attend to such cleaning immediately upon request, the Engineer may cause cleaning to be done by others and charge the cost of same to the responsible Contractor. Each Contractor shall be responsible or all damage from fire which originates in, or is propagated by, accumulations of his rubbish or debris.

B. After completion of all work and before final acceptance of the work, each Contractor shall thoroughly clean all equipment and materials and shall remove all foreign matter such as grease, dirt, plaster, labels, stickers, etc., from the exterior of materials, equipment and all associated fabrication. Pay particular attention to finished area surfaces such as lighting fixture lenses, lamps, reflectors, panels, etc.

1.40 HAZARDOUS MATERIALS

A. The Contractor is hereby advised that it is possible that asbestos and/or other hazardous materials are or were present in this building(s). Any worker, occupant, visitor, inspector, etc., who encounters any material of whose content they are not certain shall promptly report the existence and location of that material to the Contractor and/or Owner. The Contractor shall, as a part of his work, insure that his

workers are aware of this potential and what they are to do in the event of suspicion. He shall also keep uninformed persons from the premises during construction. Furthermore, the Contractor shall insure that no one comes near to or in contact with any such material or fumes therefrom until its content can be ascertained to be non-hazardous.

B. CMTA, Inc., Consulting Engineers, have no expertise in the determination of the presence of hazardous materials. Therefore, no attempt has been made by them to identify the existence or location of any such material. Furthermore, CMTA nor any affiliate thereof will neither offer nor make any recommendations relative to the removal, handling or disposal of such material.

C. If the work interfaces, connects or relates in any way with or to existing components which contain or bear any hazardous material, asbestos being one, then, it shall be the Contractor's sole responsibility to contact the Owner and so advise him immediately.

D. The Contractor by execution of the contract for any work and/or by the accomplishment of any work thereby agrees to bring no claim relative to hazardous materials for negligence, breach of contract, indemnity, or any other such item against CMTA, its principals, employees, agents or consultants. Also, the Contractor further agrees to defend, indemnify and hold CMTA, its principals, employees, agents and consultants, harmless from any such related claims which may be brought by any subcontractors, suppliers or any other third parties.

1.41 FINAL PUNCH LISTS

A. The Contractor shall review each area and prepare a punch list for each of the subcontractors, as applicable for the project.

1. For review of all other work as the project nears substantial completion.

B. When all work from the Contractor’s punch list is complete at each of these stages and prior to completing ceiling installations (or at the final punch list stage), the Contractor shall request that the Engineer develop a punch list. This request is to be made in writing seven days prior to the proposed date. After all corrections have been made from the Engineer’s punch list, the Contractor shall review and initial off on each item. This signed-off punch list and all work prior to the ceilings being installed and at the final punch list review.

C. If additional visits are required by the Engineer to review work not completed by this review, the Engineer shall be reimbursed directly by the Contractor by check or money order (due net 10 days from date of each additional visit) at a rate of $125.00 per hour for extra trips required to complete either of the above-ceiling or final punch lists.

1.42 TRAINING AND RELATED SUBMITTALS

A. Contractor shall provide classroom and in the field training for each type and/or model of equipment installed. Training shall be led by qualified factory certified technician. Contractor shall submit a request to schedule training sessions a minimum of two weeks in advance. Submission shall include qualifications of instructor as well as a syllabus that the Owner will add/deduct to as they see fit. Each individual listed as an “Attendee” on the roster submitted by the Owner shall receive a copy of the maintenance manual to review during training. All training sessions shall be recorded and a DVD with proper labels identifying the date, equipment, and project shall be delivered prior to Completion of the project. If the audio from the recording is unclear, narration shall be added.

B. Systems/Components which require owner training. The training shall be accomplished by a factory trained representative. Include (8) hours minimum for each system described here-in. Each equipment representative shall be represented wherever their equipment is used.

1. Electrical Distribution (Panelboards)

2. Photovoltaic System

C. Instruction Program: Submit outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

D. At completion of training, submit two complete training manual(s) for Owner's use.

E. Qualification Data: For facilitator, instructor and photographer.

F. Attendance Record: For each training module, submit list of participants and length of instruction time.

G. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

H. Demonstration and Training DVDs: Submit two copies within seven days of end of each training module.

I. Identification: On each copy, provide an applied label with the following information:

1. Name of Project.
2. Name and address of photographer.
3. Name of Architect and Construction Manager.
4. Name of Contractor.
5. Date video was recorded.
6. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

J. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video. Include name of Project and date of video on each page.

PART 2 – PRODUCTS – NOT APPLICABLE

PART 3 – EXECUTION – NOT APPLICABLE

END OF SECTION

SECTION 26 0030 - CUTTING, PATCHING AND REPAIRING

PART 1 - GENERAL

1.1 Each Electrical Contractor shall be responsible for all openings, sleeves, trenches, etc. that he may require in floors, roofs, ceilings, walls, etc. and shall coordinate all such work with the General Contractor and all other trades. He shall coordinate with the General Contractor any openings which he is to provide before submitting a bid proposal in order to avoid conflict and disagreement during construction. Improperly located openings shall be reworked at the expense of the responsible Contractor.

1.2 Each Electrical Contractor shall plan his work ahead and shall place sleeves, frames or forms through all walls, floors and ceilings during the initial construction, where it is necessary for conduit, buss duct, conductors, wireways, etc. to go through; however, when this is not done, this Contractor shall do all cutting and patching required for the installation of his work, or he shall pay other trades for doing this work when so directed by the Architect. Any damage caused to the buildings by the workmen of the responsible Contractor must be corrected or rectified by him at his own expense.

1.3 Each Electrical Contractor shall cut holes in casework, equipment panels, etc. (if any), as required to pass pipes in and out.

1.4 Each Electrical Contractor shall notify other trades in due time where he will require openings of chases in new concrete or masonry. He shall set all concrete inserts and sleeves for his work. Failing to do this, he shall cut openings for his work and patch same as required at his own expense.

1.5 Openings in slabs and walls shall be cut with core drill. Hammer devices will not be permitted. Edges of trenches and large openings shall be scribe cut with a masonry saw.

1.6 Cast iron sleeves shall be installed through all walls where pipe enters the building below grade. Sleeves shall be flush with each face of the wall and shall be sufficiently larger than the entering pipe to permit thorough caulking with lead and oakum between pipe and sleeve for waterproofing.

1.7 In all cases, sleeves shall be at least two pipe sizes larger than nominal pipe diameter.

1.8 Sleeves passing through exterior wall (none are permitted thru roof) or where there is a possibility of water leakage and damage shall be caulked water tight for horizontal sleeves and flashed and counter-flashed with lead (4 lb.) or copper and soldered to the piping, lapped over sleeve and properly weather sealed. All roof penetrations shall be made inside mechanical equipment curbs.

1.9 All rectangular or special shaped openings in plaster, stucco or similar materials including gypsum board shall be framed by means of plaster frames, casing beads, wood or metal angle members as required. The intent of this requirements is to provide smooth even termination of wall, floor and ceiling finishes as well as to provide a fastening means for lighting fixtures, panels, etc. Lintels shall be provided where indicated over all openings in bearing walls, etc.

1.10 No cutting is to be done at points or in a manner that will weaken the structure and unnecessary cutting must be avoided. If in doubt, contact the Architect.

1.11 Each Electrical Contractor shall be responsible for properly shoring, bracing, supporting, etc. any existing and/or new construction to guard against cracking, settling, collapsing, displacing or weakening while openings are being made. Any damage occurring to the existing and/or new structures, due to failure to exercise proper precautions or due to action of the elements, shall be promptly and properly made good to the satisfaction of the Architect.

1.12 All work improperly done or not done at all as required by the Electrical trades in this section will be performed by the General Contractor at the direction of the Contractor whose work is affected. The cost of this work shall be paid for by the Contractor responsible.

PART 2 – PRODUCTS – NOT APPLICABLE

PART 3 – EXECUTION – NOT APPLICABLE

END OF SECTION

SECTION 26 0075 - IDENTIFICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. The Contractor is directed to examine each and every section of these specifications, all drawings relating to the Contract Documents, any and all Addenda, etc., for work described elsewhere that may relate to the provision of the work described herein. Materials and performance requirements are specified elsewhere herein that relate to these systems.

C. Each Electrical Contractor's attention is directed to Section 260000 - General Provisions, Electrical, and all other Contract Documents as they apply to his work.

1.2 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Warning labels and signs.
5. Instruction signs.
6. Equipment identification labels.
7. Miscellaneous identification products.

1.3 DEFINITIONS AND ABBREVIATIONS

A. T - Transformer

B. SWGR – Switchgear. Electrical switching gear which consists of cam operated knife switches that can be operated either manually or electrically or both with amperage capacities greater than 1000 amps.

C. SWBD – Switchboard. Electrical distribution boards which contain 3 phase, stored-energy breakers which distribute power to other distribution panels or directly to large loads.

D. ATS - Automatic Transfer Switch. Stand-alone electrical transfer switches which maintain power to critical building loads. In the event of a loss of normal power, these switches will start the associated emergency generator and switch its load’s power feed to the generator.

E. MCC - Motor Control Center. Electrical distribution boards which house the electrical controllers for the loads which they feed. Example loads are usually fans and pumps.

F. DP - Distribution Panel. Electrical distribution panel which is an integral part of a switchboard or switchgear but has its own isolation circuit breaker.

G. P – Panel. Electrical distribution panels with manually operated circuit breakers which feed other distribution panels or directly to loads. These are generally the last distribution panel before the load.

H. N - Normal power system. Annotates that the associated component is part of the Normal Power distribution system and receives no backup power from the Emergency Power distribution system.

I. E - Emergency power system. Annotates that the associated component is part of the Normal Power and Emergency Power distribution systems. In the event of a loss of the supply from the normal power system, the component will receive power from the emergency power system.

J. BKR – Breaker. Switch which interrupts or establishes power flow to its associated load.

K. DISC - Disconnect Switch. Manually operated knife switch which interrupts or establishes power flow to its associated load.

1.4 ACTION SUBMITTALS

A. Product Data: For each electrical identification product indicated.

B. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.

C. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.5 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 FLOOR MARKING TAPE

A. 2-inch wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

2.2 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 7 by 10 inches.

D. Metal-Backed, Butyrate Warning Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 10 by 14 inches.

E. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES”

2.3 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.

1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.

C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

2.4 EQUIPMENT IDENTIFICATION LABELS

A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

B. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

C. Retain paragraph below to specify type of label for identifying outdoor equipment if specified in "Identification Schedule" Article.

D. Stenciled Legend: In nonfading, waterproof, [black] <Insert color> ink or paint. Minimum letter height shall be [1 inch (25 mm)] <Insert dimension>.

2.5 CABLE TIES

A. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black.

B. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F (Minus 46 to plus 140 deg C).
5. Color: Black.

2.6 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

F. Cable Ties: For attaching tags.

1. Plenum rated.
2. Outdoors: UV-stabilized nylon.

G. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.2 SCOPE OF WORK

A. Equipment, disconnect switches, switchgear, switchboards, panelboards, transformers, motor starters, variable frequency drives, special device plates, and similar materials shall be clearly marked as to their function and use. Markings shall be applied neatly and conspicuously to the front of each item of equipment with 1/2" black lamacoid plate (or equivalent) with white letters 1/4" high unless otherwise specified.

B. All receptacle cover plates shall be marked with their panel and circuit number with clear, machine, printed adhesive labels. Circuit number shall also be hand written inside outlet box with black permanent marker.

C. The Contractor shall provide clearly legible typewritten directories in each electrical panel indicating the area, item of equipment, etc. controlled by each switch, breaker, fuse, etc. These directories are to be inserted into plastic cardholders on back door in each panel. Descriptions to be approved by the Owner.

1. EXAMPLE:

a. LIGHTS, ROOM 100
b. RECEPTION, ROOM 200

D. Branch circuit panelboards and switch gear shall be provided with a black lamacoid plastic plate with 1/2" white letters for panel designation and 1/4" white letters showing voltage and feeder information. Branch circuit switches shall be designated as to function. Panelboard and switchgear labels shall indicate the source they are fed from, and the circuit number at that source. Clearly indicate the exact label legend to be furnished with each panelboard and switchgear on the shop drawings for each item of equipment prior to submission of shop drawings. Refer to drawings for details.

E. Where branch circuit panelboards and switchgear are connected to an emergency source, the lamacoid plate shall be red, and the word "emergency" shall be incorporated into the legend. In health care applications, the NEC - designated branch (life safety, critical or equipment branch) shall also be incorporated into the legend, all in ¼" letters. Also provide similar plates and legends for automatic transfer switches, as appropriate. Refer to drawings for details.

F. Lamacoid plates shall be located at center of top of trim for branch circuit panels, switch gear, and centered at side for branch circuit switches. Fasten with self-tapping stainless steel screws or other approved method.

G. Verify identity of each item before installing identification products

H. Identification shall consist of all UPPER CASE LETTERS.

I. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

J. Apply identification devices to surfaces that require finish after completing finish work.

K. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification devices.

L. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

M. Concealed Raceways, Duct Banks, More Than 600 V, within Buildings: Tape and stencil 4-inch wide black stripes on 10-inch centers over orange background that extends full length of raceway or duct and is 12 inches wide. Stencil legend "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch high black letters on 20-inch centers. Stop stripes at legends. Apply to the following finished surfaces:

1. Floor surface directly above conduits running beneath and within 12 inches (300 mm) of a floor that is in contact with earth or is framed above unexcavated space.
2. Wall surfaces directly external to raceways concealed within wall.
3. Accessible surfaces of concrete envelope around raceways in vertical shafts, exposed in the building, or concealed above suspended ceilings.

N. Accessible Raceways, More Than 600 V: Self-adhesive vinyl labels. Install labels at 10-foot maximum intervals.

O. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:

1. Emergency Power.
2. Power.
3. UPS.

P. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

Q. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

R. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

S. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels

1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

    a. Power transfer switches.
    b. Controls with external control power connections.

T. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

U. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

Y. Labeling Instructions:

1. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on 1-1/2-inch high label; where two lines of text are required, use labels 2 inches high.
2. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
3. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

END OF SECTION

SECTION 26 0120 - CONDUCTORS, IDENTIFICATION, SPLICING DEVICES & CONNECTORS

PART 1 - GENERAL

1.1 This section of the Specifications covers all of the electrical power, lighting, and control power (line voltage) conductors, but does not include communications, data or signal system conductors, which are specified separately in these specifications.

1.2 All conduits installed without conductors shall have a 200 lb. test nylon string installed for future use, tied off securely at each end.

1.3 No more than 40% conduit fill is permitted for any conduit system, including video, intercom, data, power or other signal circuits unless specifically indicated otherwise on the plans.

1.4 No more than seven current carrying conductors and no more than ten total conductors shall be installed in conduit except for switch legs and travelers in multi-point switching arrangements.

1.5 Neutrals shall not be shared. All branch circuits shall be provided with separate neutrals.

1.6 If more than three phases are installed in a single raceway, an additional equipment grounding conductor shall be installed as indicated by the number of phase conductors.

PART 2 - MATERIALS

2.1 CONDUCTORS

2.1.1 All conductors shall be 98% conductive annealed copper unless otherwise noted, UL listed and labeled.

2.1.2 Lighting and receptacle branch circuits shall be not less than #12 AWG copper wire or of the sizes shown on the drawings with Type THW, THHN or THWN insulation. All feeder circuits shall be Type THW or THWN of the size as shown on the Contract Drawings. THHN wiring shall only be installed in overhead, dry or damp locations. THWN or THW wiring shall be used for all circuits pulled in underground or other wet locations.

2.1.3 Conductors #12 AWG and #10 shall be solid. Conductors #8 AWG and larger sizes shall be stranded.

2.1.4 All wire on the project shall be new, in good condition, and shall be delivered in standard coils or reels.

2.1.5 The color of the wire shall be selected to conform with Section 210-5 of the latest edition of the National Electrical Code. Refer also to 260120.

2.1.6 All equipment grounding conductors shall have green color insulation or if larger than #8 AWG, shall be taped for two inches, green color at every termination and pullbox access point.

2.1.7 Conductors used for motor connections and connections to vibrating or oscillating equipment shall be extra flexible.

2.1.8 Conductors for main ground from neutral bus, equipment grounding bus, building steel, grounding grid and main cold water pipe connection shall be bare copper.

2.1.9 All conductors shall be identified by color code and by means of labels placed on conductors in all junction boxes and at each terminal point with Brady, Ideal, T & B or approved equivalent labels indicating source, circuit number or terminal number.

2.1.10 Branch wiring and feeder conductors that are greater than 50' in length shall be increased at least one size to compensate for voltage drop. All circuits shall be installed and sized for a maximum 2% voltage drop.

2.1.11 MC cable is not permitted for use on this project.

2.2 SPLICING DEVICES & CONNECTORS

2.2.1 Splicing devices for use on #10 AWG or smaller conductors shall be pressure type such as T & B "STA-KON", Burndy, Reliable or approved equivalent.

2.2.2 Wire nuts shall be spring pressure type, insulation 600V, 105NC insulation, up to #8 size. Greater than #6 Cu shall be a compression type connection, 600V insulation, cold shrink tubing, taped to restore full insulation value of the wire being spliced.

2.2.3 Pressure crimp-applied ring type (or fork with upturned ends) terminations shall be employed on motor and equipment terminals where such terminals are provided on motor and equipment leads or on all stranded wire terminations using #10 AWG or smaller conductors.

2.2.4 Splices, where necessary, shall be made with hydraulically-set "Hy-press" or equivalent crimped connectors. All splices shall be insulated to the full value of the wiring insulation using a cold-shrink kit or the equivalent in built-up materials.

2.2.5 Large connectors (lugs) at terminals shall be mechanical type, hex-head socket or crimp-on style, installed per the manufacturer's recommendations.

2.2.6 Aluminum conductors shall not be used.

PART 3 - INSTALLATION

3.1 The pulling of all wires and cable on this project shall be performed in strict compliance with applicable sections of the National Electrical Code. No conductor entering or leaving a cabinet or box shall be deflected in such a manner as to cause excess pressure on the conductor insulation. Conductors shall only be installed after insulating bushings are in place.

3.2 The radius of bending of conductors shall be not less than eighteen times the outside diameter of the conductor insulation or more, if recommended by the manufacturer.

3.3 Conductors installed within environmental air plenums shall be per NEC Article 800 and other applicable codes, with FEP-type insulation or an approved equivalent.

3.4 Where indicated, communications conductors that are installed exposed shall not be routed across ceilings or ductwork. They shall be held up against building structure or against permanent support members. They shall be installed in such a manner that they do not interfere with the access to or operation of equipment or removal of ceiling tiles. Nylon tie-wraps shall be installed in such a manner so as to bundle conductors neatly, allowing runouts of single conductors or groups to drop down to equipment served. Install grommeting where dropping out of trays or into panels or service columns. Install sleeves with bushings where penetrating partitions. Firestop sleeves with approved material. Do not penetrate firewalls if so, indicated on plans. Refer to the drawings for support requirements and details on routing exposed communications conductors.

3.5 Conductors for isolated power systems shall be XHHN or XHHW and shall be installed in as short a run of conduit as practicable. No pulling soap shall be used on conductors in isolated power systems.

3.6 Maximum permissible pulling tensions, as recommended by the manufacturer for any given type of cable or wire installed shall not be exceeded. Utilize special remote readout equipment as required to ensure compliance. Use particular caution when installing twisted pair data cable or fiber optic cables -- forces permitted for pulling in are typically very low for these cable types.

PART 4- COLOR CODING DISTRIBUTION VOLTAGE CONDUCTORS, 600 VOLT OR LESS

4.1 Conductors to be color coded as follows:

4.1.1 120/208 Volt Conductors
Phase A - Black
Phase B - Red
Phase C - Blue
Neutral – White

4.1.2 277/480 Volt Conductors
Phase A - Brown
Phase B - Orange

Phase C - Yellow
Neutral - Gray, or white with brown tracer

4.1.2 Control Wiring - Red, or as indicated.

4.1.3 Conductors within enclosures that may be energized when enclosure disconnect is off - yellow, or taped with 2" yellow tape every 6" of length, inside enclosure. Provide lamacoid plate warning sign on front of enclosure where this condition occurs.

4.1.4 D.C. Wiring - Positive - Light Blue
Negative - Dark Blue

END OF SECTION

SECTION 26 0130 - RACEWAYS & FITTINGS

PART 1 - GENERAL

1.1 This section is intended to specify the raceways, conduit, conduit fittings, hangers, junction boxes, splice boxes, specialties and related items necessary to complete the work as shown on the drawings and specified herein.

1.2 This section specifies basic materials and methods and is a part of each Division 26 Section that implies or refers to electrical raceways specified therein.

1.3 The types of raceways specified in this section include the following:

1.3.1 Steel electrical metallic tubing (EMT).
1.3.2 Intermediate metal conduit (IMC).
1.3.3 Rigid galvanized steel conduit (GRS)
1.3.4 Flexible metal conduit
1.3.5 Liquid - tight flexible metal conduit.
1.3.6 Rigid nonmetallic conduit.
1.3.7 Surface metal raceways.
1.3.8 Cable tray or cable trough.
1.3.9 Duct banks, and their construction.

1.4 For each piece of cord-connected or flexible conduit connected items of equipment in the kitchen, provide a "Kellems" or equivalent strain relief grip at each end of connector, to prevent pullout if equipment is rolled or shoved by cleaning personnel.

1.5 Refer to the Architect's details for fire-rated grids and gypsum board expanses that protect certain areas of the steel construction of the building. This rated partition shall not be penetrated by electrical or mechanical work unless absolutely necessary and then equivalent firestopping methods to restore the rating of the plane shall be provided.

1.6 No electrical raceways are to be embedded horizontally within the concrete slabs. Note that all piping, conduit, etc., penetrations thru precast planks shall be done in a manner approved by the precast installer. All sleeves for lines run thru precast horizontal planks or grade beams shall be coordinated by each trade with the General Contractor, the Precast Manufacturer and in a manner as approved by the Architect and Structural Engineer.

1.7 All raceways, as listed in 1.3 above and otherwise specified herein shall be provided in compliance with latest editions of all applicable UL, NEMA, NEC and ANSI standards. All conduit, raceways and fittings shall be Underwriters Laboratories listed and labeled, or bear the listing of an agency acceptable to the local authority having jurisdiction.

1.8 Conduit and raceways, as well as supporting inserts in contact with or enclosed in concrete shall comply with the latest edition of all ACI standards and the equipment manufacturer's recommendations for such work.

1.9 PVC or other non-metallic conduit shall be rated for the maximum operating temperature that could be developed by the conductors it encloses, while in normal operation.

1.10 The decision of the Engineer shall be final and binding in any case where a question or inquiry arises regarding the suitability of a particular installation or application of raceways, supports or materials, if other than outlined herein.

1.11 Minimum size of conduit shall be 3/4" trade size. All conduit and raceways shall be sized for the number of conductors contained, in accord with the latest edition of the National Electrical Code or any other applicable standards.

1.12 The installer of raceway systems shall avoid the use of dissimilar metals within raceway installations that would result in galvanic-action corrosion.

PART 2 - PRODUCTS

2.1 STEEL ELECTRICAL METALLIC TUBING

2.1.1 Electrical metallic tubing, (EMT) of corrosion-resistant steel construction shall be permitted for concealed installation in dry interior locations. Electrical metallic tubing shall not be installed underground, in concrete slabs or where exposed to physical damage. Electrical metallic tubing shall be permitted for exposed work in mechanical and electrical rooms and other exposed structure areas where not subjected to physical damage, as determined by the Engineer.

2.2 RIGID GALVANIZED STEEL CONDUIT

2.2.1 Rigid galvanized steel conduit shall be used where subject to physical damage for exposed work in mechanical spaces, within factory or other industrial work areas, for exposed fit-up work on machinery, for exposed exterior damp or wet location work, in hazardous atmospheres, in exterior underground locations where installed beneath roadways, where ells occur in underground PVC conduits, or where turning out of concrete encased duct banks, and at other locations as specifically called out on the drawings.

2.2.2 Rigid galvanized steel conduit shall be used for all building interior power wiring or cables of over 600 Volts.

2.2.3 “Kwik-Couple” is not acceptable.

2.3 INTERMEDIATE METAL CONDUIT

2.3.1 Unless otherwise indicated on the drawings, intermediate metal conduit (IMC) may be used in any location in place of rigid galvanized steel conduit, as permitted by codes, and as approved by the Engineer.

2.4 FLEXIBLE METAL CONDUIT

2.4.1 Flexible conduit may be used only where required for connection to light fixtures, motors and other equipment subject to vibration. It shall be constructed of steel. It shall be installed with clamp-on, insulated throat connectors designed for the purpose. All flexible metal conduit shall be installed as a single piece. No joints shall be installed. Flexible conduit shall not be used in wet or dusty locations or where exposed to oil, water or other damaging environments. An equipment grounding conductor or bonding jumper shall be used at all flexible conduit installations. Maximum length shall not exceed 6' for light fixture and 3' for other connections. Use of MC cable is not permitted for use on this project.

2.5 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

2.5.1 Weatherproof flexible metal conduit shall be wound from a single strip of steel, neoprene covered, equivalent to "Liquatite" or "Sealtite" Type "UA". It shall be installed in such a manner that it will not tend to pull away from the connectors. Provide strain relief fittings equivalent to "Kellems" as required where subject to vibration. Flexible connections to motors in dusty areas shall be dust-tight, in areas exposed to the weather - weatherproof. Length shall not exceed 3' unless permitted by the Engineer.

2.6 RIGID NON-METALLIC CONDUIT

2.6.1 Rigid non metallic conduit shall be constructed of PVC, nominally schedule 40 weight, encased in concrete wherein underground locations. If installation will enclose utility company provided conductors, verify exact type required, and install in accord with their standards, where more stringent than this specification in normal building conditions. It shall be UV-resistant, rated for 90 degree C conductor temperature.

2.6.2 Rigid non-metallic conduit may be used in exterior wet or damp locations where installed 6" underslab or underground. It shall not be run in interior locations, except with special permission from the Engineer for use in corrosive environments, and then only if protected from physical damage. No rigid nonmetallic conduit may be installed in environmental air plenums or cast into above-grade concrete slabs. No rigid nonmetallic conduit may be installed in locations where the ambient temperature might exceed the rating of the raceway. Where used underground, provide continuous marker tape with metallic tracer above line as required.

2.6.3 Where rigid non metallic conduit is placed underground, as for feeder circuits, secondaries or branch circuit runs and where ell is made upward thru a slab on grade, transition the turning ell and the riser to rigid steel conduit to a height of 6" above the concrete slab. Transition may then be made to EMT or other approved conduit for remainder of run.

2.6.4 Flexible nonmetallic conduit shall not be used, except by special permission, obtained in writing from the Engineer.

2.6.5 Provide equipment grounding conductors of copper, sized as required by codes, in all circuits installed in rigid nonmetallic raceways.

2.7 SURFACE METAL RACEWAYS

2.7.1 Surface metal raceways shall only be provided where indicated on the drawings.

2.7.2 Surface metal raceways and fittings shall be constructed of code gauge corrosion-resistant galvanized steel, and finished in an ivory color. Finishes shall be suitable for field painting, prepared by the installing contractor as necessary. Surface metal raceways shall be painted to match wall color.

2.7.3 Surface metal raceways to be furnished with integral receptacles shall have Simplex Nema 5-20R outlets spaced on centers as indicated on plans. These shall be Wiremold Co. #2000 Series ivory color or equivalent Walkerduct, Isotrol or other approved manufacturer.

2.7.4 Surface metal raceways and all components and fittings shall be furnished by a single manufacturer, wherever practical. All trim and cover fittings, flush feed boxes, splices, outlet fittings, etc, necessary for a complete installation shall be provided by the installing contractor - bends are not permitted. These raceways shall be rigidly mounted with approved fasteners on not to exceed 24" centers in a run, or 6" from ends and on either side of a corner. Refer to plans for notations on exact types of these raceways and outlet configurations.

2.8 RACEWAY FITTINGS

2.8.1 Fixture whips shall be 1/2" flexible, with clamp-on steel fittings at each end, six foot maximum length, with insulated throat bushings at each end and bonding locknuts. Wiring thru fixture whips shall be #12 AWG, with #12 AWG ground bonded to outlet at source end.

2.8.2 Conduit bodies shall be of gray iron or malleable iron. They shall be furnished in proper configurations, avoiding excessive plugged openings. Any openings that are left shall be properly plugged. All coverplates shall be gasketed with neoprene or similar approved materials, rated for the environment. Wiring splices within are not permitted.

2.8.3 Where required, raceway fittings shall be provided in explosion-proof configurations rated for the atmosphere. Place conduit seal off fittings at each device in accord with applicable codes. Seal off fittings shall be packed with wadding, and poured with an approved non-shrink sealing compound.

2.8.4 Where conduit transitions in a run from a cold to a warm environment, (such as at a freezer, refrigerator or exterior wall) sealoff fittings shall be placed on the warm side immediately at the boundary to prevent migration of condensation within raceway systems.

2.8.5 UL listed expansion/deflection fitting shall be provided at all locations where a raceway/conduit crosses a structural joint intended for expansion, contraction or deflection. Other approved means may be acceptable with permission of the Engineer. Provide copper ground bonding jumpers across expansion fittings.

2.8.6 Conduit bodies, junction boxes and fittings shall be dust tight and threaded for dusty areas, weatherproof for exterior locations and vapor tight for damp areas. Conduit fittings shall be as manufactured by Crouse Hinds, Appleton, Killark or approved equivalent. All surface mounted conduit fittings as with "FS", "FD", "GUB" Types etc., shall be provided with mounting hubs.

2.8.7 Where lighting fixtures, appliances or wiring devices are to be suspended from ceiling outlet boxes, they shall be provided with 3/4" rigid conduit pendants. Outlet boxes shall be malleable iron, provided with self-aligning covers with swivel ball joint and #14 gauge steel locking ring. Provide safety chain between building structure and ballast housing of light fixtures for all fixtures, appliances or devices greater than 10 lbs weight. Fixtures shall be installed plumb and level. Cover pendants shall be finished to match fixtures.

2.8.8 Fittings for threaded raceways shall be tapered thread with all burrs removed, reamed ends and cutting oil wiped clean.

2.8.9 Fittings for EMT conduit shall be of steel, compression type. Fittings for sizes larger than 2" shall be setscrew, with two setscrews each side. Conduit stops shall be formed in center of couplings. All EMT connectors and couplings shall be of formed steel construction. All connectors shall be insulated throat type.

2.8.10 Indentation or die-cast fittings shall not be permitted in any raceway system.

2.8.11 Compression type fittings shall be utilized for EMT conduit installed in damp or dusty locations, or where otherwise indicated.

2.8.12 All conduit fittings shall be securely tightened. All threaded fittings shall engage seven full threads. Fasteners shall be properly torqued to manufacturer's recommendations.

2.9 SUPPORTS AND HANGERS

2.9.1 Supports and hangers shall be installed in accord with all applicable codes and standards. They shall be corrosion - resistant, galvanized or furnished with an equivalent protective coating. All electrical raceways shall be hung independently from the building structure with UL listed and approved materials. Hangers and supports depending from the support systems of other trades work shall not be permitted, except with specific approval in writing from the Engineer. The use of tie wire for support or fastening of any raceway system is prohibited. Perforated metal tape shall not be used for raceway support.

2.9.2 No raceway shall be installed on acoustic tile ceiling tees, or in any location that will impair the functioning, access or code-required clearances for any equipment or system.

2.9.3 Supports for raceways shall be of materials compatible with the raceway, of malleable iron, spring steel, stamped steel or other approved material. Die-cast fittings are not permitted for supports.

2.9.4 The installing contractor shall provide all necessary supports and braces for raceways, in a rigid and safe installation, complying with all applicable codes.

2.9.5 Individual raceways run on building walls or equipment shall be secured by two-hole galvanized malleable iron or stamped steel pipe strap. The straps are to be anchored by an approved means such as expansion anchors, toggle bolts, through bolts, etc. Where required by codes or other standards, provide spacers behind mounting clamps to space conduits off walls.

2.9.6 Individual conduits run on building steel shall be secured by means of clamp supports similar and equal to those manufactured by the C.C. Korn Company, Elcen Co., B-Line or approved equivalent. Provide korn clamps, bulb tee clamps, flange clamps, beam clamps, "minerallacs", etc.

2.9.7 Where feasible, vertical and/or horizontal runs of conduit shall be grouped in common hangers on "trapezes" of channel stock as manufactured by "Unistrut" or equivalent, 1-5/8" minimum depth. Utilize conduit clamps appropriate to the channel.

2.9.8 Channel strut systems for supporting electrical equipment or raceways shall be constructed of 16 gauge minimum hot dip galvanized steel with 9/16" diameter holes on 8" centers, with finish coat of paint as manufactured by Unistrut, B-Line, Kindorf, or approved equivalent.

2.9.9 The minimum diameter of round all-thread steel rods used for hangers and supports shall be 1/4", 20 threads per inch. All-thread rod shall be furnished with a corrosion-resistant finish.

2.9.10 Welding directly on conduit or fittings is not permitted.

2.9.11 Provide riser support clamps for vertical conduit runs. Riser support clamps shall be of heavy gauge steel construction. Install riser support clamps at each floor level penetration, or as otherwise required.

2.9.12 Provide conduit cable support clamps for vertical conductor runs as required or indicated on plans. Clamps to be insulating wedging plug, with malleable iron support ring. Install within properly sized and anchored junction box.

2.9.13 Spring steel clips and fittings such as those manufactured by HITT-Thomas, Caddy-Erico, or approved equivalent, with black oxide finish are permitted in any indoor dry location for concealed work, where acceptable to the local authority having jurisdiction.

2.10 FIRESTOPPING MATERIALS

2.10.1 All conduits, and cables penetrating fire rated floors, walls and ceilings shall be firestopped. Firestopping assembly must be UL listed. All corridor walls, storage room walls and data/electrical/mechanical room walls shall be considered one-hour fire rated. The mezzanine and second floor slabs shall also be considered one-hour rated.

2.10.2 Provide shop drawings indicating penetration detail for each type of wall and floor construction. Shop drawings must be specific for each individual type. (i.e., one hour fire rated gypsum wall board with insulated metal pipe penetration.)

2.10.3 3M fire protection products are listed below. Equivalent products may be submitted if they are UL listed

2.10.4 The manufacturer of the firestopping materials must provide on site training for the contractor. The training session shall demonstrate to the contractors the proper installation techniques for all the firestopping materials. The training session shall be four hours minimum. Contact the Engineer prior to conducting this training session.

2.10.5 Firestopping materials to include but not limited to the following:

2.10.5.1 3M fire barrier FS-195 wrap/strip.

2.10.5.2 3M fire barrier CP 25 caulk.

2.10.5.3 3M fire barrier MP moldable putty.

2.10.5.4 3M fire barrier RC-1 restricting collar with steel hose clamp.

2.10.5.5 3M fire barrier damming materials.

2.10.5.6 3M fire barrier CS-195 composite sheet.

2.10.5.7 3M fire barrier fire dam 150 caulk.

2.10.5.8 Steel sleeves.

PART 3 - EXECUTION

3.1 This Contractor shall lay-out and install all conduit systems so as to avoid any other service or systems, the proximity of which may prove injurious to the conduit, or conductors which it confines. All conduit systems, except those otherwise specifically shown to the contrary, shall be concealed within the building construction or run above ceilings. Size of all conduits shall conform to Annex C of NEC, unless otherwise shown on the Contract Drawings.

3.2 No conduit shall be installed in or below poured concrete slabs, foundation walls or footings. Conduit shall be held at least 6" from flues or hot water pipes.

3.3 All exposed conduit in mechanical spaces, conduit above corridor ceilings, above gymnasium or other large room ceilings shall be installed on strut system racks with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceilings, with right angle turns consisting of cast metal fittings or symmetrical bends unless otherwise shown. All conduit shall have supports spaced not more than eight feet apart. Conduits randomly routed will not be accepted.

3.4 Groups of branch circuit conduits shall be run above corridor ceilings where possible, and shall not be routed over classrooms. The conduits from wall outlets in classrooms shall be turned out in the zone between the structure or bottom of the gypsum board fire barrier and the room ceiling directly into junction boxes (fastened to the masonry walls, with a minimum of bends. These branch power, lighting and systems conduits shall then be routed along the walls (or structure, in the case of lighting conduits) to emerge thru the corridor walls at the elevations necessary to route with minimal offset to the racked conduit/junction box system mounted on the bottom of the corridor structure. If in doubt about any particular installation, contact the Engineer for clarification prior to proceeding with rough-in work.

3.5 Conduit shall be installed in such a manner so as to insure against collection of trapped condensation. All runs of conduit shall be arranged so as to be devoid of traps. Trapped conduit runs shall be provided with explosion proof drains at low points. Runs of conduit between junctions shall not have more than the equivalent of three 90degree bends.

3.6 Junction boxes shall be installed so that conduit runs will not exceed 85', or as shown on the Contract Drawings. Sizes of junction boxes shall be in accord with Article 370 of the NEC.

3.7 Install electrical raceways in accordance with manufacturer's written instructions, applicable requirements of latest edition of the NEC, and NECA "Standard of Installation", complying with recognized industry practices.

3.8 Coordinate with other trades, including metal and concrete deck trades, as necessary to interface installation of electrical raceways and components.

3.9 Level and square raceway runs, and install at proper elevations and required heights. Hold tight to structure wherever possible, to maximize available space and not restrict other trades.

3.10 Complete installation of electrical raceways before starting installation of cables or wires within raceways.

3.11 No more than seven conductors shall be installed in conduit without special permission of Engineer, except where switch legs and travelers for lighting controls will be the exceeding conductors or in the case of fire alarm wiring.

3.12 Raceways installed in exterior locations shall receive one coat of primer, two coats finish paint after preparation of galvanizing, color selected by Architect. Exposed raceways in painted interior areas shall be similarly painted.

3.13 Conduits, cables, raceways, and enclosures under metal-corrugated sheet roof decking shall not be located within 1-½" of the roof decking, measured from the lowest surface of the roof decking to the top of the conduit, cable, raceway, or box. GRS and IMC are exempt from this.

3.14 Conduits, cables, raceways, and enclosures are not permitted in concealed locations of metal-corrugated sheet decking type roofing.

3.15 All conduits shall be ¾" minimum.

3.16 All EMT terminations at junction boxes, panels, etc. shall be made with case hardened locknuts and appropriate fittings, with insulated throat liners. Insulating terminations shall be manufactured as a single unit. The use of split sleeve insulators is not permitted.

3.17 All rigid conduit, except main and branch feeders, shall have heavy fiber insulating bushings reinforced with double locknuts. All branch and main feeders shall have insulated bushings with grounding lugs and shall be bonded to enclosures with appropriately sized copper jumpers, except at pad mounted transformers. Bonding jumpers shall be installed as required by the NEC and other applicable codes.

3.18 All conduit stubbed through floor during construction shall have openings protected with plastic caps approved for this purpose. Connections on both ends of all flexible conduit shall be equivalent to Thomas and Betts, Ideal, Appleton, Efcor, or approved equivalent, rated for the environment.

3.19 Pulling lines shall be left in all open conduit systems and shall be non-metallic, left securely tied off at each end.

3.20 Where spare raceways terminate in switchboards or motor control centers a fishtape barrier shall be provided.

3.21 All outlet, junction and pull boxes shall be grounded with pigtail to the equipment grounding conductor.

3.22 All fire alarm raceways in concealed areas, data/mechanical/electrical rooms and above ceilings shall be red. Exposed fire alarm raceways shall match adjacent finishes.

3.23 All junction, outlet and pull boxes in data/mechanical/electrical rooms and above ceilings shall be identified with panel and circuit designation on outside of covers. All junction, outlet and pull boxes in exposed areas shall be identified with panel and circuit designation on inside of covers.

END OF SECTION

SECTION 26 0400 - ELECTRICAL DISTRIBUTION EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. The Contractor is directed to examine each and every section of these specifications, all drawings relating to the Contract Documents, any and all Addenda, etc., for work described elsewhere that may relate to the provision of the work described herein. Materials and performance requirements are specified elsewhere herein that relate to these systems.

C. Each Electrical Contractor's attention is directed to Section 260501 - General Provisions, Electrical, and all other Contract Documents as they apply to his work.

1.2 SUMMARY

A. Section Includes:

1. Distribution panelboards.
2. Disconnecting and overcurrent protective devices.

1.3 DESCRIPTION OF WORK

A. All panelboards shall be of the circuit breaker type, and shall be of one manufacturer.

B. Branch panelboards shall be as indicated on the drawings and as specified herein. The lighting panelboards shall be of the dead-front, quick-make, quick-break, bolt-on circuit breaker type, with trip indicating and trip free handles. All circuits shall be clearly and properly numbered and shall be provided with thermal magnetic protection.

C. The panelboards shall be enclosed in code gauge, galvanized steel cabinets with smooth finished hinged doors without visible external fasteners and heavy chrome locks. Provide baked-on grey enamel finish, in accord with ANSI 61. Panels shall be constructed in accord with Federal Specification W-P-115B Type 1 Class 1, UL67, UL50, NEMA P31, and NFPA 70. Locks shall all be keyed alike.

D. Each door shall have a directory card inside, covered with a plastic shield, filled in typewritten with circuit numbers and description indicated. Room numbers shall be coordinated with final room numbers as selected by Owner -- not numbers on Contract Documents.

E. Panelboard trim for surface or flush panels shall be double-hinged type, to allow exposure of dead-front breaker portion behind locked door, with screw-fastened gutter trim that is hinged to allow full access to wiring gutters.

F. Special Note: The room numbers used to fill out the panel directories shall match the actual final name and numbering scheme selected by the Owner. They shall not be filled out per the construction drawing numbering scheme, unless the Contractor is directed to do so by the Architect or Engineer.

G. Branch panelboards shall be surface or flush mounted as indicated on the Contract Drawings. Flush panels trims shall be tight to wall and interior barriers, with no gaps allowing access to live parts. Oversize trims will not be acceptable.

H. Note: Where mounted in groups, align top of trim or tub for all panels in an area. Exact mounting height of topline shall be as directed by the Engineer.

I. All main bus and connections thereto in panelboards shall be copper. All bus bars shall extend full length of panelboards.

J. All panelboards shall have full size un-insulated copper ground busses and insulated full neutral busses.

1.4 DEFINITIONS

A. SVR: Suppressed voltage rating.

B. GFCI: Ground-fault circuit interrupter

1.5 ACTION SUBMITTALS

A. Product Data: For each type of panelboard, switching and overcurrent protective device, surge suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types and details for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Short-circuit current rating of panelboards and overcurrent protective devices.
5. Include evidence of NRTL listing for series rating of installed devices.
6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
7. Include wiring diagrams for power, signal, and control wiring.
8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.

1.6 INFORMATIONAL SUBMITTALS

A. Panelboard Schedules: For installation in panelboards. Submit final version after load balancing.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

1. Routine maintenance requirements for panelboards and all installed components.
2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
3. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

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. Keys: Two spares for each type of panelboard cabinet lock.

1.9 QUALITY ASSURANCE

A. Testing Agency Qualifications: Member company of NETA or an NRTL.

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

B. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

C. Product Selection for Restricted Space: Drawings indicate space available for panelboards including clearances between panelboards and adjacent surfaces and other items. Furnish and install equipment to comply with NEC clearances.

D. 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.

E. Comply with NEMA PB 1.

F. Comply with NFPA 70.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Handle and prepare panelboards for installation according to NECA 407 and NEMA PB 1.

1.11 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Construction Manager no fewer than 14 days in advance of proposed interruption of electric service.
2. Do not proceed with interruption of electric service without Construction Manager's written permission.
3. Comply with NFPA 70E.

1.12 COORDINATION

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

1.13 WARRANTY

A. The equipment items shall be supported by service organizations which are reasonably convenient (less than 100 miles from project site) to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

B. All panelboards, finishes, and all of its component parts, and controls shall have an unconditional one (5) year warranty. Warranty shall include finishes and all components to be free from defects in materials and workmanship for a period of one (5) year from date of Owner’s acceptance. Replacement of panelboards, faulty materials and the cost of labor to make the replacement shall be the responsibility of the Contractor.

C. The Warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under provisions of the Contract Documents and shall be in addition to, and run concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

D. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace surge suppression devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

1.14 SYSTEM COMMISSIONING

A. Section 019113 requires the engagement of a Commissioning Authority to document the completion of the Mechanical, Fire Protection, Plumbing, Electrical, Electronic Safety and Security, and associated Control Systems for the project. Section 019113 defines the roles and responsibilities of each member of the commissioning team.

B. Comply with the requirements of Section 019113 for the commissioning of the various building systems.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

A. All panelboards shall be of the circuit breaker type, and shall be of one manufacturer.

B. Enclosures: Flush- and surface-mounted cabinets. Box width shall not exceed 20" wide. Rated for environmental conditions at installed location.

1. Indoor Dry and Clean Locations: NEMA 250, Type 1.
2. Kitchen and Catering Areas: NEMA 250, Type 4X, Stainless Steel.

C. Type 1 Boxes

1. Boxes shall be hot zinc dipped galvanized steel constructed in accordance with UL 50 requirements. Unpainted galvanized steel is not acceptable.
2. Boxes shall have removable end walls. End walls shall not be provided with concentric knockouts. Boxes shall have welded interior mounting studs. Interior mounting brackets are not required.
3. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.

4. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
5. Gutter Extension and Barrier: Same gage and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.
6. Finishes: Panels, Back Boxes and Trim: Galvanized Steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
7. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.
8. All lock assemblies shall be keyed alike.

D. Incoming Mains Location: Top and bottom to match feeder conduit entry. Feeders routed through the side gutters to reach the top or bottom main breakers from the opposite end of the panel are not acceptable.

E. Phase, Neutral, and Ground Busses:

1. Material: Fully plated, hard-drawn copper, 98 percent conductivity.
2. Equipment Ground Bus: Extend full length of panelboard and adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
3. Isolated Ground Bus: Adequate for branch-circuit isolated ground conductors; insulated from box. Provide where show on drawings.
4. Extra-Capacity Neutral Bus: Neutral bus rated 200 percent of phase bus and UL listed as suitable for nonlinear loads. Provide when supplied by K rated transformers.
5. Split Bus: Vertical buses divided into individual vertical sections.

F. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Main and Neutral Lugs: Mechanical type.
2. Ground Lugs and Bus-Configured Terminators: Mechanical type.
3. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
4. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
5. Extra-Capacity Neutral Lugs: Rated 200 percent of phase lugs mounted on extra-capacity neutral bus.

G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

H. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 DISTRIBUTION PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Square-D or approved equal.

B. Panelboards: NEMA PB 1, power and feeder distribution type.

C. Doors: Secured with vault-type latch with tumbler lock; keyed alike. For doors more than 36 inches (914 mm) high, provide two latches, keyed alike.

D. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.

E. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Square-D or approved equal.

B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Circuit breakers shall be CSA and UL Listed with amperage ratings, interrupting ratings, and number of poles as indicated on the panelboard schedules.

2. Molded case branch circuit breakers shall have bolt-on type bus connectors.
3. Circuit breakers shall have an over center toggle mechanism which will provide quick-make, quick-break contact action. Circuit breakers shall have thermal and magnetic trip elements in each pole. Two- and three-pole circuit breakers shall have common tripping of all poles.
4. There shall be two forms of visible trip indication. The circuit breaker handle shall reside in a position between ON and OFF. In addition, there shall be a red indicator appearing in the clear window of the circuit breaker housing.
5. The exposed faceplates of all branch circuit breakers shall be flush with one another.
6. Lugs shall be UL Listed to accept solid or stranded copper and aluminum conductors.
7. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
8. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
9. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:
10. Instantaneous trip.
11. Long- and short-time pickup levels.
12. Long- and short-time time adjustments.
13. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
14. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
15. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
16. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.
17. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

    a. Standard frame sizes, trip ratings, and number of poles.
    b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
    c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
    d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
    e. Shunt Trip: 120 V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
    f. Multipole units enclosed in a single housing or factory assembled to operate as a single unit.

2.4 ACCESSORY COMPONENTS AND FEATURES

A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

B. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Receive, inspect, handle, and store panelboards according to NECA 407.

B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install panelboards and accessories according to NECA 407 and NEMA PB 1.1.

B. Equipment Mounting: Install floor-mounted panels on concrete bases, 4-inch nominal thickness. Comply with requirements for concrete base specified in Section 033000 "Cast-in-Place Concrete."

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around full perimeter of base.
2. For panelboards, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
4. Install anchor bolts to elevations required for proper attachment to panelboards.
5. Attach panelboard to the vertical finished or structural surface behind the panelboard.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.

D. Comply with mounting and anchoring requirements specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."

E. Mount top of trim 90 inches above finished floor unless otherwise indicated.

F. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

G. Install overcurrent protective devices and controllers not already factory installed. Set field-adjustable, circuit-breaker trip ranges.

H. Install filler plates in unused spaces.

I. Stub four (4) 1-inch and two (2) 1-1/4”-inch empty conduits from recessed panelboard into accessible ceiling space or space designated to be ceiling space in the future.

J. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.

K. Comply with NECA 1.

3.3 IDENTIFICATION

A. Each door shall have a directory card inside, covered with a plastic non-yellowing shield. Directory Card to indicate installed circuit loads after balancing panelboard loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer to create directory in Microsoft Excel; handwritten directories are not acceptable. Digital versions to be provided to Owner.

B. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553.

C. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Section 260553.

3.4 QUALITY CONTROL/STARTUP: Major equipment and system startup and operational tests shall be scheduled and documented in accordance with Section 019113 Commissioning.

A. Functional Performance Tests: System functional performance testing is part of the Commissioning Process as specified in Section 019113. Functional performance testing shall be performed by the contractor and witnessed and documented by the Commissioning Authority.

B. Demonstration and Training: Training of the owner’s operation and maintenance personnel is required in cooperation with the Commissioning Authority. The instruction shall be scheduled in coordination with the Commissioning Authority after submission and approval of formal training plans.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Panelboards will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.6 CLEANING

A. On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

3.7 ADJUSTING

A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as specified in Section 260573.

C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.

1. Measure as directed during period of normal system loading.
2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

END OF SECTION

SECTION 26 6100 – PHOTOVOLTAIC SYSTEM

PART 1 – GENERAL:

1.1 RELATED DOCUMENTS

1.1.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.1.2 Division 26 - ELECTRICAL

1.2 SUMMARY

1.2.1 This Section includes the minimum requirements for a Turn-Key Photovoltaic System.

1.2.2 This Section includes, but is not limited to the following:

1.2.2.1 Photovoltaic Modules
1.2.2.2 Photovoltaic Inverters
1.2.2.3 Photovoltaic Monitoring and Reporting System, Software and Services
1.2.2.4 Infrastructure, Wiring, Connections, and Testing
1.2.2.5 Identifications and Signs

1.2.3 Provide all labor and materials, and make all necessary connections, so that a complete and fully operational system shall be turned over to the owner. Any errors, omissions, or ambiguities concerning the photovoltaic (PV) system specifications shall be brought to the Engineers attention ten (10) working days prior to bid.

1.3 SCOPE OF WORK

1.3.1 For all work associated with the new photovoltaic system including photovoltaic modules, mounting rails, inverters, wire management system, photovoltaic monitoring and reporting services, disconnects, cabling, installation, terminations and devices shall be provided and performed by a qualified Photovoltaic System Contractor for a complete and operational photovoltaic system.

1.3.2 Photovoltaic System Contractor shall provide a functioning photovoltaic (PV) system with the minimum requirements of this section.

1.3.3 Mounting system: Contractor shall provide racking system as indicated on drawings. System shall be galvanized steel or aluminum. Mounting system shall not void the roof warranty. PV modules shall be installed and located to avoid shadowing from skylights, tubular daylighting devices, HVAC equipment and parapets.

1.3.4 Roof penetrations: Contractor shall minimize roof penetrations and shall not void the roof warranty.

1.3.5 Inverters: Inverters shall be IEEE 929 compliant and shall be inspected by utility company before commissioning, testing and operation of the system.

1.3.6 Electrical interconnection: Contractor shall install conductors, conduit, pull boxes, etc per NEC and requirements of specifications and drawings. All DC conductors shall be copper and 90 degree C, wet location rated with USE-2 insulation.

1.3.7 All membrane roof mounted conduits shall be supported off the roof with Cooper B-Line Dura-Blok rooftop support system.

1.3.8 All work shall be in accordance with the NEC and local codes.

1.3.9 All equipment shall be listed and labeled per UL and installed per the listing requirements and the manufacturer's instructions.

1.3.10 All outdoor equipment shall be minimum NEMA 3R.

1.3.11 All equipment shall be properly grounded per NEC 250 and NEC 690.

1.3.12 All circuits connected to more than one source shall have overcurrent devices located so as to provide overcurrent protection from all sources. NEC 690.9 (a)

1.3.13 Installation of PV panel arrays shall resist sliding and pop-up resulting from seismic events and shall comply with ASCE standard 7-05, chapter 13.

1.3.14 PV System Contractor shall coordinate all work with the Engineer, Architect, General Contractor, Electrical Contractor and all other contractors to ensure the PV system is installed and coordinated with the contract documents.

1.3.15 All roof penetrations and associated labor costs shall be at the expense of the PV contractor, but shall be installed by the roofing contractor in order to maintain any applicable roof warranties. Any deviations necessary by this contractor shall first be submitted to the Architect's office for review. Any costs associated with changes to this system that are a result of proposed details not being acceptable to the Owner, Architect or Engineer shall be at the expense of the PV Contractor. All required connection devices shall be reviewed by the architect and engineer. Penetration devices through standing seam metal roof areas shall be provided by the sheet metal roofing contractor.

1.3.16 Provide all necessary electrical distribution equipment, feeders, branch circuits, etc as required for a complete and functioning system.

1.4 PERFORMANCE REQUIREMENTS

1.4.1 Material Compatibility: Provide photovoltaic, electrical and mounting materials that are compatible with one another under conditions of service and application required, as demonstrated by photovoltaic manufacturer based on testing and field experience.

1.5 SUBMITTALS

1.5.1 Product Data: For each type of product indicated.
- Preparation instructions and recommendations.
- Storage and handling requirements and recommendations.
- Installation methods.

1.5.2 Shop Drawings: Provide on standard 30” by 42” size for photovoltaic system shall include but not limited to:

1.5.2.1 Plans, elevations, sections, details, and attachments to other Work.

1.5.2.2 All diagrams must be submitted by the approved Contractor along with a point to point PV system interconnection diagram. Diagram shall identify all DC and AC components, conduit and wiring characteristics,

1.5.2.3 Site plan showing infrastructure layouts, PV array locations, and identifiable features.

1.5.2.4 Annual yield simulation report from Helioscope or similar software.

1.5.2.5 Riser diagram and General Notes:
- Connection to utility AC disconnects and main electrical switchboard.
- Indicate conduits, power and communication wires, and combiners, disconnects, inverters, meters, etc.
- Provide PV system(s) power production calculations and total system(s) rating.

1.5.2.6 Assembly Details. Provide as minimum the following details:
- Array attachment details.
- Support details and spacing dimensions.
- Roof mounted conduit supports and roof penetrations.
- Indicate all system(s) interface connections.

- Provide AC and DC wiring plans.
- Provide electrical equipment room layouts and equipment elevation details.

1.5.2.7 Complete point to point PV System interconnection diagram(s):
- Identify all DC and AC components.
- Indicate conduit and wire characteristics, sizes and quantities.
- Indicate conduit fill and voltage drops.
- Provide combiner box schedule.
- Provide list of all materials.
- System monitoring details.

1.5.2.8 Warranties: Sample copy of Warranties and Special Warranties to be issued with submittal.

1.5.3 Inspection Report: Copy of photovoltaic system manufacturer's inspection report of completed photovoltaic installation.

1.5.4 Manufacturer Approval of Testing Agency: Copy of manufacturer's letter indicating acceptance of qualifications of testing agency to perform inspections specified under Part 3 Article "Field Quality Control," including manufacturer's compliance with testing agency's requirements for final roofing inspection and manufacturer's warranty certification.

1.6 QUALITY ASSURANCE

1.6.1 Installer Shall: Be certified by the North American Board of Certified Energy Practitioners (NABCEP)

1.6.2 Manufacturer Qualifications: A qualified manufacturer that has testing listings for photovoltaic system for this Project.

1.6.2.1 Photovoltaic modules shall comply with the latest revision of the following standards and the Contractor shall provide evidence of certification to the Engineer:
- UL Listed to 1000 Vdc
- Meet IEC 61646
- UL 1703

1.6.2.2 Inverters shall comply with the latest revision of the following standards and the Contractor shall provide evidence of certification to the Engineer:
- UL 1741
- IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity)
- IEEE 1547.1 Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems
- UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems
- NFPA 70 - National Electrical Code
- ANSI 62.41
- IEEE 929-2000
- Inverters shall be considered certified for interconnected operation if the generation equipment and all related interconnection components have been tested and listed by a Nationally Recognized Testing Laboratory (NRTL certification by Department of Labor) for continuous interactive operation with an electric distribution system in compliance with the codes and standards outlined above.
- "Utility-Interactive" Labeled

1.6.2.3 Electric Installation
- NFPA 70: National Electric Code

1.6.3 Electrical and Fire Safety Characteristics: Provide photovoltaic materials with the electrical and fire safety characteristics for use in systems up to 1000 Vdc as determined by UL. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1.6.3.1 Exterior Fire-Test Exposure: Class A for slopes up to 2:12 and Class C for unlimited slopes.

1.6.4 Pre-installation Conference: Conduct conference at Project site. Review methods and procedures related to roofing system including, but not limited to, the following:

1.6.4.1 Meet with Owner, Architect and Engineer, photovoltaic installer, roofing installer, lightning protection installer, mechanical contractor and other installers whose work interfaces with or affects photovoltaic installation including installers of electrical components.

1.6.4.2 Review methods and procedures related to photovoltaic installation, including manufacturer's written instructions.

1.6.4.3 Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

1.6.4.4 Examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.

1.6.4.5 Review governing regulations and requirements for insurance and certificates if applicable.

1.6.4.6 Review temporary protection requirements for roofing system during and after installation.

1.7 QUALITY CONTROL

1.7.1 Contractor shall have adequate experience installing systems of similar size and complexity.

1.7.2 Qualifications of Installer: Minimum 5 years of experience installing products and systems of similar scope and complexity.

1.7.3 Installer shall have completed at least one (1) project of similar products and 300kW minimum project size and two (2) additional projects of similar products and 100kW minimum project size.

1.7.4 Installer shall submit certification from the equipment manufacturer indicating that installer is an authorized representative of the equipment manufacturer and/or is trained on the installations of the specified PV system products.

1.7.5 Installer shall maintain a fully equipped service organization capable of furnishing repair service to the equipment.

1.7.6 Installer shall furnish a letter from manufacturer of equipment certifying equipment has been installed according to factory standards and that system is operating properly.

1.7.7 Contractor shall have completed and commissioned a minimum of one (1) service agreement that provides similar support services to those needed for this project.

1.7.8 System startup and testing shall be performed by a factory engineer under the direct observation of the Engineer and Owner.

1.7.9 The installer shall provide the system components required by code and for the life safety of the service personnel.

1.8 DELIVERY, STORAGE, AND HANDLING

1.8.1 Deliver photovoltaic materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, and directions for storing and mixing with other components. Ensure that any materials temporarily stored on roof do not damage membrane if applicable.

1.9 PROJECT CONDITIONS

1.9.1 Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit photovoltaic system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

1.10.1 System Warranty: Contractor shall provide an unconditional warranty for the complete installed system for a period of five (5) years following acceptance of the completed project. Warranty shall include labor and materials to repair, reprogram, or replace components at no charge to the Owner during the warranty period. All corrective work or system modifications shall be updated on all user documentation.

1.10.1.1 Warranty shall include annual on-site inspection, including: system testing (operating current of each electrical system), system adjustments and routine maintenance. Annual inspection shall take place during Spring.

1.10.1.2 Warranty shall include repair and/or replacement of defective parts.

1.10.1.3 System performance monitoring and historical data access for customer via secure website. Data is required to include: system energy and power production.

1.10.1.4 Monthly system monitoring by vendor, including reporting of problems to customer and dispatch of resources for expeditious resolution of problems.

1.10.1.5 The warranty shall include a response time of 24 hours for major system failures (emergency service), and 72 hours for minor repairs (routine service). Proposed agreement shall include annual site visits for preventative maintenance inspection so that all systems are validated prior to the warranty expiration date.

1.10.1.6 Provide a list of all applicable warranties for all equipment and components, this list shall include warranty information, names, addresses, telephone numbers, and procedures for filing a claim and obtaining warranty services.

1.10.1.7 Contractor shall respond to the Owner's request for warranty service within 24 hours during normal business hours. For all calls, the Contractor shall submit records of the nature of the call, the work performed, and the parts replaced or service rendered.

1.10.2 Component Warranty:

1.10.2.1 Crystalline photovoltaic panels: Manufacturer shall provide a 12 year performance warranty at 90% of its rated power output, 25 years at 80% of its rated power output. Warranty shall include all travel, labor and materials to repair, reprogram, or replace components at no charge to the Owner during the warranty period.

1.10.2.2 AC/DC inverters: 5 year material. Warranty shall include all travel, labor and materials to repair, reprogram, or replace components at no charge to the Owner during the warranty period.

1.11 INSPECTIONS AND PREVENTATIVE MAINTENANCE

1.11.1 Service and Maintenance Agreement: Provide biannual inspection, cleaning and maintenance during the warranty period of five (5) years following Owner acceptance of the completed project. Provide the following:

1.11.1.1 Inverter maintenance: Visual inspection and verify performance via monitoring service.

1.11.1.2 Photovoltaic panel and wiring maintenance: Check electrical connections at combiner boxes, check electrical output at combiner boxes with volt meter to ensure proper electrical output.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

2.1.1 In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:

- Manufacturers: Subject to compliance with requirements, provide products the manufacturers specified.

2.1.2 Photovoltaic modules: as indicated on drawings.

2.1.3 Inverters: as indicated on drawings.

2.1.4 Self-Ballasted Mounting System: as indicated on drawings.

2.1.5 Photovoltaic Monitoring and Reporting Services: SolarEdge or equal. Contractor shall include a minimum of five (5) years of monitoring service for the entire system. Monitoring service shall generate daily report comparing yield by inverter. System shall automatically send an email to provided recipients if standard deviation of any single inverter exceeds 25%.

PART 3 – EXECUTION

3.1 SYSTEM INSTALLATION

3.1.1 Install equipment and all required wiring. Provide required conductor terminations to devices for a complete system to function as specified and indicated on Drawings.

3.1.2 Terminations shall be in terminal cabinets or on equipment terminals.

3.1.3 Conductors shall be installed within conduits, boxes, and terminal cabinets in a totally enclosed installation. Furnish and install conductors required to connect incoming and outgoing circuits.

3.1.4 Wiring within equipment and terminal cabinets shall be installed to conform to contract documentation and NFPA 72 standards. Wiring shall be cabled, laced, and securely fastened in place so that no weight is imposed on equipment or terminals.

3.1.5 Conductors shall be color-coded per specifications and tagged with code markers at terminal cabinets, and equipment. A wire index shall be typed and installed on terminal cabinet doors. Index shall be covered with clear plastic adhesive covers. Wiring shall be identified as to building and location of devices.

3.1.6 Complete installation shall comply with local building codes, manufacturer’s instructions, and applicable industry standards.

3.1.7 Do not scale Drawings to determine locations and routing of conduits. Location of the infrastructure and equipment shall conform to architectural features of the building and other Work already in place, and must be ascertained in the field before the start of Work.

3.1.8 Drawings generally indicate Work to be provided, but do not indicate all bends, transitions or special fittings required to clear beams, girders or other Work already in place. Investigate conditions where conduits are to be installed, and furnish and install required fittings.

3.1.9 The roof shall be inspected prior to start of any work. Any observed deficiencies shall be brought up to the attention of the Engineer and Architect prior to commencing any work.

3.1.10 Prepare framing to receive PV modules in accordance with manufacturer’s recommendations and in compliance with accepted shop drawings.

3.1.11 Adequate ventilation shall be provided to ensure that all system components are operated within their environmental ratings.

3.1.12 Provide warning signs as required by NEC, drawings, specifications and applicable codes.

3.1.13 Solar panel connectors and wiring shall be supported.

3.2 LABELING

3.2.1 Provide a permanent plaque providing the location of the service disconnecting means and the photovoltaic system disconnecting means at each location. NEC 690.56

3.2.2 Each AC disconnect shall be labeled with "PHOTOVOLTAIC SYSTEM AC DISCONNECT".

3.3 TESTING

3.3.1 A ten (10) day notice shall be provided to the Owner, Engineer and Commissioning Agent before final testing.

3.3.2 Demonstrate in presence of the Engineer and Commissioning Agent that circuit and wiring tests are free of shorts and grounds and that installation performs as specified herein and within manufacturer's guidelines.

3.3.3 PV modules shall be factory tested for design performance.
3.3.4 Inverters shall be factory tested for performance.

3.3.5 Provide commissioning and system startup.

3.3.6 Installer is responsible for identifying required tests, coordinating, scheduling, and conducting tests before Substantial Completion. Tests shall include the following:

3.3.6.1 System response, data logging and transmission, and performance.

3.3.6.2 System features and components under normal operation.

3.3.6.3 System shutdown from utility override switches.

3.3.6.4 Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

3.3.6.5 When the system is equipped with optional features, consult the manufacturer manual to determine proper testing procedures.

3.3.7 All defects resulting from tests shall be corrected prior to substantial completion.

3.4 SYSTEM START-UP

3.4.1 Provide the service of the manufacturer trained certifier who shall visit the site and verify the following:

3.4.1.1 Verify AC Voltage and that grid AC cables have been installed correctly.

3.4.1.2 Verify DC conductors terminated correctly to all MPPT inputs.

3.4.1.3 Apply Grid Voltage. Verify all enclosure doors are closed and locked. Closed AC disconnect switch. Look, listen and smell for signs of defects.

3.4.1.4 Confirm AC operational parameters. Verify inverter AC limit.

3.4.1.5 Confirm DC operational parameters. Verify inverter PV settings.

3.4.1.6 Confirm power tracker configuration operational parameters. Verify inverter power tracker configurations.

3.4.1.7 Completed commissioning. Save test report to file. Send completed report to inverter manufacturer. Send copy of product registration to inverter manufacturer.

3.4.1.8 Electrical Inspection and Approval. Using post-installation checklist and maintenance checklist included in the Operation and Maintenance Manual.

3.5 TRAINING: Contractor shall provide full instructions to Owner in the system's operation, maintenance, and programming. Training shall be specifically oriented to installed equipment systems.

3.5.1 Provide 8 hours of onsite owner familiarization and training for the installed system. Training shall include system overview, override commands, normal and emergency operation and response, programming features and report generation. District employees attending this training session shall be provided with the following documentation:

3.5.1.1 System layout point to point connection diagram.

3.5.1.2 System components cut sheets.

3.5.1.3 Operations and maintenance data.

3.5.1.4 Safety rules for the operations and maintenance of PV systems.

3.6 SERVICE MANUALS:

3.6.1 Contractor shall deliver to the Owner and Engineer, three (3) copies of the service manuals. Each manual shall include the following:

3.6.1.1 Installation manuals, programming manuals, user manuals, and part numbers if applicable for every major system component. Catalog cut sheets alone are not acceptable.

3.6.1.2 A printed copy of the system configuration, including all system labeling codes, and passwords.

3.6.1.3 Two (2) electronic copies of the system configuration program on USB drive.

3.6.1.4 Final test report.

3.6.1.5 Detailed explanation of the operation of the system.

3.6.1.6 Instructions for routine maintenance.

3.6.1.7 Detailed wiring diagrams and updated shop drawings that include all revisions made in the field via plan changes, RFIs, Field Change Directives, and any other construction change documents including interface details with other systems.

3.6.1.8 Provide a USB drive electronic copy of the updated system As-Built Drawings to the Owner, prepare this copy in the latest version of AutoCAD; along with the electronic copy provide a full-size bond copy. Include one USB drive with the up-dated As-Built Drawings with each of the Service Manuals. USB drive and folded drawings shall be secured and inserted into the Service Manuals via a three-hole punched protective case and protective envelopes for the drawings.

3.6.1.9 All materials and required deliverables shall be submitted to the Owner.

END OF SECTION