

PROJECT MANUAL / SPECIFICATIONS

KATONAH-LEWISBORO SCHOOL DISTRICT

60 North Salem Road, Cross River, NY 10518

HVAC UPGRADES

INCREASE MILLER ELEMENTARY SCHOOL

186 Waccabuc Road/Rt. 138, Goldens Bridge, NY 10526; SED No. 66-01-01-03-0-004-019

MEADOW POND ELEMENTARY SCHOOL

185 Smith Ridge Road, Route 123, South Salem, NY 10590; SED No. 66-01-01-03-0-007-018

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SPECIFICATION CONSULTANT

SUSAN B. MCCLYMMONDS, AIA

200 Robb Road, Amsterdam, NY 12010

CONSTRUCTION DOCUMENTS

22 NOVEMBER 2023

THE UNDERSIGNED CERTIFIES THAT TO THE BEST OF HIS KNOWLEDGE, INFORMATION AND BELIEF, THE PLANS AND SPECIFICATIONS ARE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF THE NEW YORK STATE UNIFORM FIRE PREVENTION AND BUILDING CODE, THE STATE ENERGY CONSERVATION CONSTRUCTION CODE, AND BUILDING STANDARDS OF THE EDUCATION DEPARTMENT, AND THAT THE PLANS AND SPECIFICATIONS REQUIRE THAT NO ASBESTOS CONTAINING MATERIAL SHALL BE USED.

Russell Davidson, FAIA

KG+D Architects, PC

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22 November 2023
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Katonah-Lewisboro Union Free School District
HVAC Upgrades
SED No. Increase Miller ES: 66-01-01-03-0-004-019
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ADVERTISEMENT FOR BIDS

The ***Katonah-Lewisboro Union Free School District*** will receive individual sealed proposals at the District Office, 60 North Salem Road, Cross River, NY 10518, for the project identified below. All proposals that have been received in accordance with the terms hereof will be opened and read aloud at the time and place of the Bid Opening.

HVAC UPGRADES

**INCREASE MILLER ELEMENTARY SCHOOL
MEADOW POND ELEMENTARY SCHOOL**

SED No. 66-01-01-03-0-004-019
SED No. 66-01-01-03-0-007-018

Katonah-Lewisboro Union Free School District
60 North Salem Road, Cross River, NY 10518
BID #11-23/24

Documents Available to Bidders:	November 29, 2023, 3:00 PM
Pre-Bid Site Meeting:	December 7, 2023, 4:00 PM
Bid Opening:	December 19, 2023, 1:30 PM

Contracts: 1 – Mechanical Construction

Complete sets of Bidding Documents, which include Drawings, Specifications and Addenda, may be obtained from REVplans, 28 Church Street, Unit 7, Warwick, NY, 10990, 845-651-3845. Complete digital sets of Bidding Documents may be obtained online as a download at the following website: revplans.biddychq.com. Follow instructions to create an account or login if already registered. Select the “Projects” tab at the top of the screen and use the search function if needed to view this project. All bidders are urged to register to ensure receipt of all necessary information, including Bid Addenda.

Complete hard copy sets of Bidding Documents may be obtained from REVplans upon depositing the sum of \$100 per set. Deposit checks or money orders shall be made payable to *Katonah-Lewisboro Union Free School District*. Plan deposits are refundable to all bidders submitting bids in accordance with NYS law and the terms in the Instructions to Bidders section of the Specifications. Any plan holder requiring document shipping shall make such arrangements with REVplans and be responsible for paying all packaging and shipping costs.

Please note REVplans (revplans.biddychq.com) is the designated location and means for distributing all bid package information. REVplans takes no responsibility for the accuracy or completeness of Bidding Documents obtained from other sources. Obtaining Bidding Documents through REVplans enables a prospective bidder to be identified as a registered plan holder. All Bid Addenda issued after initial document download will be transmitted to registered plan holders via email and will be available at revplans.biddychq.com. Plan holders who have paid for hard copies of the Bidding Documents may coordinate directly with REVplans if hard copies of Bid Addenda are needed. There is no charge for registered plan holders to obtain hard copies of the Bid Addenda.

Each bid proposal must be accompanied by a certified check payable to *Katonah-Lewisboro UFSD* or by a Bid Bond for a sum equal to ten percent (10%) of the bid, as set forth in the Instructions to Bidders. All bid security, except those of the three low bidders for each prime contract will be returned within four days after proposals are submitted. The bid security provided by the three low bidders for each prime contract will be returned after execution of the

Contract(s).

There will be a **pre-bid site meeting** on **December 7, 2023, at 4:00 PM**, commencing at the Main Entrance of the Increase Miller Elementary School, 186 Waccabuc Road / Route 138, Goldens Bridge, NY 10526. **Bidders are urged to attend the pre-bid site meeting. Knowledge of the field conditions is crucial to understanding the Work.**

Attention is called to the Owner's sales tax exemption, the requirements as to conditions of employment to be observed, and the minimum wage rates to be paid under the contract. In addition, the Bidding Documents for this project contain detailed requirements for the qualification of Bidders. These include insurance requirements, financial statements, bank references, lists of lawsuits, arbitrations, or other proceedings in which the Bidder has been named as a party, and a description of other projects of similar size and scope completed by Bidder.

All Requests for Information must be sent in writing to the Architect via email (Richard Markgraf, rmarkgraf@kgdarchitects.com) no later than 5 days prior to bid opening.

The Owner requires the successful bidder to provide separate Performance and Labor & Materials Payment Bonds in the amount of the contract price and in the form specified in the Bid Documents.

To the fullest extent allowed by law, the Owner reserves the right to reject bids that contain omissions, exceptions, or modifications, or in their sole discretion to waive such irregularities, or to reject any or all bids or to accept any bid which is in the best interest of the Owner.

Proposals (including all required attachments) shall be submitted in a sealed, opaque envelope (First Envelope) distinctly marked on the outside as follows:

**Katonah-Lewisboro Union Free School District
HVAC UPGRADES - BID #11-23/24
December 19, 2023, 1:30 PM
Contract Number & Construction Type
Name of Bidder
Marked "BID PROPOSAL"**

Bid Qualifications shall be submitted in a sealed, opaque envelope (Second Envelope) distinctly marked on the outside as follows:

**Katonah-Lewisboro Union Free School District
HVAC UPGRADES - BID #11-23/24
December 19, 2023, 1:30 PM
Contract Number & Construction Type
Name of Bidder
Marked "BID QUALIFICATIONS"**

The Owner will not open or consider any proposal delivered after the bid opening date and time. Bidders are solely responsible for the arrival of each bid proposal at the place of bid opening by the appointed time, regardless of the means of delivery.

END OF ADVERTISEMENT

INSTRUCTIONS TO BIDDERS

To be considered, Bids must be made in accordance with these Instructions to Bidders.

1. PROJECT DESCRIPTION

The Project consists of performing HVAC Upgrades at the Meadow Pond Elementary School and the Increase Miller Elementary School for the Katonah-Lewisboro Union Free School District as shown on the Contract Drawings and described in the Specifications.

1. The scope of the Work of this project is removal of existing Gas-fired Rooftop HV units serving the Gym and provision of new All Electric Rooftop HVAC units and Heat Pump units to serve the Gym. Project scope provides necessary upgrades to HVAC systems by replacing RTUs and ERUs in student occupied spaces.
2. The Work will be performed at the following locations:
 - a. Meadow Pond Elementary School located at 185 Smith Ridge Road, South Salem, NY 10590.
 - b. Increase Miller Elementary School located at 186 Waccabuc Road, Goldens Bridge, NY 10526.
3. The Contract Documents shall consist of (a) the project specifications, including these instructions to Bidders; b) the Owner-Contractor Agreement; c) the General Conditions of the Contract for Construction; and d) the successful bidder's bid.

2. TYPE OF CONTRACTS

The Work of this Project will be let in a single Prime Contract.

3. TIME SCHEDULE

It is the intent of the Owner to award the Contracts for the Work on or about two (2) weeks after receipt of bids. Immediately upon receipt of Notice of Award of Contract from Owner, Contractors shall begin preparing required bonds, insurance certificates and other required submittals. Work may be performed at the building and site only upon receipt of written authorization (Notice to Proceed) from Owner and after the approval of the required submissions.

The anticipated Notice to Proceed/start of construction date is as indicated in the Project Milestone Schedule included at the end of Section 011000 "Summary."

The Work shall be Substantially Complete on or before the date(s) indicated in the Project Milestone Schedule included at the end of Section 011000 "Summary." It is extremely important that the Owner assume its full use of the buildings and sites on the completion date(s) specified.

4. QUALIFICATIONS OF BIDDERS

The Owner may make such investigation as it deems necessary to determine the responsibility of any bidder or to determine the ability of any bidder to perform the Work. The Owner reserves the right to disqualify any prospective bidder or to reject any bid.

5. DOCUMENTS

Bidders may obtain the Bid Documents after 3:00 PM on Wednesday, November 22, 2023, from REVplans, 28 Church Street, Unit 7, Warwick, NY 10990; 877-272-0216. Complete digital sets of Bidding Documents may be obtained online as a download at the following website: (revplans.biddyhq.com). Follow instructions to create an account or login if already registered. Select the "Projects" tab at the top of the screen and use the search function if needed to view this project. All bidders are urged to register to ensure receipt of all necessary information, including bid addenda.

Complete hard copy sets of Bidding Documents, drawings and specifications, may be obtained upon depositing the sum of \$100.00 for each combined set of documents. Checks or money orders shall be made payable to Katonah-Lewisboro Union Free School District. The deposit of \$100.00 per set for the first set is refundable as per NYS General Municipal Law Article 5A Section 102. Deposit, for initial sets, will be refunded to all qualified bidders returning plans and specifications in good condition within 30 days following the award of the Contract or rejection of that bidder's Bid.

Additional copies of the documents will be available from the designated printer and at the non-refundable cost of reproduction.

Any bidder requiring documents to be shipped shall make arrangements with the printer and pay for all packaging and shipping costs.

Please note REVplans (revplans.biddyhq.com) is the designated location and means for distributing and obtaining all bid package information. REVplans takes no responsibility for the accuracy or completeness of Bidding Documents obtained from other sources. Obtaining Bidding Documents through REVplans enables a prospective bidder to be identified as a registered plan holder. All Bid Addenda issued after initial document download will be transmitted to registered plan holders via email and will be available at revplans.biddyhq.com. Plan holders who have paid for hard copies of the Bidding Documents may coordinate directly with REVplans if hard copies of Bid Addenda are needed. There is no charge for registered plan holders to obtain hard copies of the Bid Addenda.

6. DEPOSITS

Bidders' deposits will be refunded if the set is returned in good condition within thirty (30) days following the award of the contract or rejection of the bids.

7. EXAMINATION

Bidders shall carefully examine the Bid Documents and the existing building and site to obtain first-hand knowledge of existing conditions and to verify conditions under which work will be performed. Failure to do so will not relieve a successful bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated work for the construction set forth in his bid. Submission of a Bid will be considered conclusive evidence that a bidder has visited the site and is conversant with local facilities and difficulties, the requirements of the Contract Documents, applicable laws and codes, the state of labor and material markets, and has made due allowance in his bid for all contingencies that may arise, whether or not stated.

8. QUESTIONS

Should a bidder find discrepancies in, or omissions from the drawings or any Contract Documents, or should he be in doubt, as to their meaning, or should he find provisions of any law or applicable code conflicting with provisions of the Contract Documents, he shall at once notify the Architect in writing, who will endeavor to issue the necessary clarifications or revisions to prospective bidders by means of an Addendum. Such Addendum, as part of the Contract Documents, shall be binding on all bidders. It shall be the duty of each bidder to make certain that he has received or provided himself with copies of all Addenda. Bids will be conclusively presumed to be based upon all Addenda issued up to the time of the opening of Bids, regardless of whether or not a copy of each Addendum is actually in the possession of the bidder

Prospective bidders may request clarifications of the Bid Documents from the Architect by contacting Richard Markgraf at KG + D Architects, PC, via e-mail to rmarkgraf@kgdarchitects.com. All questions must be submitted in writing, no phone calls will be accepted. All correspondence must be addressed to subject line "HVAC Upgrades at Meadow Pond Elementary School and Increase Miller Elementary School".

Inquiries received over the phone will not be answered. All information will be relayed to bidders by written addenda. Neither the Owner nor the Architect will be responsible for any oral instruction or clarification to any persons whatsoever. Questions received less than five (5) calendar days prior to the bid opening date cannot be answered.

If a bidder, prior to submitting a Bid, fails to give notification to the Architect of the existence of any such discrepancies, omissions, ambiguities, errors, or conflicts, he shall comply with the interpretations or directions given by the Architect in resolving same, without claiming extra costs

9. INTERPRETATION OF BID DOCUMENTS

If, in the interpretation of Bid Documents, requirements within the Drawings and Specifications conflict, or it appears that the Drawings and Specifications are not in agreement, the Contractor shall base his bid on (1) the greater quantity, where there is a discrepancy in quantity; and (2) the superior quality, where there is a discrepancy in quality.

10. PRE-BID MEETING

A pre-bid meeting will be held on Thursday, December 7, 2023 at 4:00 PM at the main entrance to the Increase Miller Elementary School located at 186 Waccabuc Road, Goldens Bridge, NY 10526. Attendance at the prebid meeting is not mandatory for submitting a bid but is strongly encouraged.

It is the bidder's responsibility to examine carefully the plans and specifications, proposal and the site upon which the work is to be performed. By submitting its bid, the bidder represents that it has made such examination and is familiar with all of the conditions and requirements of the Project.

11. PREPARATION OF BIDS

Each Bid must be completed in duplicate on the applicable Bid Form(s) provided herein. All blank spaces must be filled in with ink in both words and figures. Erasures or other changes in a proposal must be explained or noted over the signature of the bidder. The Bid shall be signed by person or persons legally authorized to bind Bidder to Contract.

First Envelope BID PROPOSAL: This envelope shall be clearly marked with the name of the project, bidder's name and marked "BID PROPOSAL" in large lettering on the envelope and shall contain the following items:

1. Certified check or Bid Bond in the amount totaling ten percent (10%) of the base bid.
2. Certified letter from Bonding Company, indicating that they meet the criteria set forth in Article 11 of the General Conditions.
3. One (1) original and one (1) copy (clearly marked "copy") proposal forms.
4. Certified letter that the company bidding this project has been in business under the same name for a period of five (5) years or longer, and is not currently disbarred from bidding or working on public works projects by the New York State Department of Labor.
5. Original fully executed non-collusive form.
6. In accordance with the requirements of the General Municipal Law Section 103-g, the bidder is required to include either (1) the "Certification of Compliance with the Iran Divestment Act" or, in the case where the bidder is unable to make such certification, (2) the form titled "Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act". These forms are included in the Bid Documents.
7. Executed insurance coverage certification.
8. Executed sexual harassment prevention certification.

Second Envelope BID QUALIFICATIONS: This envelope shall be clearly marked with the name of the project, bidder's name and marked "BID QUALIFICATIONS" in large lettering and the envelope and shall contain the following items:

1. Fully completed statement of bidder's qualifications.
2. A description of its experience with projects of comparative size, complexity and cost together with documentary evidence showing that said projects

were completed to the Owner's satisfaction and were completed in a timely fashion.

3. Documentation evidencing the bidder's financial responsibility, including a certified financial statement.

All blank spaces on all attachments to the Bid Form must be filled in with ink in both words and figures.

Any Bid submitted contrary to requirements above or specified, or containing omissions, conditions, or irregularities of any kind may be rejected by the Owner.

12. BID SECURITY

Each bid must be accompanied by a Bid Security made payable to Katonah-Lewisboro Union Free School District in the amount of ten percent (10%) of the Bid Sum (the sum of the Base Bid plus all Add Alternates). The Bid Security shall be either a certified bank check payable to payable to Katonah-Lewisboro Union Free School District or a Bid Bond issued by a surety company licensed to conduct business in the State of New York on the form included herein (AIA Document A310). The Bid Bond must be issued by a surety which meets the requirements set forth in the General Conditions. The successful bidder's security will be retained until he has signed the Agreement and furnished required Performance and Payment Bonds. The Owner reserves the right to retain the security of the three lowest bidders for each contract until the successful bidder enters into the contract, or until 45 days after the bid opening, whichever is longer. All other bid security will be returned within 4 days after the bid opening. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

13. PERFORMANCE AND LABOR AND MATERIAL BOND

The successful bidder shall provide a Performance Bond and Payment Bond made payable to Katonah-Lewisboro Union Free School District, each in an amount at least equal to one hundred percent (100%) of the Contract Price as security for the faithful performance of his Contract and for payment of all persons performing labor and furnishing materials in connection with the project. The value of each bond shall be adjusted during the Project construction period to reflect changes in the Contract Sum. All Bonds must meet or exceed the requirements set forth in the General Conditions. Provide such bonds simultaneously with the execution of the Contract. Bonding company and bond must be approved by the Owner. Only surities licensed to do business in the State of New York may be used.

14. SUBMITTAL

Submit each Bid in an opaque, sealed envelope. Identify the envelope with: (1) project name, (2) name of bidder, (3) Contract name (e.g. Contract No. 1 - General Construction Work) and (4) proposal opening date. Submit Bids in accordance with Advertisement for Bids and with these Instructions to Bidders. If forwarded by mail, the Bid must be enclosed in another envelope and forwarded to the Owner by certified mail or tracked delivery at the address indicated in the Advertisement for Bids. The bidder assumes the risk of any delay

in the mail or in handling of the bid by the Owner. The bidder assumes full responsibility for having his bid deposited on time and to the location and person indicated in the Advertisement for Bids, regardless of the method of delivery.

15. MODIFICATION AND WITHDRAWAL

No oral, facsimile, or telephonic proposals or modifications of Bids will be considered. Bids may be modified at any time prior to bid opening by submitting to the Owner a written modification, enclosed in a sealed opaque envelope, signed by the bidder, or an officer thereof if the bidder is a corporation, clearly setting forth in what respects the Bid is to be modified. Bids may be withdrawn on written or telegraphic request received from bidders prior to the time fixed for bid opening. Except as otherwise provided by law, negligence on the part of the bidder in preparing his Bid confers no right for the withdrawal of the Bid after it has been opened. No bidder may withdraw his Bid for forty-five (45) days after the opening thereof, except as otherwise provided by law.

16. REJECTION OF BIDS

The Owner reserves the right to reject any and all Bids. The Owner reserves the right to reject any Bid for reasons including, but not limited to, the following:

- a. The bidder fails to furnish any portion of the information required pursuant to the Instructions to Bidders.
- b. The bidder mis-states or conceals any material fact.
- c. The Bid does not strictly conform to law or to requirements of the Contract Documents.
- d. The Bid is conditional.
- e. The Bid is incomplete (by reason of, for example, failure to fill in an alternate price or failure to submit required documentation described herein).
- f. The Bidder is deemed unqualified to undertake the work.

The Owner reserves the right, however, to waive any informalities in the Bids received when such waiver is deemed to be in its interest.

17. OPENING AND AWARD

Bids will be opened as stated in the Advertisement for Bids. The Owner will award the Contract, if at all, on or about two weeks after receipt of bids.

The Owner reserves the right to accept Alternates in any order or combination and to determine the low bidder on the basis of the sum of the Base Bid and Alternates accepted.

18. EXECUTION OF CONTRACT

After the Owner has ascertained the successful bidder, it shall send a Notice of Award of Contract to bidder to whom a Contract has been awarded.

The Contract used for this project shall be the Owner-Contractor Agreement in the form included in the Contract Documents.

The successful bidder shall execute the contract within ten (10) days of receipt of the Notice of Award. Notwithstanding the foregoing, the bidder acknowledges that its bid is an offer to contract and that the Owner's award is an acceptance of the bidder's offer, thereby creating a binding agreement.

In the event the successful bidder fails to execute the contract or perform its work in accordance with the same, the Owner reserves the right to retain the Bid Security and apply it toward the damages incurred by the Owner for such failure.

19. SUBCONTRACTORS

All Subcontractors must be acceptable to the Architect and/or Owner. The Bidder shall submit the names of the Subcontractors proposed for use on the Project and all other information concerning his Subcontractors as requested by the Architect and/or Owner within the time frame stipulated. If the Architect and/or Owner disapproves any proposed Subcontractor the contractor shall submit the name of an alternate Subcontractor to whom the Architect and/or Owner has no objection in the same manner as the original submittal.

The Owner reserves the right to reject any bid if the names of the proposed Subcontractors are not submitted as required.

20. SALES AND COMPENSATING USE TAXES

The Owner is exempt from paying sales and compensating use taxes of the State of New York and of cities, counties, and other subdivisions of the State on all materials sold to it pursuant to the provisions of this Contract. These taxes are not to be included in bids. This exemption shall apply to supplies and materials which are incorporated in such project. and any necessary changes shall be adjusted as provided in the contract. This exemption does not, however, apply to equipment rentals, small tools, and supplies for equipment such as supplies of gasoline used in operating trucks. The term "materials" as used in this article shall include supplies incorporated in this project. A Tax Exemption Certificate will be furnished to the Contractor by the Owner upon request.

21. LAWS AND REGULATIONS

All applicable State Laws, municipal ordinances, and the rules, regulations and ordinances of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

If the Contractor observes that the drawings and specifications are at variance with laws and regulations, it shall promptly notify the Architect in writing and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules, regulations or

specifications, or local, state or federal authorities without providing such notice to the Architect, the Contractor shall bear all costs arising therefrom.

22. AFFIRMATIVE ACTION PROVISION

During the performance of this Contract, each Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age or disability. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoffs or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Each Contractor agrees to include, or require the inclusion of the above provision in any subcontract made pursuant to its contract with the Owner.

23. EQUIVALENCY CLAUSE

Whenever a material, article, device, piece of equipment or type of construction is identified on the Drawings or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or similar specific information, it is so identified for the purpose of establishing a standard of quality, and such identification shall not be construed as limiting competition. Any material, article, device, piece of equipment or type of construction of other manufacturers or vendors that will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, device, piece of equipment or type of construction so proposed is completely described in submittals to the Architect and is, in the opinion of the Architect, of equal substance, appearance, and function. If the contractor desires to use any kind, type, brand, or manufacturer or material other than those named in the specifications, they shall indicate in writing, when requested, and prior to award of contract, what kind, type, brand, or manufacturer is included in the base bid for the specified item, following procedures specified in Section 016000. Refer to Division 01 General Requirements (Section 016000) and General Conditions of the Contract for Construction.

24. PAYMENT/ACCOUNTING AND EMPLOYMENT REQUIREMENTS

Contractor shall comply with the latest NYSDOL requirements, including all posting requirements, minimum wage requirements and all other requirements.

Prevailing Wage Rates: The New York State Department of Labor PRC number assigned to this project is PRC# 2023011134. Current Wage Rate Schedules can be found here:

To access the PDF file of your schedule, click on the following link or copy and paste into your browser, type in the PRC number, and click in the Wage Schedule button.

<https://apps.labor.ny.gov/wpp/doFindProject.do>

NYSDOL Requirements for OSHA 10 Compliance: The Contractor shall certify that every worker employed for this project has completed an OSHA 10 safety training course prior to performing any work on the project. Valid proof of completion of the OSHA 10 training

course includes copies of bona fide course completion card and training roster, attendance record, or other documentation from the certified trainer. Simply attesting that all employees have completed the course is not sufficient proof of completion.

25. POST BID PROCEDURES

- A. The responsibility of bidders and of their proposed subcontractors will be considered in making the award. The Owner through the Architect may make such investigation as the Owner deems necessary to determine the responsibility of any bidder or to determine the ability of any bidder to perform the Work.
- B. Bidders shall furnish all information and data required by the Owner, including financial data, within the time and in the form and manner required by the Owner. Upon notification from the Architect, the three apparent low bidders for each contract shall furnish within three (3) working days after the bid opening four (4) copies of the following information in writing:
 - 1. The names, addresses and phone numbers of the subcontractors and suppliers that the bidder proposes to use on the project
 - 2. A bar chart schedule showing the bidder's proposed plan and schedule to complete the bidder's work in accordance with the milestones outlined in the Contract Documents. The schedule shall incorporate all critical path items and any time sensitive material order and delivery dates.
 - 5. A proposed schedule of values for the bidder's work;
 - 7. A proposed list of submittals and a proposed schedule for making them, all keyed to the bar chart.
 - 8. A list of proposed substitutions.
 - 9. The name, cell phone number and e-mail address of the firm's project manager assigned to this project.
- C. After receipt of the above information, the Architect will designate a time and place for a meeting between the Owner, the Architect and the apparent low bidder. The apparent low bidder's principal, project manager and site superintendent will attend that meeting, at which time the parties will discuss the bidder's responsiveness, responsibility and qualifications.
- D. The Owner reserves the right to disapprove the use of any proposed Subcontractor and in such event the bidder shall submit the name of another Subcontractor in a similar manner within the time specified by the Architect.
- E. To the fullest extent allowed by law, the Owner reserves the right to reject any bid if the evidence required by the Owner is not submitted or fails to satisfy the Owner that the bidder is responsible, able and qualified to carry out the obligations of the Contract or to complete the Work as contemplated. The Owner will consider the information received under paragraphs A through D above in determining whether or not to accept a proposal.
- F. Acceptance of a proposal will be a notice in writing signed by a duly authorized representative of the Owner.
- G. Any bidder whose proposal is accepted will be required to sign the Contract within ten (10) days after receiving notice of acceptance.
- H. In the event that the Owner should reject the proposal of a bidder as provided above or otherwise, at the Owner's option, the Owner may elect to meet with the

next lowest bidder and to consider the information as provided in paragraphs A through D above. In the event that the proposal of the next lowest bidder is rejected as provided above or otherwise, at the Owner's option, the Owner may elect to meet with the third lowest bidder and repeat the above process. At all times the Owner retains the right to reject all bids.

END OF INSTRUCTIONS TO BIDDERS

INFORMATION AVAILABLE TO BIDDERS

1.1 GENERAL

- A. Hazardous Material Information: Data in hazardous material investigation reports included herein are provided to the Contractor for information only. Conditions are not intended as representations or warranties of accuracy or continuity between sampling locations. The Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor.



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LIMITED RENOVATION SURVEY FOR ASBESTOS-CONTAINING MATERIALS, LEAD-BASED PAINT & PCBs

PERFORMED AT:

Meadow Pond Elementary School
185 Smith Ridge Road
South Salem, New York 10590
Adelaide Project# KGD-RM:23164.05-IN
SED# 66-01-01-03-0-007-016

PREPARED FOR:

Richard Markgraf, Assoc. AIA
KG&D Architects, PC
285 Main Street
Mount Kisco, New York 10549

PREPARED BY:

Philip J. Page
August 16, 2023

REVIEWED BY:

A handwritten signature in blue ink, appearing to read "Stephanie A. Soter", is written over a light gray rectangular background.

Stephanie A. Soter
President

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1.0 Introduction

1.1 Scope of Work / Project Personnel

Adelaide Environmental Health Associates, Inc. (**Adelaide**) performed an Asbestos, Lead and PCB Survey for Building/Structure Demolition, Renovation, Remodeling and/or Repair, in conformance with ALL Federal, State and Local regulations for KG&D Architects, PC:

SURVEY LOCATION(S):	Meadow Pond Elementary School 185 Smith Ridge Road, South Salem, New York 10590
SURVEY DATE(S):	July 24, 2023 & August 4, 2023
SCOPE OF WORK:	Alterations Bond Work
SCOPE OF WORK BUILDING/	Prepared by: KG+D Architects, PC
STRUCTURE PLANS UTILIZED:	Consolidated Design Set Dated: June 05, 2023
CERTIFIED ADELAIDE	Philip J. Page (NYS Asbestos Inspector/Cert. #12-10888 and EPA
PERSONNEL:	Lead-based Paint Inspector/Cert. #LBP-I-1172697-1)
SITE CONTACT(S):	Steve (head custodian)

1.2 Executive Summary

On July 24, 2023 and August 4, 2023, **Adelaide** inspected various areas throughout the school that will be affected by the proposed scope of work for suspect ACM, LBP and PCBs.

SUSPECT HAZARDOUS MATERIAL	SAMPLE(S)/LAYER(S)/ READING(S) COLLECTED	SAMPLE(S) / HOMOGENEOUS AREA(S) IDENTIFIED POSITIVE
Asbestos-containing Materials (ACM):	49	1
Lead-based Paint (LBP):	37 (plus calibrations)	0
PolyChlorinated Biphenyls (PCB):	3	2

NOTE: The flooring in the cafeteria was abated in 2017 with non-ACM floor tiles installed. The roofs of the entire school were abated, and non-ACM EPDM roofs were installed. The hallway flooring is newer sheet flooring over identified ACM 9x9 floor tile.

There are **asbestos materials that will be impacted** by this scope of work as described in section 1.1. These materials are listed in section 2.1.

1.3 Conclusions and Recommendations

The following conclusions and recommendations are prepared by **Adelaide** as per the provided scope of work for Building/Structure Demolition, Renovation, Remodeling and/or Repair. Should the scope of work change, it is recommended that the findings be revisited to determine if additional sampling will be required to satisfy ALL Federal, State and Local regulations.

The materials sampled, as part of this survey, were limited to building materials potential affected by the provided scope of work only. All building materials outside the scope of work that have the potential to be disturbed, impacted, or if the scope of work is to change, are to be presumed asbestos-containing materials (PACM). Identified PACM **must** either be sampled by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of by a licensed NYS Asbestos Abatement Contractor.

1.4 Asbestos-containing Materials (ACM)

- This survey concluded that the materials listed in Section 2.1 tested ***positive for asbestos***.
- There are asbestos materials that will be impacted by this scope of work. These materials are listed in section 2.1. Refer to Appendix A for the approximate location of the above materials in the affected scope of work.
- Subpart 56-5(h) of 12 NYCRR Part 56 requires that no demolition, renovation, remodeling, or repair work be commenced by any owner or the owner's agent prior to the completion of asbestos abatement. Asbestos abatement must be performed by an asbestos abatement contractor that maintains a current asbestos handling license and employs NYSDOL/NYCDEP certified asbestos handlers and supervisors. It is recommended that a 12 NYCRR 56 certified Project Monitor oversee abatement activities.
- Subpart 56-5(g) of 12 NYCRR Part 56 specifies requirements for transmittal of asbestos survey information by the owner or owner's agent. (1) One copy of the asbestos survey report shall be sent to the local government entity charged with issuing a permit for such demolition, renovation, remodeling, or repair work under applicable State or local laws. (2) If controlled demolition or pre-demolition activities will be performed, one copy of the asbestos survey report shall be submitted to the appropriate Asbestos Control Bureau district office. (3) One copy of the asbestos survey report must be kept on the construction site throughout the duration of the asbestos project and any associated demolition, renovation, remodeling, or repair project.

1.5 Lead-based Paint (LBP)

- This survey concluded that the readings summarized in Section 2.3 and Appendix E tested ***negative for lead-based paint***.

1.6 PolyChlorinated Biphenyls (PCB)

- This survey concluded that the materials listed in Section 2.4 tested ***positive for PCBs***.
- These materials must be removed and disposed of in accordance with ALL Federal, State and Local regulations.

2.0 Summary of Hazardous Materials

2.1 Summary of Identified ACM/PACM

KEY: **ACM** = Materials containing greater than 1% of asbestos; **HA** = Homogeneous Area; **LF** = Linear Feet; **SF** = Square Feet; **PACM** = Presumed Asbestos-containing Materials; **Friable** = ACM capable of being released into air, and which can be crumbled, pulverized, powdered, crushed or exposed by hand-pressure; ^A = Material is considered non-friable solely in an intact and undisturbed state, however, may be rendered friable if pulverized or crumbled while in dry state.

Samples collected by **Adelaide** July 24, 2023 & August 4, 2023

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
8	9x9 Floor Tile	A-Wing, Corridor & 6 Classrooms	7,000 SF	Good	No
		B-Wing, Corridor & 6 Classrooms	7,000 SF	Good	No
		C-Wing, Corridor & 6 Classrooms	7,000 SF	Good	No
		Library & Computer Lab	3,500 SF	Good	No
		Hallways (bottom layer)	NQ	Good	No

2.2 Summary of Identified Non-ACM

Samples collected by **Adelaide** July 24, 2023 & August 4, 2023

Identified Non-ACM	Sample Location(s) & HA's
2x2 Dot Textured Ceiling Tile	Throughout School
1x1 Splined Ceiling Tile	Throughout School
2x2 Dot Speck Ceiling Tile	Room E4
Sheetrock & Joint Compound	Throughout School
Brick Mortar	Throughout School
Cove Base & Adhesive	Throughout School
Mastic associated w/ ACM 9x9 Floor Tile	Throughout School
Ceramic Tile Grout & Mudset	Bathrooms Throughout
CMU Mortar	Walls Throughout School
Vestibule Caulk	Exterior, Main Entrance
Sidewalk Caulk (trace)	
Expansion Joint	
Concrete	
Peg Board	Room O-3
1x1 Red Floor Tile & Mastic	Room O-3
1x1 Beige Floor Tile & Mastic	Room B-10
Window Caulk	Exterior of Room O-3
Plaster (<1%)	Exterior, Main Entrance, Overhang

2.3 Summary of Identified LBP

Based on review of the data generated by the Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s), the following surfaces tested were identified as lead-based, as defined by HUD/EPA (equal to or in excess of 1.0 milligram per square centimeter):

Readings collected by **Adelaide** July 24, 2023 & August 4, 2023

Location of LBP	LBP Component	Substrate	Color	Condition	Readings (mg/cm2)
<i>NO Lead-based Paints identified above HUD/EPA standards of readings collected in reference to the above-mentioned scope of work.</i>					

2.4 Summary of Identified PCB-containing Materials

Samples collected by **Adelaide** July 24, 2023 & August 4, 2023

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
P1	Exterior, Main Entrance, Vestibule Curtain Wall, along perimeter	Caulk	Grey	Metal & Concrete	320 ppm
P2	Exterior, Main Entrance, Sidewalk, along building	Caulk	Grey	Concrete	34,000 ppm

2.5 Observations

ASBESTOS-CONTAINING MATERIALS (ACM)

A visual inspection was performed, and homogeneous material types were established based on appearance, color and texture. The findings presented in this report are based upon reasonably available information and observed site conditions at the time the assessment was performed. The findings and conclusions of this report are not meant to be indicative of future conditions at the site and does not warrant against conditions that were not evident from visual observations or historical information obtained from others.

On July 24, 2023 & August 4, 2023, representative bulk sampling was performed on suspect building materials for laboratory analysis and the following is a summary of installed building materials sampled as per the scope of work provided:

- Ceiling Materials – Ceiling Tiles (multiple types), Sheetrock, Joint Compound, Overhang Plaster.
- Wall Materials – Sheetrock, Joint Compound, Cove Base & Adhesive, Brick Mortar, CMU Mortar, Peg Board.
- Flooring Materials – 9x9 Floor Tile & Mastic, 1x1 Floor Tile & Mastic (multiple types), Ceramic Tile System.
- Miscellaneous Materials – Misc. Caulks, Expansion Joint, Concrete.
- Non-suspect Materials (not sampled) – Fiberglass Insulation, Silicone, Wood, Glass, Metal.

3.0 Asbestos-containing Materials (ACM)

3.1 Field Procedures and Analysis Methodology

Guidelines used for the inspection were established by the U.S. Environmental Protection Agency (EPA) in the Guidance for Controlling Asbestos Containing Materials in Buildings, Office of Pesticides and Toxic Substances, DOC# 560/5-85-024 and 40 CFR Part 763, Asbestos Hazard Emergency Response Act (AHERA) and Title 12 NYCRR Part 56-5.1. Field information was organized as per the AHERA concept of a homogeneous area (HA); that is, suspect Asbestos-containing Materials (ACM) with similar age, appearance, and texture were grouped together, sampled and assessed for condition.

For the purposes of this inspection, suspect ACM has been placed in three material categories: thermal, surfacing, and miscellaneous. 1) Surfacing materials are those that are sprayed on, troweled on or otherwise applied to surfaces for fireproofing, acoustical, or decorative purposes (e.g., wall and ceiling plaster). 2) Thermal materials are those applied to heat pipes or other structural components to prevent heat loss or gain or prevent water condensation (e.g., pipe and fitting insulation, duct insulation, boiler flue). 3) Miscellaneous materials are interior building materials on structural components, structural members or fixtures, such as floor and ceiling tiles, etc. and do not include surfacing material or thermal system insulation.

SURFACING MATERIALS

Surfacing materials were grouped into homogeneous sampling areas. A homogeneous area contains material that is uniform in color and texture and appears identical in every other respect. Materials installed at different times belong to different sampling areas. Homogeneous areas were determined on per floor basis.

The following protocol was used for determining the number of samples to be collected:

- At least three bulk samples were collected from each homogeneous area that is 1,000 square feet or less.
- At least five bulk samples were collected from each homogeneous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
- At least seven bulk samples were collected from each homogeneous area that is greater than 5,000 square feet.

THERMAL SYSTEM INSULATION (TSI)

The concept of homogeneous sampling areas applies equally well to thermal insulation as to surfacing material. A "typical" building may contain multiple insulated pipe runs from any combination of the following categories:

- Hot water supply and/or return
- Cold water supply
- Chilled water supply
- Steam supply and/or return
- Roof or system drain

The following protocol was used for determining the number of samples to be collected.

- Collect at least three bulk samples from each homogeneous area of thermal system insulation.
- Collect at least one bulk sample from each homogeneous area of patched thermal system insulation if the patched section is less than 6 linear or square feet.
- In a manner sufficient to determine whether the material is ACM or not ACM, collect a minimum of three bulk samples from each homogeneous insulated mechanical system tee, elbow, and valve.

Bulk samples are not collected from any homogeneous area where the certified inspector has determined that the thermal system insulation is fiberglass, foam glass, or rubber.

MISCELLANEOUS MATERIALS

Miscellaneous materials are grouped into different homogeneous areas and at least two bulk samples are collected from each homogeneous area as per the clarification letter from the EPA and the Professional Abatement Contractors of New York, Inc in November of 2007.

Samples collected were analyzed by a laboratory approved under the New York State Department of Health Environmental Laboratory Approval Program (NYSDOH ELAP). Samples were analyzed in the laboratory by Polarized Light Microscopy (PLM), Polarized Light Microscopy-NOB (PLM-NOB) and/or Quantitative Transmission Electron Microscopy (QTEM), as required. Sample collection and laboratory analysis were conducted in compliance with the requirements of Title 12 NYCRR Part 56-5.1, 29 CFR 1926.1101 and standard EPA & OSHA accepted methods. Samples consisting of multiple layers were separated and analyzed independently in the laboratory.

3.2 Regulatory Guidelines and Requirements for ACM

FEDERAL

In accordance with the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) established National Emission Standards for hazardous Air Pollutants (NESHAP) to protect the public from exposure to airborne pollutants. Asbestos was one of the air pollutants, which was addressed under the NESHAP 40 CFR Part 61. The purpose of asbestos NESHAP regulations is to protect the public health by minimizing the release of asbestos when facilities, which contain ACM, are being renovated or demolished. EPA is responsible for enforcing regulations related to asbestos during renovations and demolition, however, the CAA allows the EPA to delegate this authority to State and Local Agencies. Even after EPA delegate's responsibility to a state or Local agency, EPA retains the authority to oversee agency performance and to enforce NESHAP regulations as appropriate.

NEW YORK STATE

Asbestos in New York State is regulated under the Labor Law Section 906, Part 56 of Title 12 of the Official Compilation of Codes, Rules, and Regulations. Within the department and for the purpose of the Department of Labor, this part (rule) is known as Industrial Code Rule No. 56 (ICR 56) relating to hazards to the public safety and health, during the removal, encapsulation, or disturbance of friable asbestos, or any handling of ACM that may result in the release of asbestos fiber.

As specified in Title 12 NYCRR Part 56-5.1 (h) and (i), "If the building/structure asbestos survey finds that the portion of the building/structure to be demolished, renovated, remodeled, or have repair work contains ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material, which is impacted by the work, the owner or the owner's agent shall conduct, or cause to have conducted, asbestos removal performed by a licensed asbestos abatement contractor in conformance with all standards set forth in this Part. All ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material impacted by the demolition, renovation, remodeling or repair project shall be removed as per this Part, prior to access or disturbance by other uncertified trades or personnel. No demolition, renovation, remodeling or repair work shall be commenced by any owner or the owner's agent prior to the completion of the asbestos abatement in accordance with the notification requirements of this Part...All building/structure owners and asbestos abatement contractors on a demolition, renovation, remodeling, or repair project, which includes work covered by this part, shall inform all trades on the work site about PACM, ACM, asbestos material and suspect miscellaneous ACM...Bids may be advertised and contracts awarded for demolition, remodeling, renovation, or repair work, but no work on the current intermediate portion of the project shall commence on the demolition, renovation, remodeling or repair work by any owner or agent prior to completion of all necessary asbestos abatement work for the current intermediate portion of the entire project, in conformance with all standards set forth in this Part." All work conducted should be in accordance with all legal requirements, including but not limited to U.S. Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) [40 CFR Part 61], New York State Industrial Code Rule 56 Asbestos Regulations (ICR 56) and Chapter 1 of Title 15 of the Rules of the City of New York Regulations, as applicable. Advance notification of the asbestos project to the USEPA, NYSDOL, and NYCDEP may be required.

CONCEALED ACM

In addition to the ACMs identified at the site, there is a possibility that concealed suspect ACM may exist at the building/structure. As such, if any concealed suspect ACM is encountered during future construction related activities, the work should immediately stop. Prior to resuming the work, the suspect ACM should either be 1) Sampled by an appropriately-certified asbestos professional and submitted to an Approved NYSDOH ELAP laboratory for asbestos analysis or 2) Presumed to be ACM (PACM) and removed by a licensed asbestos abatement contractor for disposal in accordance with all applicable regulations.

4.0 Lead-based Paint (LBP)

4.1 Applicable Standards/Guidelines for LBP

The U.S Department of Housing and Urban Development (HUD) defines the action level for lead-based paint as a lead content equal to or greater than 1.0 milligrams of lead per square centimeter of painted surface ($\geq 1.0 \text{ mg Pb/cm}^2$) when measured with an XRF analyzer or 0.5 percent by weight when chemically tested. This definition is described in the HUD "Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing, September 1990". The state of New York's definition of the action level for lead-based paint is consistent with the level established by HUD.

Please note that although the HUD defines lead-based paint as paint having lead concentrations equal or greater than 1.0 mg/cm², the Occupational Safety and Health Administration (OSHA) considers any concentration of lead in paint to be lead-containing paint. Regardless of the lead concentrations in paint, the contractor shall comply with 29 CFR 1926.62, OSHA regulations, and take precautionary measures for dust control and limit employee exposure to lead dust during the renovations.

Painted surfaces that would be impacted by planned activities such as drilling, cutting, scrapping, etc. and create dust should be properly addressed by following safe work practices, good housekeeping procedures and/or following proper abatement procedures. Grinding and sanding of paint without HEPA filter exhaust, open flame gas fired torch, unconfined abrasive blasting, and chemical strippers containing methylene chloride or other human carcinogenic chemicals are not recommended.

The Federal Resource Conservation and Recovery Act (RCRA) regulation governs the handling, transportation, and disposal of hazardous materials. Every demolition/renovation debris generator has the responsibility to determine whether the debris exhibits one or more of the characteristic wastes listed in subpart C of 40 CFR Part 261. In the case of demolition debris, lead in LBP is a characteristic waste, and therefore, it is the responsibility of the renovation/demolition debris generator to characterize the waste prior to its disposal and, if found to be hazardous waste as defined by Federal Statutes, to be properly handled and disposed.

Metal objects painted with LBP are exempt from disposal regulations applicable to lead, provided they are properly recycled. All metal objects that are painted with LBP should be sent to a certified recycling facility.

This report is not Lead-based Paint abatement specification and should not be used for specifying removal methods or techniques.

4.2 XRF Information

Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s) were used to survey the building/structure or portion thereof identified to be demolished, renovated, remodeled or repaired for the presence of LBP. The Viken Pb200e XRF Analyzer(s) are using a sealed source of Co-57 with 6mCi sources, meeting HUD requirements for the analysis of paint films. During the analysis, the intensity of the x-rays is converted by the instrument's internal software into an estimate of the concentration of lead in the substance being analyzed. The results are interpreted as concentrations of lead in milligrams per square centimeter. This device is a field-screening tool, used to collect multiple readings in a short period of time. The method of measurement is based on spectrometric analysis of lead x-ray fluorescence within a controlled depth of interrogation. The reading is an estimate of lead content in all layers of paint. The results are displayed in milligrams per square centimeter (mg/cm²). The device(s) used for this inspection were the Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s) Serial Number 2104, Source date 4/1/23, Serial number 2231, Source date 5/15/22, Serial number 2595, Source date 2/15/23 and/or Serial number 2901, Source date 2/15/23.

5.0 PolyChlorinated Biphenyls (PCB)

5.1 Background and Protocol for PCBs

PolyChlorinated Biphenyls (PCB) are a group of manmade chemicals. PCBs were widely used in building materials and electrical products in the past. The U.S. Environmental Protection Agency banned the manufacturing and certain uses of PCBs in 1978, but buildings constructed or renovated between 1950 and 1978 may still have building materials and electrical products that contain PCBs. Examples of products that may contain PCBs include caulk, paint, glues, plastics, fluorescent lighting ballasts, transformers and capacitors.

PCBs are currently prohibited from being used in caulk and other commodities (U.S. EPA, 40 CFR 761). However, prior to 1977, PCBs were present in some caulking materials used in the construction of schools and other buildings. Studies have shown that concentrations of PCB can exceed 1% (10,000 ppm) by weight in some caulk materials. An investigation of 24 buildings in the Greater Boston Area revealed that one-third of the buildings tested (8 of 24) contained caulking materials with polychlorinated biphenyl (PCB) content exceeding 50 ppm by weight with an average concentration of 15,600 ppm or 1.5% (Herrick et al., 2004). These buildings included schools and other public buildings.

The U.S. EPA regulates the disposal of caulk, as well as soil and other materials contaminated with PCBs from caulk, if the concentration of PCBs exceeds 50 ppm. Such materials must be disposed at an appropriate approved or permitted facility.

U.S. EPA regulation 40 CFR 761 defines "PCB remediation waste" to include contaminated soil, and specifies a clean-up level of <1ppm without further conditions for unrestricted use in "high occupancy areas" (i.e., areas where individuals may be present for 335 hours or more per year). PCB caulk is defined as a PCB bulk product waste, and its disposal is subject to U.S. EPA regulations under the Toxic Substances Control Act (40 CFR761.62).

This protocol has been developed in consultation with the New York State Department of Health, Division of Environmental Health Assessment, Bureau of Toxic Substance Assessment to address concerns about properly managing caulk containing PCBs that will be disturbed during building renovation and maintenance.

CAULK SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977 have a potential to contain PCBs in existing caulk. Representative samples of caulking materials from these buildings prior to renovation or demolition work should be tested to determine whether the caulk is contaminated with PCBs. Professional judgement should be used to design the sampling plan for characterizing caulk throughout the building. The consultant should pay particular attention to construction and maintenance records and to the appearance of caulking materials (likenesses and differences). Samples should be taken from window frames or expansion joints that have not been repaired or replaced since 1977. Depending on specific information provided in the workplan developed by the project manager, such as window placement, compositing of some caulk samples might be appropriate. Caulk from different time periods or that have a different appearance should not be composited together.

It is important to note that caulk used during the time period of interest may also contain asbestos or lead. Therefore, the work plan should include testing, handling and disposal requirements appropriate for such regulated materials.

SOIL SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977, which have undergone further renovation after 1977, may have residual PCB contamination in adjacent soils. An adequate representation of surface soils should be tested to assess the potential for residual PCB contamination.

When designing a representative soil sampling plan, the likelihood of soil contamination from deteriorated or deteriorating caulk should be considered. Caulk that has in the past dried out and fallen to the ground is the most important source of soil contamination. Thus, sampling should include soil beneath windows where caulk has obviously deteriorated or been replaced because of previous deterioration. Areas subject to the stress of sun and prevailing weather (typically the southern and western side of each structure) should be included for sampling. These samples would provide a conservative evaluation of soil conditions due to an increased potential for material failure, possibly resulting in contamination of soil. Also, if earlier renovation or demolition work may have stockpiled potentially contaminated caulk in other school areas, the school should consider having soils in those areas tested as well.

Soil sampling should focus on areas of the building where "banks" or "gangs" of windows exist/were replaced and areas of the structure where large expansion joints are located. This would provide a conservative evaluation of potential soil contamination and permit efficient sampling.

Any obvious pieces of caulk encountered during the collection of soil samples should be removed from the soil, categorized (with respect to location and depth) and treated as a separate potential sample.

Depth – At each soil sample location, soil should be collected in depth intervals of 0-2 inches, 2-6 inches and 6-12 inches. The surface soil sample (0-2 inches) should be collected from below the vegetative surface layer, if present.

Distance from Structure – Samples should be collected within 1 foot of the building and 5 feet from the building.

Samples should be collected in a manner that prevents cross-contamination. Augers or driven core samplers should be avoided, as any caulk caught on the edge of this type of tool could be driven to lower intervals. Using a designated trowel for each sample location and each interval of depth is encouraged. If the sampling tool is field cleaned between samples, do so in a manner that does not add solvent contamination to the environment.

NOTE

Sampling was performed by **Adelaide** in compliance with protocols outlined by New York State Education Department (NYSED) and USEPA 40 CFR 761, as described above. Only one sample per homogeneous area was required for analysis of suspect PCB-containing materials. Bulk sample(s) were properly packaged and forwarded, with associated Chain of Custody (COC), to York Analytical Laboratories, Inc., for analysis using method SW846-3550B/8082. The analysis will determine if the suspect material will be classified as PCB-containing at or above 50 ppm or mg/kg as per the EPA regulations. Copies of the analytical results are contained within attached appendices for review.

6.0 General Discussion

All construction personnel as well as individuals who have access to locations where asbestos-containing materials (ACM), lead-based paints (LBP) and/or polychlorinated biphenyls (PCB) exists should be informed of its presence and the proper work practices in these areas. Conspicuous labeling of all ACM is suggested to ensure personnel is adequately informed. Personnel should be informed not to rest, lean or store material or equipment on or near these surfaces and not to cut, saw, drill, sand or disturb ACM. All removal, disturbance, and repair of ACM should be performed in compliance with Title 12 NYCRR Part 56 by persons properly trained to handle ACM. Facility custodial and maintenance personnel should receive training commensurate with their work activities; as defined in 29 CFR 1910.1001.

7.0 Disclaimers

Adelaide certifies that the information contained within this report is based solely upon site observations and the results of laboratory analysis for samples collected during this survey/assessment. These observations and results are time dependent, subject to changing site conditions and revisions to Federal, State and Local regulations. **Adelaide** warrants that these findings have been promulgated after being prepared in general accordance with generally accepted practices in the abatement industries. **Adelaide** also recognizes that inspection laboratory data is not usually sufficient to make all abatement and management decisions. No other warranties are expressed or implied.

The materials sampled, as part of this survey, were limited to building materials potential affected by the provided scope of work only. All building materials outside the scope of work that have the potential to be disturbed, impacted, or if the scope of work is to change, are to be presumed asbestos-containing materials (PACM). Identified PACM **must** either be sampled by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of by a licensed NYS Asbestos Abatement Contractor.

Due to the potential for concealed Asbestos-containing Materials (ACM) and/or other regulated materials, this report should not be construed to represent all ACM and/or regulated materials within the site(s). All quantities of ACM and/or other regulated materials identified, and all dimensions listed within this report are approximate and should be verified On-site.

This report is generated for the exclusive use of the client and is not designed to serve as a specification for abatement. The owner is strongly encouraged to contract with a consultant having a current Asbestos Project Designer Certificate as issued by New York State Department of Labor for the preparation of contract specifications, work plans, and/or drawings prior to requesting bids for the abatement or removal of the materials identified in this report.

NYSDOH issued an Interim Guidance Letter, on July 9, 2013, which outlined the approved testing alternative for materials containing vermiculite. Specifically, "...Where TSI, surfacing materials, or other PACM or miscellaneous suspect ACM contain greater than 10% vermiculite, Item 198.6 may be used to evaluate the asbestos content of the material; provided, however, that any test results using this method must be reported with the following conspicuous disclaimer: *"This method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite."* On July 22, 2014, NYSDOH issued a Regulatory Guidance Letter outlining the new approved analytical methods for testing sprayed-on fireproofing (SOF-P) that contains vermiculite. NYSDOH authorized the use of **two** analytical methods to evaluate the asbestos content of SOF-P that contains vermiculite. As per NYSDOH Guidelines, *"After October 31, 2014, one of the new methods **must** be used to test SOF-V, regardless of the percent of vermiculite."* On May 6, 2016, NYSDOH issued a Regulatory Guidance Letter outlining the new protocol for analytical procedure for surfacing materials (ie. plaster, stucco, etc.) that contain vermiculite. As per NYSDOH Guidelines, *"The original July 2013 and July 2014 letters addressed SOF-V only. Both NYS DOH's Item 198.8 and Rj Lee Group Method 055 shall now be applied to test for vermiculite in other Surfacing Material (SM) as defined in 12 NYCRR Part 56 (NYS Industrial Code Rule 56)."*

APPENDIX A
ACM LOCATION MAP(S)



ACM LEGEND: (see report for details)	
1A	ACM 9x9 White Floor Tie & Mastic (exposed)
1B	ACM 9x9 White Floor Tie & Mastic (bottom layer)

Adelaide
ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
KG+D Architects, PC
285 Main Street
Mount Kisco, New York 10549

SED Project #
66-01-01-03-0-007-016

SURVEY LOCATION:
Meadow Pond ES
185 Smith Ridge Road
South Salem, New York 10590

DATE: 08/16/2023

DRAWING VERSION: No. 1

ISSUED FOR:
Limited HazMat Survey

ADELAIDE PROJECT NO.:
KGD-RM.23164.05-IN

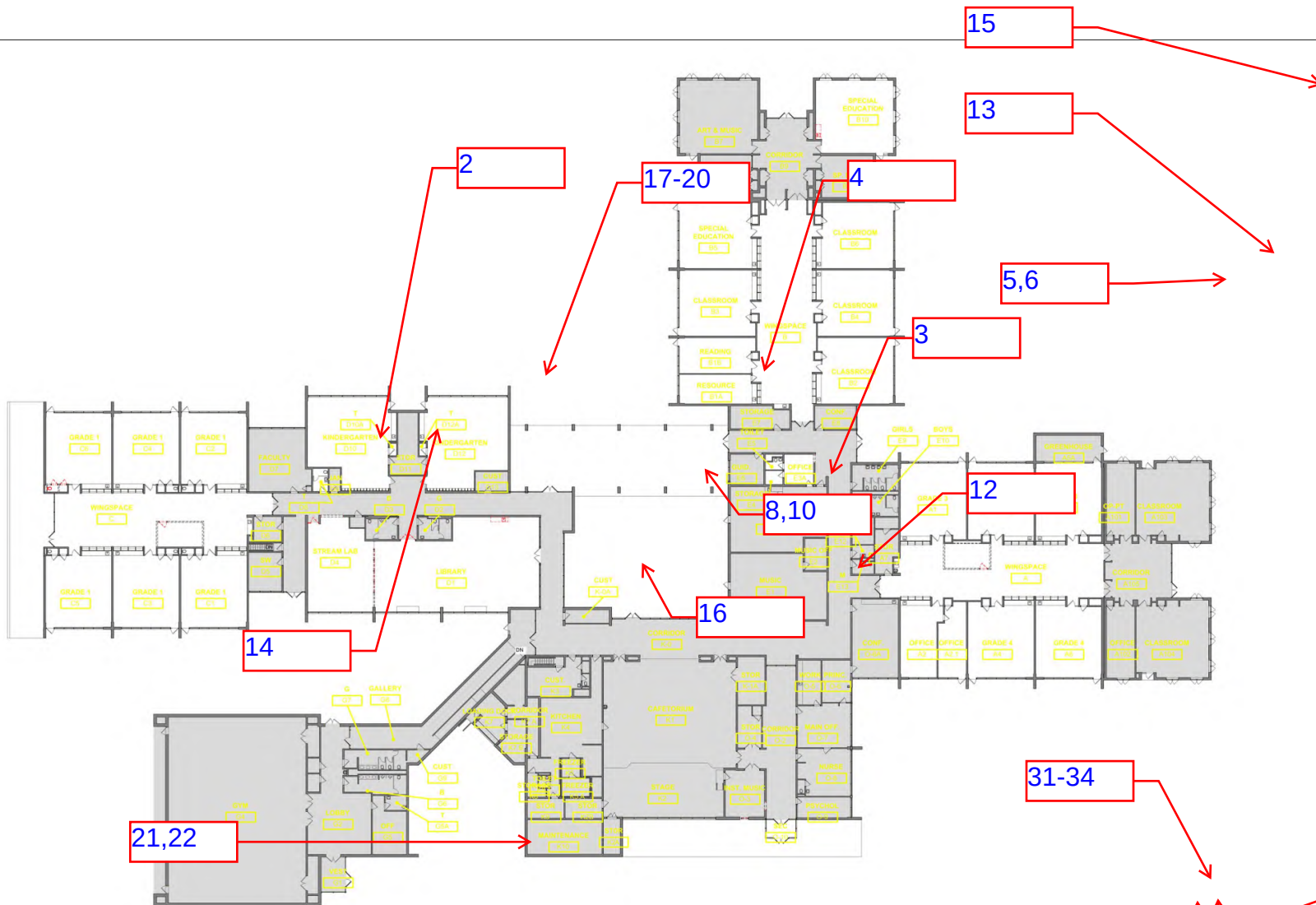
DRAWING PREPARED BY:
PJP

ASB-01

First Floor Key Plan - Limited ACM Locations

ACM locations identified on this drawing are ONLY limited to the scope of work provided
Drawing Not to Scale

APPENDIX B
SAMPLE LOCATION MAP(S)



First Floor Key Plan - Sample Locations
 Drawing Not to Scale



1511 Route 22
 Brewster, NY 10509
 Phone: (845) 278-7710
 Fax: (845) 278-7750

CLIENT:
KG+D Architects, PC
 285 Main Street
 Mount Kisco, New York 10549

SED Project #
66-01-01-03-0-007-016

SURVEY LOCATION:
Meadow Pond ES
 185 Smith Ridge Road
 South Salem, New York 10590

DATE: 08/16/2023

DRAWING VERSION: No. 1

ISSUED FOR
 Limited HazMat SU

ADELAIDE PROJECT NO.:
 KGD-RM-23164-05-IN

BY:

SL-01

1,7,9

11

39-41

23,24

25-30

31-34

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16

14

21,22

17-20

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5,6

3

15

13

12

APPENDIX C
ACM PHOTO(S)

HA 8
Wings
9x9 Floor Tile
6.6% Chrysotile



HA 8
Library
Under Carpet
9x9 Floor Tile
6.6% Chrysotile



HA 8
Computer Lab
Bottom layer under
1x1 Floor Tile
9x9 Floor Tile
6.6% Chrysotile



APPENDIX D
ASBESTOS ANALYTICAL RESULTS

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge Road, South Salem, NY 10590

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	1	1	0.127	21.6	39.2	39.2	NAD	NAD
Location: A Wing, Drop Ceiling, 2 X 2 Dot Textured - Ceiling Tile								
02	2	1	0.180	26.8	42.2	31.0	NAD	NAD
Location: C Wing, Drop Ceiling, 2 X 2 Dot Textured - Ceiling Tile								
03	3	2	0.275	11.2	70.2	18.6	NAD	NAD
Location: Library, Drop Ceiling, 1 X 1 Splined - Ceiling Tile								
04	4	2	0.238	11.5	68.8	19.6	NAD	NAD
Location: Room D12, Drop Ceiling, 1 X 1 Splined - Ceiling Tile								
05	5	3	0.209	27.1	42.3	30.5	NAD	NAD
Location: Room E4, Drop Ceiling, 2 X 2 Dot Speck - Ceiling Tile								
06	6	3	0.210	25.8	36.9	37.3	NAD	NAD
Location: Room E4, Drop Ceiling, 2 X 2 Dot Speck - Ceiling Tile								
07	7	4	----	----	----	----	NAD	NA
Location: A Wing - Sheetrock								
08	8	4	----	----	----	----	NAD	NA
Location: Library - Sheetrock								
09	9	5	----	----	----	----	NAD	NA
Location: A Wing - Joint Compound								
10	10	5	----	----	----	----	NAD	NA
Location: Library - Joint Compound								
11	11	6	----	----	----	----	NAD	NA
Location: A Wing - Brick Wall - Mortar								
12	12	6	----	----	----	----	NAD	NA
Location: Library - Brick Wall - Mortar								
13L1	13	7	0.351	33.6	57.8	8.6	NAD	NAD
Location: B Wing, Cove Base								
13L2	13	7	0.213	69.5	7.2	23.3	NAD	NAD
Location: B Wing, Cove Base - Adhesive								
14L1	14	7	0.333	34.7	55.7	9.6	NAD	NAD
Location: C Wing, Cove Base								
14L2	14	7	0.242	62.7	10.6	26.7	NAD	NAD
Location: C Wing, Cove Base - Adhesive								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge Road, South Salem, NY 10590

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
15L1	15	8	0.297	22.3	21.2	49.9	Chrysotile 6.6	NA
Location: B Wing, Floor, 9 X 9 - Floor Tile								
15L2	15	8	0.086	73.0	12.6	14.4	NAD	NAD
Location: B Wing, Floor, 9 X 9 - Floor Tile Mastic								
16L1	16	8	0.264	25.4	18.7	55.9	NA/PS	NA
Location: Library, Floor, Under Carpet - 9 x 9 Floor Tile								
16L2	16	8	0.111	73.1	8.0	18.9	NAD	NAD
Location: Library, Floor, Under Carpet - 9 x 9 Floor Tile Mastic								
17	17	9	----	----	----	----	NAD	NA
Location: D Wing Adduct Bathroom, Ceramic tile Floor - Grout								
18	18	9	----	----	----	----	NAD	NA
Location: D Wing Adduct Bathroom, Ceramic tile Floor - Grout								
19	19	10	----	----	----	----	NAD	NA
Location: D Wing Adduct Bathroom, Ceramic tile Floor - Mudset								
20	20	10	----	----	----	----	NAD	NA
Location: D Wing Adduct Bathroom, Ceramic tile Floor - Mudset								
21	21	11	----	----	----	----	NAD	NA
Location: Gym, CMU Wall - Mortar								
22	22	11	----	----	----	----	NAD	NA
Location: Gym, CMU Wall - Mortar								
23	23	12	0.204	28.9	57.5	13.6	NAD	NAD
Location: Exterior, Main Entrance, Vestibule, Caulk								
24	24	12	0.293	34.5	58.4	7.2	NAD	NAD
Location: Exterior, Main Entrance, Vestibule, Caulk								
25	25	13	0.184	51.1	32.0	16.8	NAD	Chrysotile Trace
Location: Exterior, Main Entrance, Sidewalk - Caulk								
26	26	13	0.137	52.4	29.6	18.0	NAD	Chrysotile Trace
Location: Exterior, Main Entrance, Sidewalk - Caulk								
27	27	14	----	----	----	----	NAD	NA
Location: Exterior, Main Entrance, Sidewalk - Expansion Joint								
28	28	14	----	----	----	----	NAD	NA
Location: Exterior, Main Entrance, Sidewalk - Expansion Joint								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge Road, South Salem, NY 10590

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
29	29	15	----	----	----	----	NAD	NA
Location: Exterior, Main Entrance, Sidewalk - Concrete								
30	30	15	----	----	----	----	NAD	NA
Location: Exterior, Main Entrance, Sidewalk - Concrete								

Analyzed by: Feyza Gungor
Date: 7/26/2023



Reviewed by: Feyza Gungor



**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples). Analysis using Hitachi, Model H7000-Noran 7 System, Microscope, Serial #: 747-05-06. NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, NJ Lab ID #NY031.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

**AmeriSci New York**

117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Adelaide Environmental Health
Attn: John Soter
1511 Rte. 22 Suite C24

Brewster, NY 10509

Date Received 07/25/23 **AmeriSci Job #** 223073766
Date Examined 07/26/23 **P.O. #**
ELAP # 11480 **Page** 1 **of** 7
RE: KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 1	223073766-01 Location: A Wing, Drop Ceiling, 2 X 2 Dot Textured - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 39.2%			
2 1	223073766-02 Location: C Wing, Drop Ceiling, 2 X 2 Dot Textured - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 31%			
3 2	223073766-03 Location: Library, Drop Ceiling, 1 X 1 Splined - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 18.6%			
4 2	223073766-04 Location: Room D12, Drop Ceiling, 1 X 1 Splined - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 19.6%			
5 3	223073766-05 Location: Room E4, Drop Ceiling, 2 X 2 Dot Speck - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 30.5%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 3	223073766-06 Location: Room E4, Drop Ceiling, 2 X 2 Dot Speck - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 37.3%			
7 4	223073766-07 Location: A Wing - Sheetrock	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: White/Brown, Heterogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 15%, Non-fibrous 85%			
8 4	223073766-08 Location: Library - Sheetrock	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose Trace, Non-fibrous 100%			
9 5	223073766-09 Location: A Wing - Joint Compound	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
10 5	223073766-10 Location: Library - Joint Compound	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
11 6	223073766-11 Location: A Wing - Brick Wall - Mortar	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
12 6	223073766-12 Location: Library - Brick Wall - Mortar	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
13 7	223073766-13L1 Location: B Wing, Cove Base	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 8.6%			
13 7	223073766-13L2 Location: B Wing, Cove Base - Adhesive	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 23.3%			
14 7	223073766-14L1 Location: C Wing, Cove Base	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 9.6%			
14 7	223073766-14L2 Location: C Wing, Cove Base - Adhesive	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 26.7%			
15 8	223073766-15L1 Location: B Wing, Floor, 9 X 9 - Floor Tile	Yes	6.6% (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 6.6 % Other Material: Non-fibrous 49.9%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
15 8	223073766-15L2 Location: B Wing, Floor, 9 X 9 - Floor Tile Mastic	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 14.4%			
16 8	223073766-16L1 Location: Library, Floor, Under Carpet - 9 x 9 Floor Tile		NA/PS
Analyst Description: Bulk Material Asbestos Types: Other Material:			
16 8	223073766-16L2 Location: Library, Floor, Under Carpet - 9 x 9 Floor Tile Mastic	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 18.9%			
17 9	223073766-17 Location: D Wing Adduct Bathroom, Ceramic tile Floor - Grout	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
18 9	223073766-18 Location: D Wing Adduct Bathroom, Ceramic tile Floor - Grout	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
19 10	223073766-19 Location: D Wing Adduct Bathroom, Ceramic tile Floor - Mudset	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20	223073766-20	No	NAD
10	Location: D Wing Adduct Bathroom, Ceramic tile Floor - Mudset		(by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
21	223073766-21	No	NAD
11	Location: Gym, CMU Wall - Mortar		(by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
22	223073766-22	No	NAD
11	Location: Gym, CMU Wall - Mortar		(by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
23	223073766-23	No	NAD
12	Location: Exterior, Main Entrance, Vestibule, Caulk		(by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 13.6%			
24	223073766-24	No	NAD
12	Location: Exterior, Main Entrance, Vestibule, Caulk		(by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 7.2%			
25	223073766-25	No	NAD
13	Location: Exterior, Main Entrance, Sidewalk - Caulk		(by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 16.9%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
26 13	223073766-26 Location: Exterior, Main Entrance, Sidewalk - Caulk	No	NAD (by NYS ELAP 198.6) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 18.1%			
27 14	223073766-27 Location: Exterior, Main Entrance, Sidewalk - Expansion Joint	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Brown, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 80%, Non-fibrous 20%			
28 14	223073766-28 Location: Exterior, Main Entrance, Sidewalk - Expansion Joint	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Brown, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 80%, Non-fibrous 20%			
29 15	223073766-29 Location: Exterior, Main Entrance, Sidewalk - Concrete	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
30 15	223073766-30 Location: Exterior, Main Entrance, Sidewalk - Concrete	No	NAD (by NYS ELAP 198.1) by Kensen Caro on 07/26/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Reporting Notes:

Analyzed by: Kensen Caro
Date: 7/26/2023



Reviewed by: Feyza Gungor



*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Motic, Model BA310 Pol Scope, Microscope, Serial #: 1190000538, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note:PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

_____END OF REPORT_____

Adelaide Environmental Health Associates, Inc

1511 Route 22, Suite C24

Brewster, NY 10509

845-278-7710

845-278-7750 - fax

Site Address: Meadow Pond ES			Date: 07/24/23	Inspector(s) Philip J. Page		
185 Smith Ridge Road						
South Salem, NY 10590			Project #: KGD-RM:23164.05-IN			
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
1	1		A WING, DROP CEILING, 2x2 DOT TEXTURED - CEILING TILE			
2	↓		C WING, ↓			
3	2		LIBRARY, 1x1 SPLINED -			
4	↓		Room D12, ↓			
5	3		Room E4, 2x2 DOT SPECK -			
6	↓		↓ ↓ ↓			
7	4		A WING, - SHEETROCK			
8	↓		LIBRARY - ↓			
9	5		A WING - JOINT COMPOUND			
10	↓		LIBRARY - ↓			
11	6		A WING, BRICK WALL - MORTAR			
12	↓		LIBRARY, - ↓ ↓			
Special Instructions/ Turnaround Time:			Relinquished by: <i>[Signature]</i>			
223073766 Stop at 1st Positive per Homogenous Area 24 HR TAT E-Mail Results to AdelaideLabResults@adelaidellc.com & ppage@adelaidellc.com			Received by: <i>[Signature]</i> 7/25/23 11:08			
			Relinquished by:			
			Received by:			

Adelaide Environmental Health Associates, Inc

1511 Route 22, Suite C24

Brewster, NY 10509

845-278-7710

845-278-7750 - fax

Site Address: Meadow Pond ES			Date: 07/24/23		Inspector(s) Philip J. Page		
185 Smith Ridge Road							
South Salem, NY 10590			Project #: KGD-RM:23164.05-IN				
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd	
13	7		B WING, COVE BASE - ADHESIVE				
14	↓		C WING, ↓ ↓				
15	8		B WING, FLOOR, 9x9 - FLOOR TILE + MASTIC				
16	↓		LIBRARY, ↓, UNDER CARPET - ↓				
17	9		D WING, ADULT BATHROOM, CERAMIC TILE FLOOR - GROUT				
18	↓		↓ ↓ ↓				
19	10		- MUDSET				
20	↓		↓ ↓ ↓				
21	11		GYM, CMU WALL - MORTAR				
22	↓		↓ ↓ ↓				
23	12		EXTERIOR, MAIN ENTRANCE, VESTIBULE - CAULK				
24	↓		↓ ↓ ↓ ↓				

Special Instructions/ Turnaround Time:

223073766

Stop at 1st Positive per Homogenous Area

24 HR TAT

E-Mail Results to AdelaideLabResults@adelaideinc.com & ppage@adelaideinc.com

Relinquished by:

Received by: *J. Veretich* *June Hunt* 7/25/23 11:08

Relinquished by:

Received by:

1511 Route 22, Suite C24
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Page 3 of 3

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge Road, South Salem, NY 10590

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	31	16	----	----	----	----	NAD	NA
Location: Room O-3, Wall - Peg Board								
02	32	16	----	----	----	----	NAD	NA
Location: Room O-3, Wall - Peg Board								
03L1	33	17	0.255	11.1	86.2	2.7	NAD	NAD
Location: Room O-3, Floor, 1 x 1 Red - Floor Tile & Mastic / Tile								
03L2	33	17	0.142	53.0	43.1	4.0	NAD	NAD
Location: Room O-3, Floor, 1 x 1 Red - Floor Tile & Mastic / Mastic								
04L1	34	17	0.295	12.0	85.7	2.4	NAD	NAD
Location: Room O-3, Floor, 1 x 1 Red - Floor Tile & Mastic / Tile								
04L2	34	17	0.165	63.2	33.3	3.6	NAD	NAD
Location: Room O-3, Floor, 1 x 1 Red - Floor Tile & Mastic / Mastic								
05L1	35	18	0.277	15.4	74.8	9.8	NAD	NAD
Location: Room B-10, Floor, 1 x 1 Beige - Floor Tile & Mastic / Tile								
05L2	35	18	0.159	68.1	29.0	2.9	NAD	NAD
Location: Room B-10, Floor, 1 x 1 Beige - Floor Tile & Mastic / Mastic								
06L1	36	18	0.232	14.3	82.6	3.1	NAD	NAD
Location: Room B-10, Floor, 1 x 1 Beige - Floor Tile & Mastic / Tile								
06L2	36	18	0.170	70.9	25.0	4.1	NAD	NAD
Location: Room B-10, Floor, 1 x 1 Beige - Floor Tile & Mastic / Mastic								
07	37	19	0.185	71.7	21.2	7.1	NAD	NAD
Location: Exterior, Room O-3, Window - Caulk								
08	38	19	0.202	71.3	21.2	7.5	NAD	NAD
Location: Exterior, Room O-3, Window - Caulk								
09	39	20	----	----	----	----	Chrysotile 0.8	NA
Location: Exterior, Main Entrance Overhang - Plaster								
10	40	20	----	----	----	----	Chrysotile 0.3	NA
Location: Exterior, Main Entrance Overhang - Plaster								
11	41	20	----	----	----	----	Chrysotile 0.5	NA
Location: Exterior, Main Entrance Overhang - Plaster								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge Road, South Salem, NY 10590

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM

Analyzed by: Khaalid W. Perine
Date: 8/8/2023



Reviewed by: Karol H. Lu



**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples). Analysis using Hitachi, Model H7000-Noran 7 System, Microscope, Serial #: 747-05-06. NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, NJ Lab ID #NY031.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

**AmeriSci New York**

117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Adelaide Environmental Health
Attn: John Soter
1511 Rte. 22 Suite C24

Brewster, NY 10509

Date Received 08/07/23 **AmeriSci Job #** 223081719
Date Examined 08/07/23 **P.O. #**
ELAP # 11480 **Page** 1 of 3
RE: KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
31 16	223081719-01 Location: Room O-3, Wall - Peg Board	No	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/07/23
Analyst Description: White/Brown, Heterogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 90%, Non-fibrous 10%			
32 16	223081719-02 Location: Room O-3, Wall - Peg Board	No	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/07/23
Analyst Description: White/Brown, Heterogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 85%, Non-fibrous 15%			
33 17	223081719-03L1 Location: Room O-3, Floor, 1 x 1 Red - Floor Tile & Mastic / Tile	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Red, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 2.7%			
33 17	223081719-03L2 Location: Room O-3, Floor, 1 x 1 Red - Floor Tile & Mastic / Mastic	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 4%			
34 17	223081719-04L1 Location: Room O-3, Floor, 1 x 1 Red - Floor Tile & Mastic / Tile	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Red, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 2.4%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

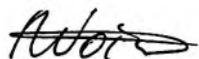
KGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
34 17	223081719-04L2 Location: Room O-3, Floor, 1 x 1 Red - Floor Tile & Mastic / Mastic	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.6%			
35 18	223081719-05L1 Location: Room B-10, Floor, 1 x 1 Beige - Floor Tile & Mastic / Tile	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 9.8%			
35 18	223081719-05L2 Location: Room B-10, Floor, 1 x 1 Beige - Floor Tile & Mastic / Mastic	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 2.9%			
36 18	223081719-06L1 Location: Room B-10, Floor, 1 x 1 Beige - Floor Tile & Mastic / Tile	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.1%			
36 18	223081719-06L2 Location: Room B-10, Floor, 1 x 1 Beige - Floor Tile & Mastic / Mastic	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 4.1%			
37 19	223081719-07 Location: Exterior, Room O-3, Window - Caulk	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 7.1%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos ReportKGD-RM:23164.05-IN; Meadow Pond ES; 185 Smith Ridge
Road, South Salem, NY 10590

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
38 19	223081719-08 Location: Exterior, Room O-3, Window - Caulk	No	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/07/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 7.5%			
39 20	223081719-09 Location: Exterior, Main Entrance Overhang - Plaster	Yes	0.8% (ELAP 400 PC) by Valeriu Voicu on 08/07/23
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Chrysotile 0.8 % Other Material: Cellulose Trace, Non-fibrous 99.2%			
40 20	223081719-10 Location: Exterior, Main Entrance Overhang - Plaster	Yes	0.3% (ELAP 400 PC) by Valeriu Voicu on 08/07/23
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Chrysotile 0.3 % Other Material: Non-fibrous 99.7%			
41 20	223081719-11 Location: Exterior, Main Entrance Overhang - Plaster	Yes	0.5% (ELAP 400 PC) by Valeriu Voicu on 08/07/23
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Chrysotile 0.5 % Other Material: Cellulose Trace, Non-fibrous 99.5%			

Reporting Notes:Analyzed by: Valeriu Voicu
Date: 8/7/2023

Reviewed by: Karol H. Lu



*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 229915, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note:PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

_____END OF REPORT_____

1511 Route 22, Suite C24
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

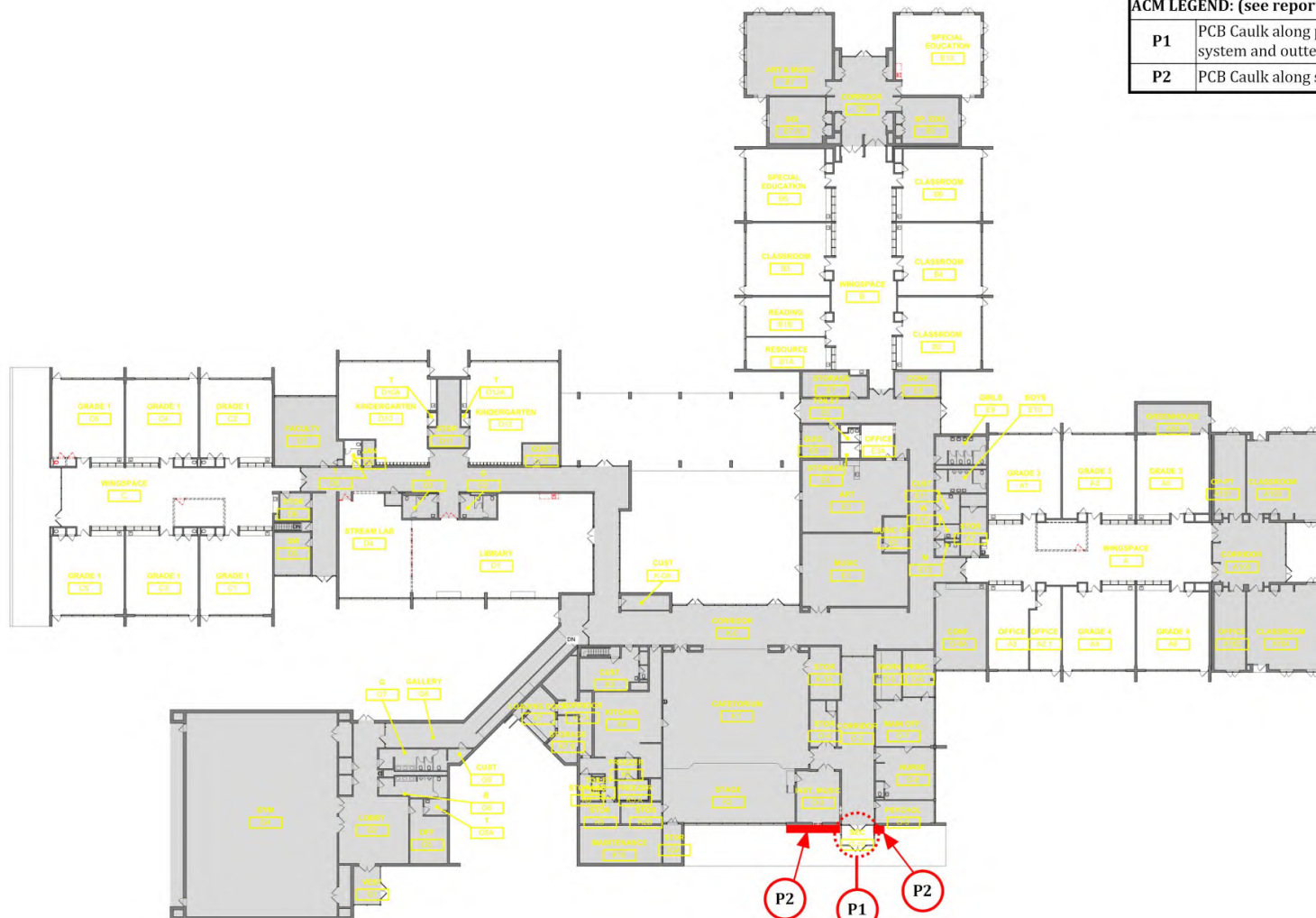
Page 1 of 1

APPENDIX E
XRF READINGS

Reading #	Date	Time	Space Type	Floor	Room	Component	Side	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
1	7/24/2023	7:38:36	School		Calibration						1.1	Positive
2	7/24/2023	7:38:56	School		Calibration						1.1	Positive
3	7/24/2023	7:39:16	School		Calibration						1.1	Positive
4	7/24/2023	7:42:27	School	1st Floor	Multi Purpose Room	Wall	A	CMU	Beige	Intact	0.1	Negative
5	7/24/2023	7:43:01	School	1st Floor	Multi Purpose Room	Structural Beam	Ceiling	Metal	White	Intact	0.2	Negative
6	7/24/2023	7:46:13	School	1st Floor	A Wing	Soffit	Ceiling	Sheetrock	White	Intact	0.2	Negative
7	7/24/2023	7:46:44	School	1st Floor	A Wing	Wall	B	Sheetrock	White	Intact	0.2	Negative
8	7/24/2023	7:47:28	School	1st Floor	A Wing	Wall	C	Sheetrock	White	Intact	0.1	Negative
9	7/24/2023	7:47:48	School	1st Floor	A Wing	Window Case	C	Metal	White	Intact	0	Negative
10	7/24/2023	7:52:33	School	1st Floor	B Wing	Door Case	A	Metal	White	Intact	0.3	Negative
11	7/24/2023	7:53:09	School	1st Floor	B Wing	Soffit	Ceiling	Sheetrock	White	Intact	0	Negative
12	7/24/2023	7:54:00	School	1st Floor	B Wing	Wall	B	Sheetrock	White	Intact	0.1	Negative
13	7/24/2023	7:54:34	School	1st Floor	B Wing	Wall	C	Sheetrock	White	Intact	0.3	Negative
14	7/24/2023	7:57:15	School	1st Floor	Library	Soffit	Ceiling	Sheetrock	White	Intact	0.1	Negative
15	7/24/2023	7:58:00	School	1st Floor	Library	Wall	A	Sheetrock	White	Intact	0.1	Negative
16	7/24/2023	7:59:40	School	1st Floor	D4	Wall	A	Sheetrock	White	Intact	0.6	Negative
17	7/24/2023	8:00:08	School	1st Floor	D4	Wall	B	Sheetrock	White	Intact	-0.1	Negative
18	7/24/2023	8:03:10	School	1st Floor	D12	Soffit	Ceiling	Sheetrock	White	Intact	0.1	Negative
19	7/24/2023	8:03:48	School	1st Floor	D12	Wall	C	Sheetrock	White	Intact	0.1	Negative
20	7/24/2023	8:06:46	School	1st Floor	Bathroom	Wall	A	CMU	White	Intact	0.3	Negative
21	7/24/2023	8:07:11	School	1st Floor	Bathroom	Door Case	A	Metal	White	Intact	0.2	Negative
22	7/24/2023	8:16:19	School	1st Floor	C Wing	Soffit	Ceiling	Sheetrock	White	Intact	0.2	Negative
23	7/24/2023	8:16:48	School	1st Floor	C Wing	Wall	B	Sheetrock	White	Intact	0.1	Negative
24	7/24/2023	8:18:18	School	1st Floor	Corridor	Wall	B	Sheetrock	White	Intact	0	Negative
25	7/24/2023	8:20:35	School	1st Floor	Gym	Wall	A	CMU	Cream	Intact	0	Negative
26	7/24/2023	8:21:35	School	1st Floor	Gym	Structural Beam	A	Metal	Cream	Fair	-0.1	Negative
27	7/24/2023	8:23:49	School	1st Floor	Cafeteria	Wall	C	CMU	White	Intact	0.2	Negative
28	7/24/2023	8:25:57	School		Exterior	Ceiling	Ceiling	Plaster	White	Intact	0.1	Negative
29	7/24/2023	8:26:49	School		Calibration						1.1	Positive
30	7/24/2023	8:27:09	School		Calibration						1	Positive
31	7/24/2023	8:27:29	School		Calibration						1	Positive

Reading #	Date	Time	Space Type	Floor	Room	Component	Side	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
1	8/4/2023	7:48:39	School		Calibration						1	Positive
2	8/4/2023	7:48:53	School		Calibration						1	Positive
3	8/4/2023	7:49:06	School		Calibration						1.1	Positive
4	8/4/2023	7:50:45	School	1st Floor	O-3	Wall	B	Peg Board	White	Intact	0.1	Negative
5	8/4/2023	7:51:03	School	1st Floor	O-3	Wall	C	Sheetrock	White	Fair	0.1	Negative
6	8/4/2023	7:51:32	School	1st Floor	O-3	Radiator Cover	C	Metal	Cream	Intact	0.2	Negative
7	8/4/2023	8:01:14	School	1st Floor	E-3-A	Wall	A	CMU	White	Fair	0.2	Negative
8	8/4/2023	8:01:29	School	1st Floor	E-3-A	Wall	B	CMU	White	Fair	0.3	Negative
9	8/4/2023	8:01:42	School	1st Floor	E-3-A	Wall	D	CMU	White	Fair	0.2	Negative
10	8/4/2023	8:02:10	School	1st Floor	E-3-A	Door Case	A	Metal	White	Intact	0.6	Negative
11	8/4/2023	8:11:47	School	1st Floor	B-10	Door Case	A	Metal	White	Intact	0.1	Negative
12	8/4/2023	8:12:06	School	1st Floor	B-10	Door	A	Metal	Grey	Intact	0.1	Negative
13	8/4/2023	8:12:36	School	1st Floor	B-10	Wall	A	Sheetrock	White	Fair	0.2	Negative
14	8/4/2023	8:12:49	School	1st Floor	B-10	Wall	B	Sheetrock	White	Fair	0.2	Negative
15	8/4/2023	8:23:20	School		Exterior	Ceiling	Ceiling	Plaster	White	Fair	0.1	Negative
16	8/4/2023	8:24:13	School		Calibration						1	Positive
17	8/4/2023	8:24:27	School		Calibration						1	Positive
18	8/4/2023	8:24:41	School		Calibration						1	Positive

APPENDIX F
PCB LOCATION MAP(S)



ACM LEGEND: (see report for details)	
P1	PCB Caulk along perimeter of inner door system and outer curtain wall system
P2	PCB Caulk along sidewalk to the building

Adelaide
ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
KG+D Architects, PC
285 Main Street
Mount Kisco, New York 10549

SED Project #
66-01-01-03-0-007-016

SURVEY LOCATION:
Meadow Pond ES
185 Smith Ridge Road
South Salem, New York 10590

DATE: 08/16/2023

DRAWING VERSION: No. 1

ISSUED FOR:
Limited HazMat Survey

ADELAIDE PROJECT NO.:
KGD-RM.23164.05-IN

DRAWING PREPARED BY:
PJP

PCB-01

First Floor Key Plan - Limited PCB Locations

PCB locations identified on this drawing are ONLY limited to the scope of work provided
Drawing Not to Scale

APPENDIX G
PCB ANALYTICAL RESULTS



Tuesday, August 01, 2023

Attn: Stephanie Soter
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Project ID: KGD-RM-23164.05-IN
SDG ID: GCO58058
Sample ID#s: CO58058 - CO58059

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Sample Id Cross Reference

August 01, 2023

SDG I.D.: GCO58058

Project ID: KGD-RM-23164.05-IN

Client Id	Lab Id	Matrix
P1	CO58058	CAULK
P2	CO58059	CAULK



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Report

August 01, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

Matrix: CAULK
Location Code: ADELAIDE
Rush Request: Standard
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

07/24/23

Time

16:20

Laboratory Data

SDG ID: GCO58058
Phoenix ID: CO58058

Project ID: KGD-RM-23164.05-IN
Client ID: P1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				07/26/23	/R/AC1/M	SW3540C
<u>PCB (Soxhlet SW3540C)</u>							
PCB-1016	ND	57000	ug/Kg	100	07/28/23	SC	SW8082A
PCB-1221	ND	57000	ug/Kg	100	07/28/23	SC	SW8082A
PCB-1232	ND	57000	ug/Kg	100	07/28/23	SC	SW8082A
PCB-1242	ND	57000	ug/Kg	100	07/28/23	SC	SW8082A
PCB-1248	ND	57000	ug/Kg	100	07/28/23	SC	SW8082A
PCB-1254	320000	57000	ug/Kg	100	07/28/23	SC	SW8082A
PCB-1260	ND	57000	ug/Kg	100	07/28/23	SC	SW8082A
PCB-1262	ND	57000	ug/Kg	100	07/28/23	SC	SW8082A
PCB-1268	ND	57000	ug/Kg	100	07/28/23	SC	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	Diluted Out		%	100	07/28/23	SC	30 - 150 %
% DCBP (Confirmation)	Diluted Out		%	100	07/28/23	SC	30 - 150 %
% TCMX	Diluted Out		%	100	07/28/23	SC	30 - 150 %
% TCMX (Confirmation)	Diluted Out		%	100	07/28/23	SC	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL

BRL=Below Reporting Level L=Biased Low

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

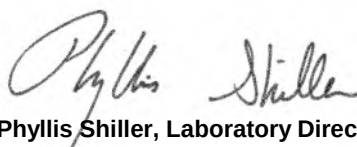
Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.

The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

August 01, 2023

Reviewed and Released by: Phyllis Shiller, Laboratory Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Report

August 01, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

Matrix: CAULK
Location Code: ADELAIDE
Rush Request: Standard
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

07/24/23

Time

16:20

Laboratory Data

SDG ID: GCO58058
Phoenix ID: CO58059

Project ID: KGD-RM-23164.05-IN
Client ID: P2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				07/26/23	/R/AC1/M	SW3540C
<u>PCB (Soxhlet SW3540C)</u>							
PCB-1016	ND	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
PCB-1221	ND	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
PCB-1232	ND	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
PCB-1242	ND	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
PCB-1248	ND	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
PCB-1254	34000000	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
PCB-1260	ND	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
PCB-1262	ND	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
PCB-1268	ND	8100000	ug/Kg	20000	07/28/23	SC	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	Diluted Out		%	20000	07/28/23	SC	30 - 150 %
% DCBP (Confirmation)	Diluted Out		%	20000	07/28/23	SC	30 - 150 %
% TCMX	Diluted Out		%	20000	07/28/23	SC	30 - 150 %
% TCMX (Confirmation)	Diluted Out		%	20000	07/28/23	SC	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low

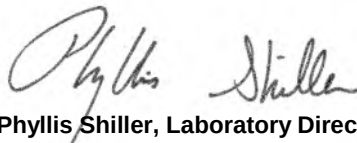
QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

August 01, 2023

Reviewed and Released by: Phyllis Shiller, Laboratory Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102



QA/QC Report

August 01, 2023

QA/QC Data

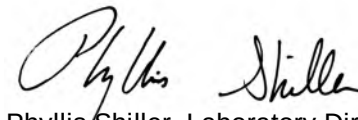
SDG I.D.: GCO58058

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 688729 (ug/Kg), QC Sample No: CO55866 10X (CO58058, CO58059)										
<u>Polychlorinated Biphenyls</u>										
PCB-1016	ND	170	100	90	10.5				40 - 140	30
PCB-1221	ND	170							40 - 140	30
PCB-1232	ND	170							40 - 140	30
PCB-1242	ND	170							40 - 140	30
PCB-1248	ND	170							40 - 140	30
PCB-1254	ND	170							40 - 140	30
PCB-1260	ND	170	103	96	7.0				40 - 140	30
PCB-1262	ND	170							40 - 140	30
PCB-1268	ND	170							40 - 140	30
% DCBP (Surrogate Rec)	124	%	104	111	6.5				30 - 150	30
% DCBP (Surrogate Rec) (Confirm)	101	%	139	83	50.5				30 - 150	30 r
% TCMX (Surrogate Rec)	113	%	104	90	14.4				30 - 150	30
% TCMX (Surrogate Rec) (Confirm)	97	%	112	83	29.7				30 - 150	30

r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference


Phyllis Shiller, Laboratory Director
August 01, 2023

Tuesday, August 01, 2023

Criteria: None

State: NY

Sample Criteria Exceedances Report

GCO58058 - ADELAIDE

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CO58058	\$PCB_SOXR	PCB-1268	NY / Requested PCB RL /	ND	57000	1000	1000	ug/Kg
CO58058	\$PCB_SOXR	PCB-1221	NY / Requested PCB RL /	ND	57000	1000	1000	ug/Kg
CO58058	\$PCB_SOXR	PCB-1232	NY / Requested PCB RL /	ND	57000	1000	1000	ug/Kg
CO58058	\$PCB_SOXR	PCB-1242	NY / Requested PCB RL /	ND	57000	1000	1000	ug/Kg
CO58058	\$PCB_SOXR	PCB-1248	NY / Requested PCB RL /	ND	57000	1000	1000	ug/Kg
CO58058	\$PCB_SOXR	PCB-1254	NY / Requested PCB RL /	320000	57000	1000	1000	ug/Kg
CO58058	\$PCB_SOXR	PCB-1260	NY / Requested PCB RL /	ND	57000	1000	1000	ug/Kg
CO58058	\$PCB_SOXR	PCB-1016	NY / Requested PCB RL /	ND	57000	1000	1000	ug/Kg
CO58058	\$PCB_SOXR	PCB-1262	NY / Requested PCB RL /	ND	57000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1268	NY / Requested PCB RL /	ND	8100000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1221	NY / Requested PCB RL /	ND	8100000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1232	NY / Requested PCB RL /	ND	8100000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1242	NY / Requested PCB RL /	ND	8100000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1248	NY / Requested PCB RL /	ND	8100000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1254	NY / Requested PCB RL /	34000000	8100000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1260	NY / Requested PCB RL /	ND	8100000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1262	NY / Requested PCB RL /	ND	8100000	1000	1000	ug/Kg
CO58059	\$PCB_SOXR	PCB-1016	NY / Requested PCB RL /	ND	8100000	1000	1000	ug/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Comments

August 01, 2023

SDG I.D.: GCO58058

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



NY Temperature Narration

August 01, 2023

SDG I.D.: GCO58058

The samples in this delivery group were received at 1.9°C.
(Note acceptance criteria for relevant matrices is above freezing up to 6°C)

1.9 we
ipok

Page 1 of 1

Phoenix Environmental Laboratories, Inc.

587 East Middle Turnpike, PO Box 370
Manchester, CT 06040
ph. (860) 645-1102
fx. (860) 645-0823

Field Chain-of-Custody Record

Phoenix Project No. _____

Analysis Turnaround: 7 Day

Company: Adelaide Environmental
1511 Route 22, Suite C24
Brewster, NY 10509

Sampled By (Print): Philip J. Page

Sampled By (Sign): [Signature]

Invoice to: Stephanie Soter

Project #: KGD-RM:23164.05-IN

Results Send Via: AdelaideLabResults@adelaidellc.com

Project ID: Meadow Pond ES - Bond Work

Cc Results: ppage@adelaidellc.com

SAMPLE #	LOCATION	SAMPLE DATE	MATRIX	ANALYSIS REQUESTED	CONTAINER
P1	Exterior, Main Entrance, Vestibule Curtain Wall, along perimeter	7/24/2023	Caulk	PCB	BAG 58058
P2	Exterior, Main Entrance, Sidewalk, along building	7/24/2023	Caulk	PCB	BAG 58059

Comments

<u>[Signature]</u> Samples Relinquished By	<u>7/24/23</u> Date/Time	<u>[Signature]</u> Samples Received By Lab	<u>7/25/23</u> Date/Time	Cool 4°C ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ NONE ☐ FROZEN ☐
				Temperature on Receipt _____ °C

[Signature]

[Signature] 7/25 16:20



Monday, August 14, 2023

Attn: Philip Page
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Project ID: MEADOW POND ES-BOND WORK
SDG ID: GCO67896
Sample ID#s: CO67896

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Monday, August 14, 2023

Criteria: None

State: NY

Sample Criteria Exceedances Report
GCO67896 - ADELAIDE

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CO67896	\$PCB_SOXR	PCB-1254	NY / Requested PCB RL /	11000	980	1000	1000	ug/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Sample Id Cross Reference

August 14, 2023

SDG I.D.: GCO67896

Project ID: MEADOW POND ES-BOND WORK

Client Id	Lab Id	Matrix
P3	CO67896	CAULK



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Report

August 14, 2023

FOR: Attn: Philip Page
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

Matrix: CAULK
Location Code: ADELAIDE
Rush Request: Standard
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

08/04/23

Time

16:30

Laboratory Data

SDG ID: GCO67896
Phoenix ID: CO67896

Project ID: MEADOW POND ES-BOND WORK
Client ID: P3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				08/10/23		R/AC1/AVSW3540C
<u>PCB (Soxhlet SW3540C)</u>							
PCB-1016	ND	980	ug/Kg	1	08/11/23	SC	SW8082A
PCB-1221	ND	980	ug/Kg	1	08/11/23	SC	SW8082A
PCB-1232	ND	980	ug/Kg	1	08/11/23	SC	SW8082A
PCB-1242	ND	980	ug/Kg	1	08/11/23	SC	SW8082A
PCB-1248	ND	980	ug/Kg	1	08/11/23	SC	SW8082A
PCB-1254	11000	980	ug/Kg	1	08/11/23	SC	SW8082A
PCB-1260	ND	980	ug/Kg	1	08/11/23	SC	SW8082A
PCB-1262	ND	980	ug/Kg	1	08/11/23	SC	SW8082A
PCB-1268	ND	980	ug/Kg	1	08/11/23	SC	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	69		%	1	08/11/23	SC	30 - 150 %
% DCBP (Confirmation)	63		%	1	08/11/23	SC	30 - 150 %
% TCMX	53		%	1	08/11/23	SC	30 - 150 %
% TCMX (Confirmation)	55		%	1	08/11/23	SC	30 - 150 %

Client ID: P3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low

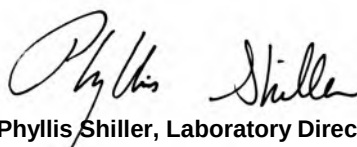
QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

August 14, 2023

Reviewed and Released by: Anil Makol, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102



QA/QC Report

August 14, 2023

QA/QC Data

SDG I.D.: GCO67896

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 691790 (ug/Kg), QC Sample No: CO67619 10X (CO67896)										
<u>Polychlorinated Biphenyls</u>										
PCB-1016	ND	170	82	49	50.4				40 - 140	30 r
PCB-1221	ND	170							40 - 140	30
PCB-1232	ND	170							40 - 140	30
PCB-1242	ND	170							40 - 140	30
PCB-1248	ND	170							40 - 140	30
PCB-1254	ND	170							40 - 140	30
PCB-1260	ND	170	83	44	61.4				40 - 140	30 r
PCB-1262	ND	170							40 - 140	30
PCB-1268	ND	170							40 - 140	30
% DCBP (Surrogate Rec)	101	%	101	60	50.9				30 - 150	30 r
% DCBP (Surrogate Rec) (Confirm)	89	%	89	47	61.8				30 - 150	30 r
% TCMX (Surrogate Rec)	83	%	84	48	54.5				30 - 150	30 r
% TCMX (Surrogate Rec) (Confirm)	85	%	87	51	52.2				30 - 150	30 r

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference

Phyllis Shiller, Laboratory Director
August 14, 2023



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Comments

August 14, 2023

SDG I.D.: GCO67896

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



NY Temperature Narration

August 14, 2023

SDG I.D.: GCO67896

The samples in this delivery group were received at 1.7°C.
(Note acceptance criteria for relevant matrices is above freezing up to 6°C)

APPENDIX H
PERSONNEL AND LABORATORY CERTIFICATIONS

WE ARE YOUR DOL



**Department
of Labor**

DIVISION OF SAFETY & HEALTH LICENSE AND CERTIFICATE UNIT, STATE OFFICE CAMPUS, BLDG. 12, ALBANY, NY 12226

ASBESTOS HANDLING LICENSE

Adelaide Environmental Health Associates, Inc.
1511 Route 22, Suite C24, Brewster, NY, 10509

License Number: 29305

License Class: RESTRICTED

Date of Issue: 06/07/2023

Expiration Date: 07/31/2024

Duly Authorized Representative: John Soter

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Amy Phillips, Director
For the Commissioner of Labor

EXCELSIOR

United States Environmental Protection Agency

This is to certify that

ADELAIDE ENVIRONMENTAL HEALTH ASSOCIATES
INC

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires September 08, 2025

LBP-15081-2

Certification #

August 25, 2022

Issued On



A handwritten signature in black ink, appearing to read "Michelle Price", is positioned above the official title of the signatory.

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that



Adelaide Environmental Health Associates, Inc

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint renovation, repair, and painting activities pursuant to 40 CFR Part 745.89

In the Jurisdiction of:

All EPA Administered States, Tribes, and Territories

This certification is valid from the date of issuance and expires December 05, 2027

NAT-15081-3

Certification #

August 03, 2022

Issued On



A handwritten signature in black ink that reads "Michelle Price".

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE



PHILIP J PAGE

CLASS(EXPIRES)

C ATEC(05/24) D INSP(05/24)

H PM (05/24) I PD (05/24)

CERT# 12-10888
DMV# 216687928

MUST BE CARRIED ON ASBESTOS PROJECTS



01213 006774130 62

EYES BRO

HAIR BLN

HGT 6' 00"

IF FOUND RETURN TO:

NYSOL - L&C UNIT

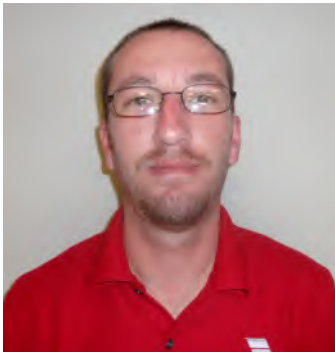
ROOM 161A BUILDING 12

STATE OFFICE CAMPUS

ALBANY NY 12240

United States Environmental Protection Agency

This is to certify that



Philip J Page

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Inspector

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

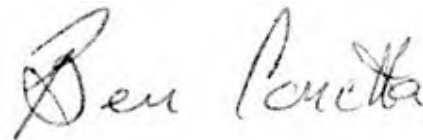
This certification is valid from the date of issuance and expires March 23, 2026

LBP-I-1172697-3

Certification #

January 25, 2023

Issued On



Ben Conetta, Chief

Chemicals and Multimedia Programs Branch

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. KAROL H. LU
AMERICA SCIENCE TEAM NEW YORK, INC
117 EAST 30TH ST
NEW YORK, NY 10016

NY Lab Id No: 11480

*is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:*

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual



Serial No.: 66402

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at <https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/>, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. PHYLLIS SHILLER
PHOENIX ENVIRONMENTAL LABS
587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

NY Lab Id No: 11301

*is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:*

Polychlorinated Biphenyls

Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1262 (PCB-1262) in Oil	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A
Aroclor 1268 (PCB-1268) in Oil	EPA 8082A
PCB 101	EPA 8082A
PCB 105	EPA 8082A
PCB 118	EPA 8082A
PCB 128	EPA 8082A
PCB 138	EPA 8082A
PCB 153	EPA 8082A
PCB 170	EPA 8082A
PCB 18	EPA 8082A
PCB 180	EPA 8082A
PCB 183	EPA 8082A
PCB 184	EPA 8082A
PCB 187	EPA 8082A
PCB 195	EPA 8082A
PCB 206	EPA 8082A
PCB 209	EPA 8082A
PCB 28	EPA 8082A
PCB 44	EPA 8082A
PCB 49	EPA 8082A
PCB 52	EPA 8082A
PCB 66	EPA 8082A
PCB 8	EPA 8082A
PCB 87	EPA 8082A
PCB Congeners, Total	EPA 8082A

Serial No.: 66336

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NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. PHYLLIS SHILLER
PHOENIX ENVIRONMENTAL LABS
587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

NY Lab Id No: 11301

*is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved analytes are listed below:*

Acrylates

Acrylonitrile	EPA TO-15
Methyl methacrylate	EPA TO-15

Chlorinated Hydrocarbons

1,2,4-Trichlorobenzene	EPA TO-15
Hexachlorobutadiene	EPA TO-15
Hexachloroethane	EPA TO-15

Metals I

Lead, Total	EPA 29 (6010)
	EPA 7010

Polychlorinated Biphenyls

PCBs and Aroclors	EPA TO-10A

Polynuclear Aromatics

Naphthalene	EPA TO-15

Purgeable Aromatics

1,2,4-Trimethylbenzene	EPA TO-15
1,2-Dichlorobenzene	EPA TO-15
1,3,5-Trimethylbenzene	EPA TO-15
1,3-Dichlorobenzene	EPA TO-15
1,4-Dichlorobenzene	EPA TO-15
2-Chlorotoluene	EPA TO-15
Benzene	EPA TO-15
Chlorobenzene	EPA TO-15
Ethyl benzene	EPA TO-15
Isopropylbenzene	EPA TO-15
m/p-Xylenes	EPA TO-15

Serial No.: 66338

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**LIMITED RENOVATION SURVEY
FOR
ASBESTOS-CONTAINING MATERIALS, LEAD-BASED PAINT & PCBs**

PERFORMED AT:

Increase Miller Elementary School
186 Waccabuc Road
Goldens Bridge, New York 10526
Adelaide Project# KGD-RM:23164.03-IN
SED# 66-01-01-03-0-004-017

PREPARED FOR:

Richard Markgraf, Assoc. AIA
KG+D Architects, PC
285 Main Street
Mount Kisco, New York 10549

PREPARED BY:

Philip J. Page
August 1, 2023

REVIEWED BY:



Stephanie A. Soter
President

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1.0 Introduction

1.1 Scope of Work / Project Personnel

Adelaide Environmental Health Associates, Inc. (**Adelaide**) performed an Asbestos, Lead and PCB Survey for Building/Structure Demolition, Renovation, Remodeling and/or Repair, in conformance with ALL Federal, State and Local regulations for KG+D Architects, PC:

SURVEY LOCATION(S):	Increase Miller Elementary School 186 Waccabuc Road, Goldens Bridge, New York 10526
SURVEY DATE(S):	July 27 & 31, 2023
SCOPE OF WORK:	Additions + Alterations Bond Work
SCOPE OF WORK BUILDING/	Prepared by: KG+D Architects, PC
STRUCTURE PLANS UTILIZED:	Consolidated Design Set Dated: June 09, 2023
CERTIFIED ADELAIDE	Philip J. Page (NYS Asbestos Inspector/Cert. #12-10888 and EPA
PERSONNEL:	Lead-based Paint Inspector/Cert. #LBP-I-1172697-1)
SITE CONTACT(S):	Rich Wilson (head custodian)

1.2 Executive Summary

On July 27, 2023, **Adelaide** inspected various areas throughout the school that will be affected by the proposed scope of work for suspect ACM, LBP and PCBs.

SUSPECT HAZARDOUS MATERIAL	SAMPLE(S)/LAYER(S)/ READING(S) COLLECTED	SAMPLE(S) / HOMOGENEOUS AREA(S) IDENTIFIED POSITIVE
Asbestos-containing Materials (ACM):	71	5
Lead-based Paint (LBP):	32 (plus calibrations)	0
PolyChlorinated Biphenyls (PCB):	1	0

NOTE: The flooring in the cafeteria was abated in 2017 with non-ACM floor tiles installed. The flooring was also abated in the computer lab and room C8. The roofs of the entire school were abated, and non-ACM EPDM roofs were installed. As per Rich Wilson, head custodian of the school, non-ACM sheet flooring was installed over the ACM 9x9 floor tile within the hallways throughout, and visually confirmed. ACM mudded fittings were observed to be abated in the kitchen areas and in computer lab.

There are **asbestos materials that will be impacted** by this scope of work as described in section 1.1. These materials are listed in section 2.1.

1.3 Conclusions and Recommendations

The following conclusions and recommendations are prepared by **Adelaide** as per the provided scope of work for Building/Structure Demolition, Renovation, Remodeling and/or Repair. Should the scope of work change, it is recommended that the findings be revisited to determine if additional sampling will be required to satisfy ALL Federal, State and Local regulations.

The materials sampled, as part of this survey, were limited to building materials potential affected by the provided scope of work only. All building materials outside the scope of work that have the potential to be disturbed, impacted, or if the scope of work is to change, are to be presumed asbestos-containing materials (PACM). Identified PACM **must** either be sampled by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of by a licensed NYS Asbestos Abatement Contractor.

1.4 Asbestos-containing Materials (ACM)

- This survey concluded that the materials listed in Section 2.1 tested ***positive for asbestos***.
- There are asbestos materials that will be impacted by this scope of work. These materials are listed in section 2.1. Refer to Appendix A for the approximate location of the above materials in the affected scope of work.
- Subpart 56-5(h) of 12 NYCRR Part 56 requires that no demolition, renovation, remodeling, or repair work be commenced by any owner or the owner's agent prior to the completion of asbestos abatement. Asbestos abatement must be performed by an asbestos abatement contractor that maintains a current asbestos handling license and employs NYSDOL/NYCDEP certified asbestos handlers and supervisors. It is recommended that a 12 NYCRR 56 certified Project Monitor oversee abatement activities.
- Subpart 56-5(g) of 12 NYCRR Part 56 specifies requirements for transmittal of asbestos survey information by the owner or owner's agent. (1) One copy of the asbestos survey report shall be sent to the local government entity charged with issuing a permit for such demolition, renovation, remodeling, or repair work under applicable State or local laws. (2) If controlled demolition or pre-demolition activities will be performed, one copy of the asbestos survey report shall be submitted to the appropriate Asbestos Control Bureau district office. (3) One copy of the asbestos survey report must be kept on the construction site throughout the duration of the asbestos project and any associated demolition, renovation, remodeling, or repair project.

1.5 Lead-based Paint (LBP)

- This survey concluded that the readings summarized in Section 2.3 and Appendix E tested ***negative for lead-based paint***.

1.6 PolyChlorinated Biphenyls (PCB)

- This survey concluded that the materials listed in Section 2.4 tested ***negative for PCBs***.

2.0 Summary of Hazardous Materials

2.1 Summary of Identified ACM/PACM

KEY: **ACM** = Materials containing greater than 1% of asbestos; **HA** = Homogeneous Area; **LF** = Linear Feet; **SF** = Square Feet; **PACM** = Presumed Asbestos-containing Materials; **Friable** = ACM capable of being released into air, and which can be crumbled, pulverized, powdered, crushed or exposed by hand-pressure; ^A = Material is considered non-friable solely in an intact and undisturbed state, however, may be rendered friable if pulverized or crumbled while in dry state.

Samples collected by **Adelaide** July 27 & 31, 2023

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
10	9x9 White Floor Tile & Mastic	Music Room (bottom layer)	260 SF	Good	No
		Main Entrance Hallway (bottom layer)	NQ	Good	No
		Hallway outside Café (bottom layer)	NQ	Good	No
		A-Wing Corridor	2,200 SF	Good	No
		A-Wing, Room A8	200 SF	Good	No
		B-Wing Conference Room	200 SF	Good	No
		B-Wing Corridor	2,200 SF	Good	No
		D-Wing Corridor	2,200 SF	Good	No
12	Window Caulk (along sides of curtain wall system to brick facade)	Exterior, A-Wing	90 LF	Damaged	No
		Exterior, B-Wing	90 LF	Damaged	No
		Exterior, K-1 & K-2	30 LF	Damaged	No
		Exterior, D-Wing	90 LF	Damaged	No
13	Tar (along brick)	Exterior, Main Entrance, Concrete Pad	2 SF	Good	No
14	Expansion Joint		8 SF	Good	No

2.2 Summary of Identified Non-ACM

Samples collected by **Adelaide** July 27 & 31, 2023

Identified Non-ACM	Sample Location(s) & HA's
Acoustical Tiles	Music Room (ceiling and walls)
2x2 Dot Textured Ceiling Tile	Throughout School
2x2 Dot Speck Ceiling Tile	Library
	D-Wing Trailer Area
Sheetrock & Joint Compound	Throughout School
Brick Mortar	Throughout School
CMU Mortar	Throughout School
Grey Cove Base & Adhesive	Throughout School
Brown Cove Base & Adhesive	Throughout School
1x1 White w/ Blue Floor Tile & Mastic	Library
Concrete Filler (rubberized)	Exterior, Main Entrance
Asphalt (paving)	Exterior, Main Entrance
	Exterior, Rear Playground

Identified Non-ACM	Sample Location(s) & HA's
Sheetrock Panels	D-Wing Trailer
Sheet Flooring	D-Wing Trailer Lobby
Leveling Compound	D-Wing Trailer Lobby
1x1 Beige Floor Tile & Mastic	D-Wing Trailer Bathrooms
1x1 White w/ Beige Floor Tile & Mastic	D-Wing, Room D8
Shingle (top layer)	Exterior, D-Wing Trailer, Rear Deck Roof
Tar Paper (bottom layer)	
Sheetrock & Joint Compound	1997 Addition, Gym
CMU Mortar	
Ceramic Tile Grout & Mudset	Bathrooms Throughout
Plaster	Exterior, Main Entrance, Overhang

2.3 Summary of Identified LBP

Based on review of the data generated by the Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s), the following surfaces tested were identified as lead-based, as defined by HUD/EPA (equal to or in excess of 1.0 milligram per square centimeter):

Readings collected by **Adelaide** July 27, 2023

Location of LBP	LBP Component	Substrate	Color	Condition	Readings (mg/cm ²)
<i>NO Lead-based Paints identified above HUD/EPA standards of readings collected in reference to the above-mentioned scope of work.</i>					

2.4 Summary of Identified PCB-containing Materials

Samples collected by **Adelaide** July 27, 2023

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
<i>NO PCB-containing materials were identified above the USEPA 40 CFR 761 threshold of 50 ppm(mg/kg) of samples collected/analyzed in reference to the above-mentioned scope of work.</i>					

2.5 Observations

ASBESTOS-CONTAINING MATERIALS (ACM)

A visual inspection was performed, and homogeneous material types were established based on appearance, color and texture. The findings presented in this report are based upon reasonably available information and observed site conditions at the time the assessment was performed. The findings and conclusions of this report are not meant to be indicative of future conditions at the site and does not warrant against conditions that were not evident from visual observations or historical information obtained from others.

On July 27, 2023, representative bulk sampling was performed on suspect building materials for laboratory analysis and the following is a summary of installed building materials sampled as per the scope of work provided:

- Ceiling Materials – Acoustical Tiles, Ceiling Tiles, Sheetrock, Joint Compound, Overhang Plaster.
- Wall Materials – Sheetrock, Joint Compound, Cove Base & Adhesive, Brick Mortar, CMU Mortar.
- Flooring Materials – Floor Tile & Mastic (multiple types), Sheet Flooring, Leveling Compound, Ceramic Tile Grout & Mudset.
- Roofing Materials – Shingle, Tar Paper.
- Miscellaneous Materials – Window Caulk, Misc. Tar, Expansion Joint, Asphalt.
- Non-suspect Materials (not sampled) – Fiberglass Insulation, Silicone, Wood, Glass, Metal.

3.0 Asbestos-containing Materials (ACM)

3.1 Field Procedures and Analysis Methodology

Guidelines used for the inspection were established by the U.S. Environmental Protection Agency (EPA) in the Guidance for Controlling Asbestos Containing Materials in Buildings, Office of Pesticides and Toxic Substances, DOC# 560/5-85-024 and 40 CFR Part 763, Asbestos Hazard Emergency Response Act (AHERA) and Title 12 NYCRR Part 56-5.1. Field information was organized as per the AHERA concept of a homogeneous area (HA); that is, suspect Asbestos-containing Materials (ACM) with similar age, appearance, and texture were grouped together, sampled and assessed for condition.

For the purposes of this inspection, suspect ACM has been placed in three material categories: thermal, surfacing, and miscellaneous. 1) Surfacing materials are those that are sprayed on, troweled on or otherwise applied to surfaces for fireproofing, acoustical, or decorative purposes (e.g., wall and ceiling plaster). 2) Thermal materials are those applied to heat pipes or other structural components to prevent heat loss or gain or prevent water condensation (e.g., pipe and fitting insulation, duct insulation, boiler flue). 3) Miscellaneous materials are interior building materials on structural components, structural members or fixtures, such as floor and ceiling tiles, etc. and do not include surfacing material or thermal system insulation.

SURFACING MATERIALS

Surfacing materials were grouped into homogeneous sampling areas. A homogeneous area contains material that is uniform in color and texture and appears identical in every other respect. Materials installed at different times belong to different sampling areas. Homogeneous areas were determined on per floor basis.

The following protocol was used for determining the number of samples to be collected:

- At least three bulk samples were collected from each homogeneous area that is 1,000 square feet or less.
- At least five bulk samples were collected from each homogeneous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
- At least seven bulk samples were collected from each homogeneous area that is greater than 5,000 square feet.

THERMAL SYSTEM INSULATION (TSI)

The concept of homogeneous sampling areas applies equally well to thermal insulation as to surfacing material. A "typical" building may contain multiple insulated pipe runs from any combination of the following categories:

- Hot water supply and/or return
- Cold water supply
- Chilled water supply
- Steam supply and/or return
- Roof or system drain

The following protocol was used for determining the number of samples to be collected.

- Collect at least three bulk samples from each homogeneous area of thermal system insulation.
- Collect at least one bulk sample from each homogeneous area of patched thermal system insulation if the patched section is less than 6 linear or square feet.
- In a manner sufficient to determine whether the material is ACM or not ACM, collect a minimum of three bulk samples from each homogeneous insulated mechanical system tee, elbow, and valve.

Bulk samples are not collected from any homogeneous area where the certified inspector has determined that the thermal system insulation is fiberglass, foam glass, or rubber.

MISCELLANEOUS MATERIALS

Miscellaneous materials are grouped into different homogeneous areas and at least two bulk samples are collected from each homogeneous area as per the clarification letter from the EPA and the Professional Abatement Contractors of New York, Inc in November of 2007.

Samples collected were analyzed by a laboratory approved under the New York State Department of Health Environmental Laboratory Approval Program (NYSDOH ELAP). Samples were analyzed in the laboratory by Polarized Light Microscopy (PLM), Polarized Light Microscopy-NOB (PLM-NOB) and/or Quantitative Transmission Electron Microscopy (QTEM), as required. Sample collection and laboratory analysis were conducted in compliance with the requirements of Title 12 NYCRR Part 56-5.1, 29 CFR 1926.1101 and standard EPA & OSHA accepted methods. Samples consisting of multiple layers were separated and analyzed independently in the laboratory.

3.2 Regulatory Guidelines and Requirements for ACM

FEDERAL

In accordance with the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) established National Emission Standards for hazardous Air Pollutants (NESHAP) to protect the public from exposure to airborne pollutants. Asbestos was one of the air pollutants, which was addressed under the NESHAP 40 CFR Part 61. The purpose of asbestos NESHAP regulations is to protect the public health by minimizing the release of asbestos when facilities, which contain ACM, are being renovated or demolished. EPA is responsible for enforcing regulations related to asbestos during renovations and demolition, however, the CAA allows the EPA to delegate this authority to State and Local Agencies. Even after EPA delegate's responsibility to a state or Local agency, EPA retains the authority to oversee agency performance and to enforce NESHAP regulations as appropriate.

NEW YORK STATE

Asbestos in New York State is regulated under the Labor Law Section 906, Part 56 of Title 12 of the Official Compilation of Codes, Rules, and Regulations. Within the department and for the purpose of the Department of Labor, this part (rule) is known as Industrial Code Rule No. 56 (ICR 56) relating to hazards to the public safety and health, during the removal, encapsulation, or disturbance of friable asbestos, or any handling of ACM that may result in the release of asbestos fiber.

As specified in Title 12 NYCRR Part 56-5.1 (h) and (i), "If the building/structure asbestos survey finds that the portion of the building/structure to be demolished, renovated, remodeled, or have repair work contains ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material, which is impacted by the work, the owner or the owner's agent shall conduct, or cause to have conducted, asbestos removal performed by a licensed asbestos abatement contractor in conformance with all standards set forth in this Part. All ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material impacted by the demolition, renovation, remodeling or repair project shall be removed as per this Part, prior to access or disturbance by other uncertified trades or personnel. No demolition, renovation, remodeling or repair work shall be commenced by any owner or the owner's agent prior to the completion of the asbestos abatement in accordance with the notification requirements of this Part...All building/structure owners and asbestos abatement contractors on a demolition, renovation, remodeling, or repair project, which includes work covered by this part, shall inform all trades on the work site about PACM, ACM, asbestos material and suspect miscellaneous ACM...Bids may be advertised and contracts awarded for demolition, remodeling, renovation, or repair work, but no work on the current intermediate portion of the project shall commence on the demolition, renovation, remodeling or repair work by any owner or agent prior to completion of all necessary asbestos abatement work for the current intermediate portion of the entire project, in conformance with all standards set forth in this Part." All work conducted should be in accordance with all legal requirements, including but not limited to U.S. Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) [40 CFR Part 61], New York State Industrial Code Rule 56 Asbestos Regulations (ICR 56) and Chapter 1 of Title 15 of the Rules of the City of New York Regulations, as applicable. Advance notification of the asbestos project to the USEPA, NYSDOL, and NYCDEP may be required.

CONCEALED ACM

In addition to the ACMs identified at the site, there is a possibility that concealed suspect ACM may exist at the building/structure. As such, if any concealed suspect ACM is encountered during future construction related activities, the work should immediately stop. Prior to resuming the work, the suspect ACM should either be 1) Sampled by an appropriately-certified asbestos professional and submitted to an Approved NYSDOH ELAP laboratory for asbestos analysis or 2) Presumed to be ACM (PACM) and removed by a licensed asbestos abatement contractor for disposal in accordance with all applicable regulations.

4.0 Lead-based Paint (LBP)

4.1 Applicable Standards/Guidelines for LBP

The U.S Department of Housing and Urban Development (HUD) defines the action level for lead-based paint as a lead content equal to or greater than 1.0 milligrams of lead per square centimeter of painted surface ($\geq 1.0 \text{ mg Pb/cm}^2$) when measured with an XRF analyzer or 0.5 percent by weight when chemically tested. This definition is described in the HUD "Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing, September 1990". The state of New York's definition of the action level for lead-based paint is consistent with the level established by HUD.

Please note that although the HUD defines lead-based paint as paint having lead concentrations equal or greater than 1.0 mg/cm², the Occupational Safety and Health Administration (OSHA) considers any concentration of lead in paint to be lead-containing paint. Regardless of the lead concentrations in paint, the contractor shall comply with 29 CFR 1926.62, OSHA regulations, and take precautionary measures for dust control and limit employee exposure to lead dust during the renovations.

Painted surfaces that would be impacted by planned activities such as drilling, cutting, scrapping, etc. and create dust should be properly addressed by following safe work practices, good housekeeping procedures and/or following proper abatement procedures. Grinding and sanding of paint without HEPA filter exhaust, open flame gas fired torch, unconfined abrasive blasting, and chemical strippers containing methylene chloride or other human carcinogenic chemicals are not recommended.

The Federal Resource Conservation and Recovery Act (RCRA) regulation governs the handling, transportation, and disposal of hazardous materials. Every demolition/renovation debris generator has the responsibility to determine whether the debris exhibits one or more of the characteristic wastes listed in subpart C of 40 CFR Part 261. In the case of demolition debris, lead in LBP is a characteristic waste, and therefore, it is the responsibility of the renovation/demolition debris generator to characterize the waste prior to its disposal and, if found to be hazardous waste as defined by Federal Statutes, to be properly handled and disposed.

Metal objects painted with LBP are exempt from disposal regulations applicable to lead, provided they are properly recycled. All metal objects that are painted with LBP should be sent to a certified recycling facility.

This report is not Lead-based Paint abatement specification and should not be used for specifying removal methods or techniques.

4.2 XRF Information

Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s) were used to survey the building/structure or portion thereof identified to be demolished, renovated, remodeled or repaired for the presence of LBP. The Viken Pb200e XRF Analyzer(s) are using a sealed source of Co-57 with 6mCi sources, meeting HUD requirements for the analysis of paint films. During the analysis, the intensity of the x-rays is converted by the instrument's internal software into an estimate of the concentration of lead in the substance being analyzed. The results are interpreted as concentrations of lead in milligrams per square centimeter. This device is a field-screening tool, used to collect multiple readings in a short period of time. The method of measurement is based on spectrometric analysis of lead x-ray fluorescence within a controlled depth of interrogation. The reading is an estimate of lead content in all layers of paint. The results are displayed in milligrams per square centimeter (mg/cm²). The device(s) used for this inspection were the Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s) Serial Number 2104, Source date 4/1/23, Serial number 2231, Source date 5/15/22, Serial number 2595, Source date 2/15/23 and/or Serial number 2901, Source date 2/15/23.

5.0 PolyChlorinated Biphenyls (PCB)

5.1 Background and Protocol for PCBs

PolyChlorinated Biphenyls (PCB) are a group of manmade chemicals. PCBs were widely used in building materials and electrical products in the past. The U.S. Environmental Protection Agency banned the manufacturing and certain uses of PCBs in 1978, but buildings constructed or renovated between 1950 and 1978 may still have building materials and electrical products that contain PCBs. Examples of products that may contain PCBs include caulk, paint, glues, plastics, fluorescent lighting ballasts, transformers and capacitors.

PCBs are currently prohibited from being used in caulk and other commodities (U.S. EPA, 40 CFR 761). However, prior to 1977, PCBs were present in some caulking materials used in the construction of schools and other buildings. Studies have shown that concentrations of PCB can exceed 1% (10,000 ppm) by weight in some caulk materials. An investigation of 24 buildings in the Greater Boston Area revealed that one-third of the buildings tested (8 of 24) contained caulking materials with polychlorinated biphenyl (PCB) content exceeding 50 ppm by weight with an average concentration of 15,600 ppm or 1.5% (Herrick et al., 2004). These buildings included schools and other public buildings.

The U.S. EPA regulates the disposal of caulk, as well as soil and other materials contaminated with PCBs from caulk, if the concentration of PCBs exceeds 50 ppm. Such materials must be disposed at an appropriate approved or permitted facility.

U.S. EPA regulation 40 CFR 761 defines "PCB remediation waste" to include contaminated soil, and specifies a clean-up level of <1ppm without further conditions for unrestricted use in "high occupancy areas" (i.e., areas where individuals may be present for 335 hours or more per year). PCB caulk is defined as a PCB bulk product waste, and its disposal is subject to U.S. EPA regulations under the Toxic Substances Control Act (40 CFR761.62).

This protocol has been developed in consultation with the New York State Department of Health, Division of Environmental Health Assessment, Bureau of Toxic Substance Assessment to address concerns about properly managing caulk containing PCBs that will be disturbed during building renovation and maintenance.

CAULK SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977 have a potential to contain PCBs in existing caulk. Representative samples of caulking materials from these buildings prior to renovation or demolition work should be tested to determine whether the caulk is contaminated with PCBs. Professional judgement should be used to design the sampling plan for characterizing caulk throughout the building. The consultant should pay particular attention to construction and maintenance records and to the appearance of caulking materials (likenesses and differences). Samples should be taken from window frames or expansion joints that have not been repaired or replaced since 1977. Depending on specific information provided in the workplan developed by the project manager, such as window placement, compositing of some caulk samples might be appropriate. Caulk from different time periods or that have a different appearance should not be composited together.

It is important to note that caulk used during the time period of interest may also contain asbestos or lead. Therefore, the work plan should include testing, handling and disposal requirements appropriate for such regulated materials.

SOIL SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977, which have undergone further renovation after 1977, may have residual PCB contamination in adjacent soils. An adequate representation of surface soils should be tested to assess the potential for residual PCB contamination.

When designing a representative soil sampling plan, the likelihood of soil contamination from deteriorated or deteriorating caulk should be considered. Caulk that has in the past dried out and fallen to the ground is the most important source of soil contamination. Thus, sampling should include soil beneath windows where caulk has obviously deteriorated or been replaced because of previous deterioration. Areas subject to the stress of sun and prevailing weather (typically the southern and western side of each structure) should be included for sampling. These samples would provide a conservative evaluation of soil conditions due to an increased potential for material failure, possibly resulting in contamination of soil. Also, if earlier renovation or demolition work may have stockpiled potentially contaminated caulk in other school areas, the school should consider having soils in those areas tested as well.

Soil sampling should focus on areas of the building where "banks" or "gangs" of windows exist/were replaced and areas of the structure where large expansion joints are located. This would provide a conservative evaluation of potential soil contamination and permit efficient sampling.

Any obvious pieces of caulk encountered during the collection of soil samples should be removed from the soil, categorized (with respect to location and depth) and treated as a separate potential sample.

Depth – At each soil sample location, soil should be collected in depth intervals of 0-2 inches, 2-6 inches and 6-12 inches. The surface soil sample (0-2 inches) should be collected from below the vegetative surface layer, if present.

Distance from Structure – Samples should be collected within 1 foot of the building and 5 feet from the building.

Samples should be collected in a manner that prevents cross-contamination. Augers or driven core samplers should be avoided, as any caulk caught on the edge of this type of tool could be driven to lower intervals. Using a designated trowel for each sample location and each interval of depth is encouraged. If the sampling tool is field cleaned between samples, do so in a manner that does not add solvent contamination to the environment.

NOTE

Sampling was performed by **Adelaide** in compliance with protocols outlined by New York State Education Department (NYSED) and USEPA 40 CFR 761, as described above. Only one sample per homogeneous area was required for analysis of suspect PCB-containing materials. Bulk sample(s) were properly packaged and forwarded, with associated Chain of Custody (COC), to York Analytical Laboratories, Inc., for analysis using method SW846-3550B/8082. The analysis will determine if the suspect material will be classified as PCB-containing at or above 50 ppm or mg/kg as per the EPA regulations. Copies of the analytical results are contained within attached appendices for review.

6.0 General Discussion

All construction personnel as well as individuals who have access to locations where asbestos-containing materials (ACM), lead-based paints (LBP) and/or polychlorinated biphenyls (PCB) exists should be informed of its presence and the proper work practices in these areas. Conspicuous labeling of all ACM is suggested to ensure personnel is adequately informed. Personnel should be informed not to rest, lean or store material or equipment on or near these surfaces and not to cut, saw, drill, sand or disturb ACM. All removal, disturbance, and repair of ACM should be performed in compliance with Title 12 NYCRR Part 56 by persons properly trained to handle ACM. Facility custodial and maintenance personnel should receive training commensurate with their work activities; as defined in 29 CFR 1910.1001.

7.0 Disclaimers

Adelaide certifies that the information contained within this report is based solely upon site observations and the results of laboratory analysis for samples collected during this survey/assessment. These observations and results are time dependent, subject to changing site conditions and revisions to Federal, State and Local regulations. **Adelaide** warrants that these findings have been promulgated after being prepared in general accordance with generally accepted practices in the abatement industries. **Adelaide** also recognizes that inspection laboratory data is not usually sufficient to make all abatement and management decisions. No other warranties are expressed or implied.

The materials sampled, as part of this survey, were limited to building materials potential affected by the provided scope of work only. All building materials outside the scope of work that have the potential to be disturbed, impacted, or if the scope of work is to change, are to be presumed asbestos-containing materials (PACM). Identified PACM **must** either be sampled by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of by a licensed NYS Asbestos Abatement Contractor.

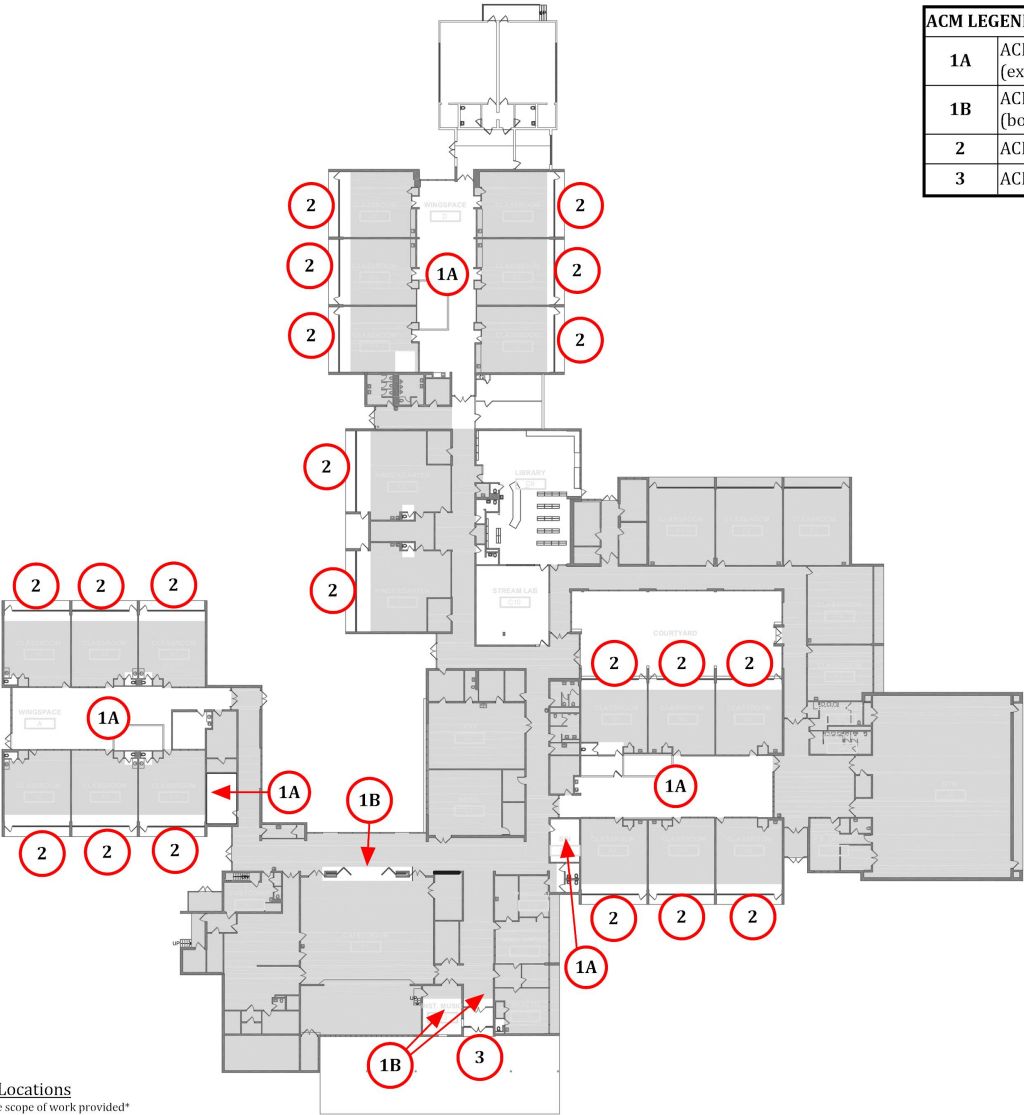
Due to the potential for concealed Asbestos-containing Materials (ACM) and/or other regulated materials, this report should not be construed to represent all ACM and/or regulated materials within the site(s). All quantities of ACM and/or other regulated materials identified, and all dimensions listed within this report are approximate and should be verified On-site.

This report is generated for the exclusive use of the client and is not designed to serve as a specification for abatement. The owner is strongly encouraged to contract with a consultant having a current Asbestos Project Designer Certificate as issued by New York State Department of Labor for the preparation of contract specifications, work plans, and/or drawings prior to requesting bids for the abatement or removal of the materials identified in this report.

NYSDOH issued an Interim Guidance Letter, on July 9, 2013, which outlined the approved testing alternative for materials containing vermiculite. Specifically, "...Where TSI, surfacing materials, or other PACM or miscellaneous suspect ACM contain greater than 10% vermiculite, Item 198.6 may be used to evaluate the asbestos content of the material; provided, however, that any test results using this method must be reported with the following conspicuous disclaimer: *"This method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite."* On July 22, 2014, NYSDOH issued a Regulatory Guidance Letter outlining the new approved analytical methods for testing sprayed-on fireproofing (SOF-P) that contains vermiculite. NYSDOH authorized the use of two analytical methods to evaluate the asbestos content of SOFP that contains vermiculite. As per NYSDOH Guidelines, *"After October 31, 2014, one of the new methods must be used to test SOF-V, regardless of the percent of vermiculite."* On May 6, 2016, NYSDOH issued a Regulatory Guidance Letter outlining the new protocol for analytical procedure for surfacing materials (ie. plaster, stucco, etc.) that contain vermiculite. As per NYSDOH Guidelines, *"The original July 2013 and July 2014 letters addressed SOF-V only. Both NYS DOH's Item 198.8 and RJ Lee Group Method 055 shall now be applied to test for vermiculite in other Surfacing Material (SM) as defined in 12 NYCRR Part 56 (NYS Industrial Code Rule 56)."*

APPENDIX A
ACM LOCATION MAP(S)

ACM LEGEND: (see report for details)	
1A	ACM 9x9 White Floor Tile & Mastic (exposed)
1B	ACM 9x9 White Floor Tile & Mastic (bottom layer)
2	ACM Window Caulk
3	ACM Tar over ACM Expansion Joint



Adelaide
ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
KG+D Architects, PC
285 Main Street
Mount Kisco, New York 10549

SED Project #
66-01-01-03-0-004-017

SURVEY LOCATION:
Increase Miller ES
186 Waccabuc Road
Goldens Bridge, New York 10526

DATE: 07/29/2023

DRAWING VERSION: No. 1

ISSUED FOR:
Limited HazMat Survey

ADELAIDE PROJECT NO.:
KGD-RM:23164.03-IN

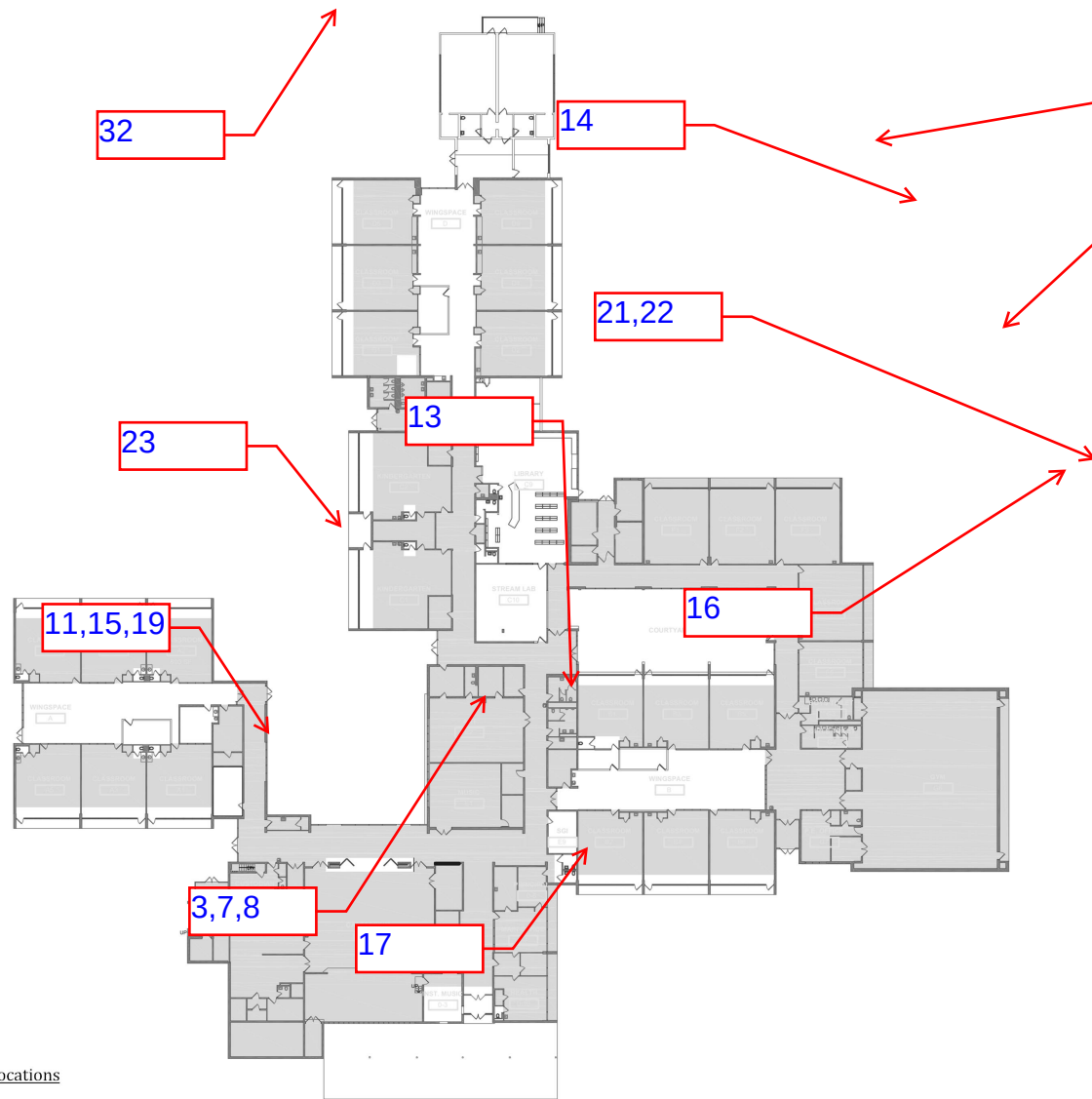
DRAWING PREPARED BY:
PJP

ASB-01

First Floor Key Plan - Limited ACM Locations

ACM locations identified on this drawing are ONLY limited to the scope of work provided
Drawing Not to Scale

APPENDIX B
SAMPLE LOCATION MAP(S)



1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
KG+D Architects, PC
285 Main Street
Mount Kisco, New York 10549

SED Project #
66-01-01-03-0-004-017

SURVEY LOCATION:
Increase Miller ES
186 Waccabuc Road
Goldens Bridge, New York 10526

DATE: 07/29/2023

DRAWING VERSION: No. 1

ISSUED FOR:
Limited HazMat Survey

ADELAIDE PROJECT NO.:
KGD-RM: 23164.03-IN

ED BY:

SL-01

First Floor Key Plan - Sample Locations
Drawing Not to Scale

APPENDIX C
ACM PHOTO(S)

HA 10
9x9 White
Floor Tile & Mastic
22% & 4.2% Chrysotile



HA 12
Exterior, Window
Along sides of curtain wall
system
8.9% Anthophyllite



HA 13 & 14
Exterior, Main Entrance
Concrete Pad, along brick
Tar - 5.9% Chrysotile
Expansion Joint -
1.4% Chrysotile



APPENDIX D
ASBESTOS ANALYTICAL RESULTS

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road, Goldens Bridge, NY 10526

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	1	1	0.282	12.2	25.8	62.0	NAD	NAD
Location: Music Room - Acoustical Tiles								
02	2	1	0.360	12.9	47.4	39.7	NAD	NAD
Location: Music Room - Acoustical Tiles								
03	3	2	0.277	29.4	19.0	51.6	NAD	NAD
Location: A Wing, Drop Ceiling, 2x2 Dot Textured - Ceiling Tile								
04	4	2	0.213	22.5	34.1	43.3	NAD	NAD
Location: B Wing, Drop Ceiling, 2x2 Dot Textured - Ceiling Tile								
05	5	3	0.289	24.7	11.8	63.4	NAD	NAD
Location: Library, Drop Ceiling, 2x2 Dot Speck - Ceiling Tile								
06	6	3	0.099	28.6	21.9	49.5	NAD	NAD
Location: Trailer Lobby, Drop Ceiling, 2x2 Dot Speck - Ceiling Tile								
07	7	4	----	----	----	----	NAD	NA
Location: A Wing, Wall - Sheetrock								
08	8	5	----	----	----	----	NAD	NA
Location: A Wing, Wall - Joint Compound								
09	9	4	----	----	----	----	NAD	NA
Location: B Wing, Soffit - Sheetrock								
10	10	5	----	----	----	----	NAD	NA
Location: B Wing, Soffit - Joint Compound								
11	11	6	----	----	----	----	NAD	NA
Location: A Wing, Brick Wall - Mortar								
12	12	6	----	----	----	----	NAD	NA
Location: D Wing, Brick Wall - Mortar								
13	13	7	----	----	----	----	NAD	NA
Location: A Wing - CMU Wall - Mortar								
14	14	7	----	----	----	----	NAD	NA
Location: D Wing - CMU Wall - Mortar								
15L1	15	8	0.167	45.9	53.1	1.1	NAD	NAD
Location: A Wing, Wall, Grey Cove Base - Adhesive								
15L2	15	8	0.197	46.2	49.9	3.9	NAD	NAD
Location: A Wing, Wall, Grey Cove Base - Adhesive								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road, Goldens Bridge, NY 10526

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
16L1	16	8	0.100	40.3	58.5	1.2	NAD	NAD
Location: Computer Lab, Wall, Grey Cove Base - Adhesive								
16L2	16	8	0.159	40.3	41.4	18.3	NAD	NAD
Location: Computer Lab, Wall, Grey Cove Base - Adhesive								
17L1	17	9	0.178	32.8	40.5	26.7	NAD	NAD
Location: Room A8, Wall, Brown Cove Bse - Adhesive 18								
17L2	17	9	0.172	44.7	11.0	44.2	NAD	NAD
Location: Room A8, Wall, Brown Cove Bse - Adhesive 18								
18L1	18	9	0.151	30.6	61.5	7.9	NAD	NAD
Location: B Wing, Wall, Brown Cove Bse - Adhesive 18								
18L2	18	9	0.660	22.8	19.7	57.5	NAD	NAD
Location: B Wing, Wall, Brown Cove Bse - Adhesive 18								
19L1	19	10	0.286	27.7	17.2	33.1	Chrysotile <0.25	Chrysotile 22.0
Location: A Wing, Floor, 9x9 White - Floor Tile								
19L2	19	10	0.220	54.1	15.9	29.8	NAD	Chrysotile <1.0
Location: A Wing, Floor, 9x9 White - Mastic								
20L1	20	10	0.176	24.8	20.2	54.9	NAD	NA/PS
Location: D Wing, Floor, 9x9 White - Floor Tile								
20L2	20	10	0.251	47.3	18.8	29.6	NAD	Chrysotile 4.2
Location: D Wing, Floor, 9x9 White - Mastic								
21L1	21	11	0.190	17.2	39.1	43.6	NAD	Chrysotile Trace
Location: Library, Floor, 1x1 White W/Blue - Floor Tile								
21L2	21	11	0.684	18.8	77.3	3.8	NAD	Chrysotile Trace
Location: Library, Floor, 1x1 White W/Blue - Mastic								
22L1	22	11	0.241	18.3	36.4	45.3	NAD	NAD
Location: Library, Floor, 1x1 White W/Blue - Floor Tile								
22L2	22	11	0.139	57.8	22.4	19.8	NAD	NAD
Location: Library, Floor, 1x1 White W/Blue - Mastic								
23	23	12	0.467	21.2	47.5	22.4	Anthophyllite 8.9	NA
Location: Floor Level Ext, A Wing, Window Side - Caulk								
24	24	12	0.234	26.5	50.9	22.5	NA/PS	NA
Location: Floor Level Ext, B Wing, Window Side - Caulk								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road, Goldens Bridge, NY 10526

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
25	25	13	0.240	57.8	9.7	26.6	Chrysotile 5.9	NA
Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Brick - Tar								
26	26	13	0.253	55.8	9.5	34.7	NA/PS	NA
Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Brick - Tar								
27	27	14	0.241	90.1	5.1	3.3	Chrysotile <0.25	Chrysotile 1.4
Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Brick - Expansion Joint								
28	28	14	0.214	89.0	7.5	3.5	Chrysotile <0.25	NA/PS
Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Brick - Expansion Joint								
29	29	15	0.164	62.6	30.3	7.1	NAD	NAD
Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Curtain Wall - Filler								
30	30	15	0.138	65.1	30.7	4.1	NAD	NAD
Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Curtain Wall - Filler								
31	31	16	0.534	6.9	11.7	81.4	NAD	NAD
Location: Floor Level Ext, Main Entrance, Walkway - Asphalt								
32	32	16	0.329	6.5	31.4	62.0	NAD	NAD
Location: Floor Level Ext, Playground Behind A Wing - Asphalt								
33	33	17	----	----	----	----	NAD	NA
Location: Floor Level Ext, D Wing Trailer, Wall - Sheetrock Panel								
34	34	17	----	----	----	----	NAD	NA
Location: Floor Level Ext, D Wing Trailer, Wall - Sheetrock Panel								
35	35	18	0.390	39.4	49.0	11.6	NAD	Chrysotile Trace
Location: Floor Level Ext, D Wing Trailer, Lobby, Floor, Top Layer - Sheet Flooring								
36	36	18	0.172	39.9	52.8	7.2	NAD	Chrysotile Trace
Location: Floor Level Ext, D Wing Trailer, Lobby, Floor, Top Layer - Sheet Flooring								
37	37	19	----	----	----	----	NAD	NA
Location: D Wing Trailer, Lobby, Floor, Bottom Layer - Leveling Compound								
38	38	19	----	----	----	----	NAD	NA
Location: D Wing Trailer, Lobby, Floor, Bottom Layer - Leveling Compound								
39L1	39	20	0.324	22.5	48.2	29.3	NAD	NAD
Location: D Wing Trailer, Bathroom, Floor, 1x1 Beige - Floor Tile								
39L2	39	20	0.094	68.4	23.7	7.9	NAD	NAD
Location: D Wing Trailer, Bathroom, Floor, 1x1 Beige - Mastic								

See Reporting notes on last page

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road, Goldens Bridge, NY 10526

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
40L1	40	20	0.259	20.6	52.6	26.7	NAD	NAD
Location: D Wing Trailer, Bathroom, Floor, 1x1 Beige - Floor Tile								
40L2	40	20	0.116	55.6	22.9	21.5	NAD	NAD
Location: D Wing Trailer, Bathroom, Floor, 1x1 Beige -Mastic								
41L1	41	21	0.162	18.1	65.0	16.8	NAD	NAD
Location: D Wing Trailer, Room D8, Floor, 1x1 White W/Beige - Floor Tile								
41L2	41	21	0.228	59.0	15.8	25.2	NAD	NAD
Location: D Wing Trailer, Room D8, Floor, 1x1 White W/Beige - Mastic								
42L1	42	21	0.315	17.8	45.5	36.7	NAD	NAD
Location: D Wing Trailer, Room D8, Floor, 1x1 White W/Beige - Floor Tile								
42L2	42	21	0.295	61.7	6.4	31.9	NAD	NAD
Location: D Wing Trailer, Room D8, Floor, 1x1 White W/Beige - Mastic								
43	43	22	0.414	29.3	38.7	32.0	NAD	NAD
Location: Floor Level Ext, D Wing Trailer, Rear Deck Roof, Top Layer - Shingle								
44	44	22	0.309	30.9	38.8	30.3	NAD	NAD
Location: Floor Level Ext, D Wing Trailer, Rear Deck Roof, Top Layer - Shingle								
45	45	23	0.375	94.8	1.3	3.9	NAD	NAD
Location: Floor Level Ext, D Wing Trailer, Rear Deck Roof, Bottom Layer - Tar Paper								
46	46	23	0.372	95.4	1.2	3.4	NAD	NAD
Location: Floor Level Ext, D Wing Trailer, Rear Deck Roof, Bottom Layer - Tar Paper								
47	47	24	----	----	----	----	NAD	NA
Location: Gym - Sheetrock								
48	48	24	----	----	----	----	NAD	NA
Location: Gym - Sheetrock								
49	49	25	----	----	----	----	NAD	NA
Location: Gym - Joint Compound								
50	50	25	----	----	----	----	NAD	NA
Location: Gym - Joint Compound								
51	51	26	----	----	----	----	NAD	NA
Location: Gym, CMU - Mortar								
52	52	26	----	----	----	----	NAD	NA
Location: Gym, CMU - Mortar								

See Reporting notes on last page

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road, Goldens Bridge, NY 10526

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM

Analyzed by: Marik Peysakhov
Date: 7/28/2023



Reviewed by: Gabriella Morozov



**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples). Analysis using Hitachi, Model H600-Noran 7 System, Microscope, Serial #: 600-27-6. NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, NJ Lab ID #NY031.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

**AmeriSci New York**

117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Adelaide Environmental Health
Attn: John Soter
1511 Rte. 22 Suite C24

Brewster, NY 10509

Date Received 07/27/23 **AmeriSci Job #** 223074134
Date Examined 07/28/23 **P.O. #**
ELAP # 11480 **Page** 1 **of** 12
RE: KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road,
Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 1 Analyst Description: Gray, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 62%	223074134-01 Location: Music Room - Acoustical Tiles	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
2 1 Analyst Description: Gray, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 39.7%	223074134-02 Location: Music Room - Acoustical Tiles	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
3 2 Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 51.6%	223074134-03 Location: A Wing, Drop Ceiling, 2x2 Dot Textured - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
4 2 Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 43.3%	223074134-04 Location: B Wing, Drop Ceiling, 2x2 Dot Textured - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
5 3 Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 63.4%	223074134-05 Location: Library, Drop Ceiling, 2x2 Dot Speck - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 3	223074134-06 Location: Trailer Lobby, Drop Ceiling, 2x2 Dot Speck - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 49.5%			
7 4	223074134-07 Location: A Wing, Wall - Sheetrock	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 10%, Fibrous glass 3%, Non-fibrous 87%			
8 5	223074134-08 Location: A Wing, Wall - Joint Compound	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
9 4	223074134-09 Location: B Wing, Soffit - Sheetrock	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 9%, Fibrous glass 2%, Non-fibrous 89%			
10 5	223074134-10 Location: B Wing, Soffit - Joint Compound	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
11 6	223074134-11 Location: A Wing, Brick Wall - Mortar	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos ReportKGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
12 6	223074134-12 Location: D Wing, Brick Wall - Mortar	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
13 7	223074134-13 Location: A Wing - CMU Wall - Mortar	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
14 7	223074134-14 Location: D Wing - CMU Wall - Mortar	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
15 8	223074134-15L1 Location: A Wing, Wall, Grey Cove Base - Adhesive	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 1.1%			
15 8	223074134-15L2 Location: A Wing, Wall, Grey Cove Base - Adhesive	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.9%			
16 8	223074134-16L1 Location: Computer Lab, Wall, Grey Cove Base - Adhesive	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 1.2%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos ReportKGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
16 8	223074134-16L2 Location: Computer Lab, Wall, Grey Cove Base - Adhesive	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 18.3%			
17 9	223074134-17L1 Location: Room A8, Wall, Brown Cove Bse - Adhesive 18	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 26.7%			
17 9	223074134-17L2 Location: Room A8, Wall, Brown Cove Bse - Adhesive 18	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 44.2%			
18 9	223074134-18L1 Location: B Wing, Wall, Brown Cove Bse - Adhesive 18	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 7.9%			
18 9	223074134-18L2 Location: B Wing, Wall, Brown Cove Bse - Adhesive 18	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 57.5%			
19 10	223074134-19L1 Location: A Wing, Floor, 9x9 White - Floor Tile	Yes	Trace (<0.25 % pc) ¹ (ELAP 400 PC) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile <0.25 % pc Other Material: Non-fibrous 55.1%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
19	223074134-19L2	No	NAD
10	Location: A Wing, Floor, 9x9 White - Mastic		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 30%			
20	223074134-20L1	No	NAD
10	Location: D Wing, Floor, 9x9 White - Floor Tile		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 54.9%			
20	223074134-20L2	No	NAD
10	Location: D Wing, Floor, 9x9 White - Mastic		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 33.8%			
21	223074134-21L1	No	NAD
11	Location: Library, Floor, 1x1 White W/Blue - Floor Tile		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 43.7%			
21	223074134-21L2	No	NAD
11	Location: Library, Floor, 1x1 White W/Blue - Mastic		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.9%			
22	223074134-22L1	No	NAD
11	Location: Library, Floor, 1x1 White W/Blue - Floor Tile		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 45.3%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
22 11	223074134-22L2 Location: Library, Floor, 1x1 White W/Blue - Mastic	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 19.8%			
23 12	223074134-23 Location: Floor Level Ext, A Wing, Window Side - Caulk	Yes	8.9% (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Anthophyllite 8.9 % Other Material: Non-fibrous 22.4%			
24 12	223074134-24 Location: Floor Level Ext, B Wing, Window Side - Caulk		NA/PS
Analyst Description: Bulk Material Asbestos Types: Other Material:			
25 13	223074134-25 Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Brick - Tar	Yes	5.9% (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 5.9 % Other Material: Non-fibrous 26.6%			
26 13	223074134-26 Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Brick - Tar		NA/PS
Analyst Description: Bulk Material Asbestos Types: Other Material:			
27 14	223074134-27 Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Brick - Expansion Joint	Yes	Trace (<0.25 % pc) ¹ (ELAP 400 PC) by Omar Hernandez on 07/28/23
Analyst Description: Dark Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile <0.25 % pc Other Material: Non-fibrous 4.7%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos ReportKGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
28 14	223074134-28 Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Brick - Expansion Joint	Yes	Trace (<0.25 % pc) ¹ (ELAP 400 PC) by Omar Hernandez on 07/28/23
Analyst Description: Dark Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile <0.25 % pc Other Material: Non-fibrous 3.5%			
29 15	223074134-29 Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Curtain Wall - Filler	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 7.1%			
30 15	223074134-30 Location: Floor Level Ext, Main Entrance, Concrete Pad, Along Curtain Wall - Filler	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 4.1%			
31 16	223074134-31 Location: Floor Level Ext, Main Entrance, Walkway - Asphalt	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 81.4%			
32 16	223074134-32 Location: Floor Level Ext, Playground Behind A Wing - Asphalt	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 62%			
33 17	223074134-33 Location: Floor Level Ext, D Wing Trailer, Wall - Sheetrock Panel	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 2%, Non-fibrous 98%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
34 17	223074134-34 Location: Floor Level Ext, D Wing Trailer, Wall - Sheetrock Panel	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 6%, Non-fibrous 94%			
35 18	223074134-35 Location: Floor Level Ext, D Wing Trailer, Lobby, Floor, Top Layer - Sheet Flooring	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 11.7%			
36 18	223074134-36 Location: Floor Level Ext, D Wing Trailer, Lobby, Floor, Top Layer - Sheet Flooring	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 7.3%			
37 19	223074134-37 Location: D Wing Trailer, Lobby, Floor, Bottom Layer - Leveling Compound	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
38 19	223074134-38 Location: D Wing Trailer, Lobby, Floor, Bottom Layer - Leveling Compound	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
39 20	223074134-39L1 Location: D Wing Trailer, Bathroom, Floor, 1x1 Beige - Floor Tile	No	NAD (by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 29.3%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
39	223074134-39L2	No	NAD
20	Location: D Wing Trailer, Bathroom, Floor, 1x1 Beige - Mastic		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 7.9%			
40	223074134-40L1	No	NAD
20	Location: D Wing Trailer, Bathroom, Floor, 1x1 Beige - Floor Tile		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 26.7%			
40	223074134-40L2	No	NAD
20	Location: D Wing Trailer, Bathroom, Floor, 1x1 Beige -Mastic		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 21.5%			
41	223074134-41L1	No	NAD
21	Location: D Wing Trailer, Room D8, Floor, 1x1 White W/Beige - Floor Tile		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 16.8%			
41	223074134-41L2	No	NAD
21	Location: D Wing Trailer, Room D8, Floor, 1x1 White W/Beige - Mastic		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 25.2%			
42	223074134-42L1	No	NAD
21	Location: D Wing Trailer, Room D8, Floor, 1x1 White W/Beige - Floor Tile		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 36.7%			

PLM Bulk Asbestos Report

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
42	223074134-42L2	No	NAD
21	Location: D Wing Trailer, Room D8, Floor, 1x1 White W/Beige - Mastic		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 31.9%			
43	223074134-43	No	NAD
22	Location: Floor Level Ext, D Wing Trailer, Rear Deck Roof, Top Layer - Shingle		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 32%			
44	223074134-44	No	NAD
22	Location: Floor Level Ext, D Wing Trailer, Rear Deck Roof, Top Layer - Shingle		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 30.3%			
45	223074134-45	No	NAD
23	Location: Floor Level Ext, D Wing Trailer, Rear Deck Roof, Bottom Layer - Tar Paper		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.9%			
46	223074134-46	No	NAD
23	Location: Floor Level Ext, D Wing Trailer, Rear Deck Roof, Bottom Layer - Tar Paper		(by NYS ELAP 198.6) by Omar Hernandez on 07/28/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.4%			
47	223074134-47	No	NAD
24	Location: Gym - Sheetrock		(by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

PLM Bulk Asbestos Report

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
48 24	223074134-48 Location: Gym - Sheetrock	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
49 25	223074134-49 Location: Gym - Joint Compound	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
50 25	223074134-50 Location: Gym - Joint Compound	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
51 26	223074134-51 Location: Gym, CMU - Mortar	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
52 26	223074134-52 Location: Gym, CMU - Mortar	No	NAD (by NYS ELAP 198.1) by Omar Hernandez on 07/28/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Reporting Notes:

- (1) Sample prepared for analysis by ELAP 198.6 method

Analyzed by: Omar Hernandez
Date: 7/28/2023



Reviewed by: Gabriella Morozov



*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Motic, Model BA310 Pol Scope, Microscope, Serial #: 1190000538, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note:PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

_____END OF REPORT_____

Adelaide Environmental Health Associates, Inc

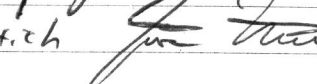
1511 Route 22, Suite C24

Brewster, NY 10509

845-278-7710

845-278-7750 - fax

228074184

Site Address: Increase Miller ES			Date: 07/27/23		Inspector(s) Philip J. Page			
186 Waccabuc Road								
Goldens Bridge, NY 10526			Project #: KGD-RM:23164.03-IN					
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description			Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
1	1		MUSIC ROOM - ACOUSTICAL TILES					
2	↓		↓ ↓					
3	2		A WING, DROP CEILING, 2x2 DOT TEXTURED - CEILING TILE					
4	↓		B WING, ↓					
5	3		LIBRARY, 2x2 DOT SPECK -					
6	↓		TRAILER LOBBY, ↓					
7	4		A WING, WALL - SHEETROCK					
8	5		↓ ↓ - JOINT COMPOUND					
9	4		B WING, SOFFIT - SHEETROCK					
10	5		↓ ↓ - JOINT COMPOUND					
11	6		A WING, BRICK WALL - MORTAR					
12	↓		D WING, ↓					
Special Instructions/ Turnaround Time:					Relinquished by: 			
Stop at 1st Positive per Homogenous Area 24 HR TAT E-Mail Results to AdelaideLabResults@adelaidellc.com & ppage@adelaidellc.com					Received by: 			
					Relinquished by:  7/27/23 18:40			
					Received by:			

Adelaide Environmental Health Associates, Inc

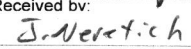
1511 Route 22, Suite C24

Brewster, NY 10509

845-278-7710

845-278-7750 - fax

223074134

Site Address: Increase Miller ES			Date: 07/27/23		Inspector(s) Philip J. Page		
186 Waccabuc Road							
Goldens Bridge, NY 10526			Project #: KGD-RM:23164.03-IN				
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd	
13	7		A WING, CMU WALL - MORTAR				
14	↓		D WING, ↓ - ↓				
15	8		A WING, WALL, GRAY COVE BASE - ADHESIVE				
16	↓		COMPUTER LAB, ↓				
17	9		Room AB, ↓, BROWN COVE BASE -				
18	↓		B WING, ↓ ↓				
19	10		A WING, FLOOR, 9x9 WHITE - FLOOR TILE + MASTIC				
20	↓		D WING, ↓ ↓				
21	11		LIBRARY, ↓, 1x1 WHITE W/ BLUE -				
22	↓		↓ ↓ ↓				
23	12	EXT	A WING, WINDOW SIDE - CAULK				
24	↓	↓	B WING, ↓ ↓				
Special Instructions/ Turnaround Time:			Relinquished by: 				
Stop at 1st Positive per Homogenous Area			Received by:  7/27/23 18:40				
E-Mail Results to AdelaideLabResults@adelaidellc.com & ppage@adelaidellc.com			Relinquished by:				
			Received by:				

24 HR TAT

223074134

Adelaide Environmental Health Associates, Inc

1511 Route 22, Suite C24
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

223074134

Site Address: Increase Miller ES			Date: 07/27/23		Inspector(s) Philip J. Page		
186 Waccabuc Road							
Goldens Bridge, NY 10526			Project #: KGD-RM:23164.03-IN				

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
37	19		D WING TRAILER, LOBBY, FLOOR, BOTTOM LAYER - LEVELING COMPOUND			
38	↓		↓			
39	20		BATHROOM, 1x1 BEIGE - FLOOR TILE + MASTIC			
40	↓		↓			
41	21		Room D8, 1x1 WHITE W/ BEIGE -			
42	↓		↓			
43	22	EXT	REAR DECK ROOF, TOP LAYER - SHINGLE			
44	↓	↓	↓			
45	23		BOTTOM - TAR PAPER			
46	↓	↓	↓			
47	24		GYM - SHEETROCK			
48	↓		↓			

Special Instructions/ Turnaround Time:

Stop at 1st Positive per Homogenous Area

24 HR TAT

E-Mail Results to AdelaideLabResults@adelaidellc.com & ppage@adelaidellc.com

Relinquished by:

Received by: 7/27/23 18:40

Relinquished by:

Received by:

845-278-7750 - fax

223074134

Page 5 of 5

**AmeriSci New York**

117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Adelaide Environmental Health
Attn: John Soter
1511 Rte. 22 Suite C24

Brewster, NY 10509

Date Received 07/31/23 **AmeriSci Job #** 223074472
Date Examined 08/01/23 **P.O. #**
ELAP # 11480 **Page** 1 of 2
RE: KGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc Road,
Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
53 27	223074472-01 Location: Bathroom, Floor Ceramic Tile - Grout	No	NAD (by NYS ELAP 198.1) by Bo Sun on 08/01/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
54 27	223074472-02 Location: Bathroom, Floor Ceramic Tile - Grout	No	NAD (by NYS ELAP 198.1) by Bo Sun on 08/01/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
55 28	223074472-03 Location: Bathroom, Floor Ceramic Tile - Mudset	No	NAD (by NYS ELAP 198.1) by Bo Sun on 08/01/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
56 28	223074472-04 Location: Bathroom, Floor Ceramic Tile - Mudset	No	NAD (by NYS ELAP 198.1) by Bo Sun on 08/01/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
57 29	223074472-05 Location: Floor Level Ext, Main Entrance, Overhang - Plaster	No	NAD (by NYS ELAP 198.1) by Bo Sun on 08/01/23
Analyst Description: White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos ReportKGD-RM:23164.03-IN; Increase Miller ES; 186 Waccabuc
Road, Goldens Bridge, NY 10526

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
58 29	223074472-06	No	NAD
Location: Floor Level Ext, Main Entrance, Overhang - Plaster			(by NYS ELAP 198.1) by Bo Sun on 08/01/23
Analyst Description: White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
59 29	223074472-07	No	NAD
Location: Floor Level Ext, Main Entrance, Overhang - Plaster			(by NYS ELAP 198.1) by Bo Sun on 08/01/23
Analyst Description: White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			

Reporting Notes:Analyzed by: Bo Sun
Date: 8/1/2023

Reviewed by: Bo Sun



*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Motic, Model BA310 Pol Scope, Microscope, Serial #: 1190000538, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note:PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

_____END OF REPORT_____

845-278-7750 - fax

Page 1 of 1

APPENDIX E
XRF READINGS

Reading #	Date	Time	Space Type	Floor	Room	Component	Side	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
1	7/27/2023	7:58:33	School		Calibration						1	Positive
2	7/27/2023	7:58:47	School		Calibration						1	Positive
3	7/27/2023	7:59:00	School		Calibration						1	Positive
4	7/27/2023	7:59:59	School	1st Floor	A Wing	Wall	B	Sheetrock	Blue	Intact	0.1	Negative
5	7/27/2023	8:00:24	School	1st Floor	A Wing	Door Case	B	Metal	Beige	Intact	0.3	Negative
6	7/27/2023	8:00:56	School	1st Floor	A Wing	Wall	D	Sheetrock	Blue	Intact	0.2	Negative
7	7/27/2023	8:02:12	School	1st Floor	A Wing	Bar Joist	Ceiling	Metal	Black	Fair	0.1	Negative
8	7/27/2023	8:13:58	School	1st Floor	A8	Door Case	A	Metal	Beige	Intact	0.5	Negative
9	7/27/2023	8:15:28	School	1st Floor	A8	Wall	A	CMU	White	Fair	0.2	Negative
10	7/27/2023	8:41:23	School	1st Floor	B Wing	Ceiling	Ceiling	Sheetrock	White	Intact	0	Negative
11	7/27/2023	8:41:47	School	1st Floor	B Wing	Wall	B	Sheetrock	White	Fair	0	Negative
12	7/27/2023	8:42:14	School	1st Floor	B Wing	Wall	D	Sheetrock	White	Fair	0.2	Negative
13	7/27/2023	8:42:55	School	1st Floor	B Wing	Door Case	B	Metal	Red	Intact	0.1	Negative
14	7/27/2023	8:44:55	School	1st Floor	Lab	Door Case	A	Metal	Red	Intact	0.4	Negative
15	7/27/2023	8:45:27	School	1st Floor	Lab	Wall	A	Sheetrock	White	Fair	0.3	Negative
16	7/27/2023	8:46:16	School	1st Floor	Library	Ceiling	Ceiling	Sheetrock	White	Intact	0.2	Negative
17	7/27/2023	8:46:49	School	1st Floor	Library	Wall	A	Sheetrock	White	Intact	0.3	Negative
18	7/27/2023	8:47:15	School	1st Floor	Library	Door Case	A	Metal	Red	Intact	0.2	Negative
19	7/27/2023	8:48:15	School	1st Floor	D Wing	Ceiling	Ceiling	Sheetrock	White	Intact	0	Negative
20	7/27/2023	8:48:35	School	1st Floor	D Wing	Wall	D	Sheetrock	White	Fair	0.2	Negative
21	7/27/2023	8:50:03	School	1st Floor	D8	Wall	A	Sheetrock	White	Fair	0.1	Negative
22	7/27/2023	8:50:42	School	1st Floor	D8	Door Case	A	Metal	Red	Intact	0.1	Negative
23	7/27/2023	8:52:04	School	1st Floor	D13	Wall	D	Sheetrock	White	Fair	0.1	Negative
24	7/27/2023	8:52:32	School	1st Floor	D13	Wall	B	Sheetrock	White	Fair	0.2	Negative
25	7/27/2023	8:53:05	School	1st Floor	D13	Window Case	B	Wood	Brown	Fair	0.2	Negative
26	7/27/2023	8:53:20	School	1st Floor	D13	Window Trim	B	Wood	Brown	Fair	0.1	Negative
27	7/27/2023	8:54:17	School	1st Floor	D12	Window Trim	D	Wood	Brown	Fair	0.2	Negative
28	7/27/2023	8:54:31	School	1st Floor	D12	Window Case	D	Wood	Brown	Fair	0.1	Negative
29	7/27/2023	8:54:53	School	1st Floor	D12	Wall	D	Sheetrock	White	Fair	0.2	Negative
30	7/27/2023	8:55:14	School	1st Floor	D12	Wall	A	Sheetrock	White	Fair	0.1	Negative
31	7/27/2023	8:55:36	School	1st Floor	D12	Door Case	A	Metal	Red	Intact	0.2	Negative
32	7/27/2023	8:57:22	School	Exterior	Trailers	Facade		Metal	Cream	Fair	0.1	Negative
33	7/27/2023	8:58:14	School	Exterior	Trailers	Porch Floor		Wood	Red	Poor	0.1	Negative
34	7/27/2023	8:58:31	School	Exterior	Trailers	Porch Railing		Wood	Red	Poor	0.2	Negative
35	7/27/2023	9:02:13	School	1st Floor	Music	Wall	D	Sheetrock	Cream	Fair	0.4	Negative
36	7/27/2023	9:03:43	School		Calibration						1	Positive
37	7/27/2023	9:03:55	School		Calibration						1	Positive
38	7/27/2023	9:04:08	School		Calibration						1	Positive

APPENDIX F
PCB ANALYTICAL RESULTS



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Report

August 01, 2023

FOR: Attn: Philip Page
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

Matrix: CAULK
Location Code: ADELAIDE
Rush Request: 24 Hour
P.O.#:

Custody Information

Collected by: PLP
Received by: LB
Analyzed by: see "By" below

Date

07/27/23

Time

07/28/23 16:56

Laboratory Data

SDG ID: GCO61534
Phoenix ID: CO61534

Project ID: INCREASE MILLER ES - BOND WORK
Client ID: EXTERIOR ALONG WINDOW CASING SIDES

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				07/31/23	Q/R/AC1	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	510	ug/Kg	2	08/01/23	SC	SW8082A
PCB-1221	ND	510	ug/Kg	2	08/01/23	SC	SW8082A
PCB-1232	ND	510	ug/Kg	2	08/01/23	SC	SW8082A
PCB-1242	ND	510	ug/Kg	2	08/01/23	SC	SW8082A
PCB-1248	ND	510	ug/Kg	2	08/01/23	SC	SW8082A
PCB-1254	ND	510	ug/Kg	2	08/01/23	SC	SW8082A
PCB-1260	1500	510	ug/Kg	2	08/01/23	SC	SW8082A
PCB-1262	ND	510	ug/Kg	2	08/01/23	SC	SW8082A
PCB-1268	ND	510	ug/Kg	2	08/01/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	62		%	2	08/01/23	SC	30 - 150 %
% DCBP (Confirmation)	86		%	2	08/01/23	SC	30 - 150 %
% TCMX	30		%	2	08/01/23	SC	30 - 150 %
% TCMX (Confirmation)	41		%	2	08/01/23	SC	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

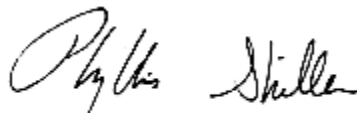
Results are reported on an ``as received`` basis, and are not corrected for dry weight.

PCB Comment:

For PCBs, in order to reach the desired RL, multiple cleanup steps were performed. The extract was cleaned up with a combination of sulfuric acid, potassium permanganate, copper powder and additional florisil.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

August 01, 2023

Official Report Release To Follow

Criteria: None
State: NY

Sample Criteria Exceedances Report
GCO61534 - ADELAIDE

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CO61534	\$PCB_SOXR	PCB-1260	NY / Requested PCB RL /	1500	510	1000	1000	ug/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

APPENDIX G
PERSONNEL AND LABORATORY CERTIFICATIONS

WE ARE YOUR DOL



**Department
of Labor**

DIVISION OF SAFETY & HEALTH LICENSE AND CERTIFICATE UNIT, STATE OFFICE CAMPUS, BLDG. 12, ALBANY, NY 12226

ASBESTOS HANDLING LICENSE

Adelaide Environmental Health Associates, Inc.
1511 Route 22, Suite C24, Brewster, NY, 10509

License Number: 29305

License Class: RESTRICTED

Date of Issue: 06/07/2023

Expiration Date: 07/31/2024

Duly Authorized Representative: John Soter

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Amy Phillips, Director
For the Commissioner of Labor

EXCELSIOR

United States Environmental Protection Agency

This is to certify that

ADELAIDE ENVIRONMENTAL HEALTH ASSOCIATES
INC

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires September 08, 2025

LBP-15081-2

Certification #

August 25, 2022

Issued On



Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that



Adelaide Environmental Health Associates, Inc

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint renovation, repair, and painting activities pursuant to 40 CFR Part 745.89

In the Jurisdiction of:

All EPA Administered States, Tribes, and Territories

This certification is valid from the date of issuance and expires December 05, 2027

NAT-15081-3

Certification #

August 03, 2022

Issued On



A handwritten signature in black ink that reads "Michelle Price".

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE



PHILIP J PAGE

CLASS(EXPIRES)

C ATEC(05/24) D INSP(05/24)

H PM (05/24) I PD (05/24)

CERT# 12-10888
DMV# 216687928

MUST BE CARRIED ON ASBESTOS PROJECTS



01213 006774130 62

EYES BRO

HAIR BLN

HGT 6' 00"

IF FOUND RETURN TO:

NYS DOL - L&C UNIT

ROOM 161A BUILDING 12

STATE OFFICE CAMPUS

ALBANY NY 12240

United States Environmental Protection Agency

This is to certify that



Philip J Page

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Inspector

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires March 23, 2026

LBP-I-1172697-3

Certification #

January 25, 2023

Issued On



Ben Conetta, Chief

Chemicals and Multimedia Programs Branch

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. KAROL H. LU
AMERICA SCIENCE TEAM NEW YORK, INC
117 EAST 30TH ST
NEW YORK, NY 10016

NY Lab Id No: 11480

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual



Serial No.: 66402

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at <https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/>, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. PHYLLIS SHILLER
PHOENIX ENVIRONMENTAL LABS
587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

NY Lab Id No: 11301

*is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:*

Polychlorinated Biphenyls

Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1262 (PCB-1262) in Oil	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A
Aroclor 1268 (PCB-1268) in Oil	EPA 8082A
PCB 101	EPA 8082A
PCB 105	EPA 8082A
PCB 118	EPA 8082A
PCB 128	EPA 8082A
PCB 138	EPA 8082A
PCB 153	EPA 8082A
PCB 170	EPA 8082A
PCB 18	EPA 8082A
PCB 180	EPA 8082A
PCB 183	EPA 8082A
PCB 184	EPA 8082A
PCB 187	EPA 8082A
PCB 195	EPA 8082A
PCB 206	EPA 8082A
PCB 209	EPA 8082A
PCB 28	EPA 8082A
PCB 44	EPA 8082A
PCB 49	EPA 8082A
PCB 52	EPA 8082A
PCB 66	EPA 8082A
PCB 8	EPA 8082A
PCB 87	EPA 8082A
PCB Congeners, Total	EPA 8082A



Serial No.: 66336

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at <https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/>, by phone (518) 485-5570 or by email to elap@health.ny.gov.



NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. PHYLLIS SHILLER
PHOENIX ENVIRONMENTAL LABS
587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

NY Lab Id No: 11301

*is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2016) for the category
ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved analytes are listed below:*

Acrylates

Acrylonitrile	EPA TO-15
Methyl methacrylate	EPA TO-15

Chlorinated Hydrocarbons

1,2,4-Trichlorobenzene	EPA TO-15
Hexachlorobutadiene	EPA TO-15
Hexachloroethane	EPA TO-15

Metals I

Lead, Total	EPA 29 (6010)
	EPA 7010

Polychlorinated Biphenyls

PCBs and Aroclors	EPA TO-10A

Polynuclear Aromatics

Naphthalene	EPA TO-15

Purgeable Aromatics

1,2,4-Trimethylbenzene	EPA TO-15
1,2-Dichlorobenzene	EPA TO-15
1,3,5-Trimethylbenzene	EPA TO-15
1,3-Dichlorobenzene	EPA TO-15
1,4-Dichlorobenzene	EPA TO-15
2-Chlorotoluene	EPA TO-15
Benzene	EPA TO-15
Chlorobenzene	EPA TO-15
Ethyl benzene	EPA TO-15
Isopropylbenzene	EPA TO-15
m/p-Xylenes	EPA TO-15

Serial No.: 66338

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at <https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/>, by phone (518) 485-5570 or by email to elap@health.ny.gov.



BID FORM

FOR

HVAC UPGRADES AT MEADOW POND ELEMENTARY SCHOOL AND INCREASE MILLER
ELEMENTARY SCHOOL

Katonah-Lewisboro Union Free School District
District Administration Office
60 North Salem Road
Cross River, New York 10518
Attention: Lisa Herlihy, Interim Assistant Superintendent for Business

1. The Undersigned hereby declares that it has carefully examined all Bidding and Contract Documents and has inspected the actual location of Work, together with the local sources of supply, and has satisfied itself as to all quantities and conditions, and understands that in signing this Proposal, it waives all rights to plead any misunderstanding regarding the same.
2. The Undersigned further understands and agrees that it is to do, perform and complete all the Work in accordance with the Contract Documents and Contract and to accept in full compensation therefor, the amount of the Base Bid, modified by such additive or deductive alternatives, if any, as are accepted by the Owner.
3. In submitting this Bid, the Undersigned agrees:
 - a. To hold the Bid open for forty-five (45) days after Bid Opening.
 - b. To accept the provisions of the Instructions to Bidders.
 - c. To enter into and execute a Contract within ten (10) days of the Notice of Award issue date, and to simultaneously furnish Performance and Labor and Material Bonds.
 - d. To commence the Work immediately upon receipt of Notice of Award.
4. The Undersigned agrees that the Work proposed herein will be Substantially Complete the dates indicated in specification Section 011000 - "Summary" and in the Project Milestone Schedule following Section 011000.
5. The Undersigned understands that the Owner reserves the right to accept or reject any or all Bids and to waive any informalities in the bidding.
6. The Undersigned acknowledges the receipt of the following addenda, but agrees that it is bound by all addenda whether or not listed herein:

Addendum Number

Date of Addendum

7. **BASE BID**

(Name of Bidder)

All labor, material, services and equipment necessary for completion of the Work shown on the Drawings and the Technical Specifications:

\$ _____ (In numbers)

Dollars
(in words)

8. **ALTERNATES** - none

9. **UNIT PRICES** - none

10. **ALLOWANCES** - none

The Undersigned has attached the following documents to this Bid:

- a. Certificate of Compliance with the Iran Divestment Act **or** Declaration of Bidders Inability to Provide Certificate of Compliance with the Iran Divestment Act
- b. Non-Collusive Form
- c. Sexual Harassment Prevention Certification Form
- d. Bid Security
- e. Insurance Coverage Certification Form
- f. Statement of Bidder's Qualifications (submit in separate envelope).

Legal name of person, partnership, joint venture, limited liability company, or corporation (please type)

(If corporation, affix
corporate seal)

Address (please type)

Federal ID No. or Social Security No. (please type)

Phone No. (please type)

E-mail address - general for company (please type)

Company URL (please type)

Name and title of signer (please type)

Signature

Date

If a Corporation
Name

Address

_____, PRESIDENT _____

_____, SECRETARY _____

(Name of Bidder)

_____, TREASURER _____

If a Partnership
Name of Partners

Address

If a Joint Venture
Name of Members

Address

If an Individual
Name of Individual

Address

If a Limited Liability Company (LLC)
Name of Members

Address

IF AWARDED THE CONTRACT:

Contract Signatory (name and title)

Project Manager (name, e-mail address and cell phone number)

CERTIFICATION OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT

As a result of the Iran Divestment Act of 2012 (the "Act"), Chapter 1 of the 2012 Laws of New York, a new provision has been added to State Finance Law (SFL) § 165-a and New York General Municipal Law § 103-g, both effective April 12, 2012. Under the Act, the Commissioner of the Office of General Services (OGS) will be developing a list of "persons" who are engaged in "investment activities in Iran" (both are defined terms in the law) (the "Prohibited Entities List"). Pursuant to SFL § 165-a(3)(b), the initial list is expected to be issued no later than 120 days after the Act's effective date at which time it will be posted on the OGS website.

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, each Bidder/Contractor, any person signing on behalf of any Bidder/Contractor and any assignee or subcontractor and, in the case of a joint bid, each party thereto, certifies, under penalty of perjury, that once the Prohibited Entities List is posted on the OGS website, that to the best of its knowledge and belief, that each Bidder/Contractor and any subcontractor or assignee is not identified on the Prohibited Entities List created pursuant to SFL § 165-a(3)(b).

Additionally, Bidder/Contractor is advised that once the Prohibited Entities List is posted on the OGS Website, any Bidder/Contractor seeking to renew or extend a Contract or assume the responsibility of a Contract awarded in response to this solicitation must certify at the time the Contract is renewed, extended or assigned that it is not included on the Prohibited Entities List.

During the term of the Contract, should the School District receive information that a Bidder/Contractor is in violation of the above-referenced certification, the School District will offer the person or entity an opportunity to respond. If the person or entity fails to demonstrate that he/she/it has ceased engagement in the investment which is in violation of the Act within 90 days after the determination of such violation, then the School District shall take such action as may be appropriate including, but not limited to, imposing sanctions, seeking compliance, recovering damages or declaring the Bidder/Contractor in default. The School District reserves the right to reject any bid or request for assignment for a Bidder/Contractor that appears on the Prohibited Entities List prior to the award of a contract and to pursue a responsibility review with respect to any Bidder/Contractor that is awarded a contract and subsequently appears on the Prohibited Entities List.

I, _____, being duly sworn, deposes and says that he/she is the
_____ of the _____ Corporation and that neither the
Bidder/ Contractor nor any proposed subcontractor is identified on the Prohibited Entities List.

SIGNED

SWORN to before me this

_____ day of _____

20____

Notary Public: _____

**DECLARATION OF BIDDER'S INABILITY TO PROVIDE CERTIFICATION OF COMPLIANCE
WITH THE IRAN DIVESTMENT ACT**

Bidders shall complete this form if they cannot certify that the bidder/contractor or any proposed subcontractor is not identified on the Prohibited Entities List. The District reserves the right to undertake any investigation into the information provided herein or to request additional information from the bidder.

Name of the Bidder: _____

Address of Bidder: _____

Has bidder been involved in investment activities in Iran? _____
Describe the type of activities including but not limited to the amounts and the nature of the investments
(e.g. banking, energy, real estate) _____

If so, when did the first investment activity occur? _____

Have the investment activities ended? _____

If so, what was the date of the last investment activity? _____

If not, have the investment activities increased or expanded since April 12, 2012? _____

Has the bidder adopted, publicized, or implemented a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran? _____

If so, provide the date of the adoption of the plan by the bidder and proof of the adopted resolution, if any and a copy of the formal plan.

In detail, state the reasons why the bidder cannot provide the Certification of Compliance with the Iran Divestment Act below (additional pages may be attached):

I, _____ being duly sworn, deposes and says that he/she is the _____ of
the _____ Corporation and the foregoing is true and accurate.

SIGNED

SWORN to before me this

_____ day of _____ 20__

Notary Public: _____

NON-COLLUSIVE FORM
BID PROPOSAL CERTIFICATIONS

Firm Name _____

Business Address _____

Telephone Number _____ Date of Bid _____

I. General Bid Certification

The bidder certifies that he will furnish, at the prices quoted, the materials, equipment and/or services as proposed on this Bid.

II. Non-Collusive Bidding Certification

The following statement is made pursuant to Section 103-D of the General Municipal Law, as amended by Chapter 675 of the Laws of 1966, and Section 139-D of the State Finance Law, as amended by Chapter 675 of the Laws of 1966, and Section 2604 of the Public Authorities Law, as amended by Chapter 675 of the Laws of 1966.

By submission of this bid proposal, the bidder certifies that he/she is complying with Section 103-d of the General Municipal Law as follows:

Statement of non-collusion in bids and proposals to political subdivision of the state. Every bid or proposal hereafter made to a political subdivision of the state or any public department, agency or official thereof where competitive bidding is required by statute, rule, regulation, or local law, for work or services performed or to be performed or goods sold or to be sold, shall contain the following statement subscribed by the bidder and affirmed by such bidder as true under the penalties of perjury:

Non-collusive bidding certification.

A(a) 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 its 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;

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 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.

(b) A bid shall not be considered for award nor shall any award be made where (a) (1) (2) and (3) above have not been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the reasons therefor. Where (a) (1) (2) and (3) above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the political subdivision, public department agency or official thereof to which the bid is made or his designee, determines that such disclosure was not made for the purpose of restricting competition.

The fact that a bidder (a) has published price lists, rates, or tariffs covering items being procured, (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (c) has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of subparagraph one (a).

Any bid hereafter made to any political subdivision of the state or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, and where such bid contains the certifications referred to in subdivision II of this section, shall be deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing, and submission of the bid and the inclusion therein of the certificate as to non-collusion as the act and deed of corporation.

The bidder affirms the above statement as true under the penalties of perjury.

Signature of Bidder: _____

(Signature of bidder or authorized representative of a corporation)

Title: _____

Sworn to before me this _____ day of _____, 20____

Sexual Harassment Prevention Certification Form

By submission of this bid, the person signing on behalf of the bidder certifies, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of Section 201-g of the Labor Law.

Bidder Name: _____

Bidder Address: _____

Signature: _____

Print Name and Title: _____

Date: _____

 AIA® Document A310™ – 2010**Bid Bond****CONTRACTOR:***(Name, legal status and address)***SURETY:***(Name, legal status and principal place of business)***OWNER:***(Name, legal status and address)***BOND AMOUNT: \$****PROJECT:***(Name, location or address, and Project number, if any)*

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

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

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

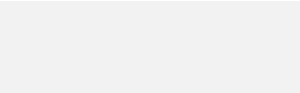
ADDITIONS AND DELETIONS:

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.

Signed and sealed this day of ,



(Witness)

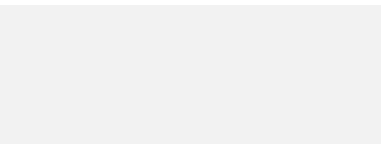
(Contractor as Principal) (Seal)

(Title)

(Surety) (Seal)

(Witness)

(Title)



Init.
/

INSURANCE COVERAGE CERTIFICATION

_____ (name), President/CEO/Owner/Managing Member of _____ (bidder), hereby represents that the bidder currently has, or immediately upon being awarded the contract, will obtain insurance coverage, from an insurer licensed and admitted to do business in the State of New York, that meets the following requirements:

1. **Workers' Compensation, Paid Family Leave and NYS Disability Insurance**
Statutory Workers' Compensation (C-105.2 or U-26.3), NYS Paid Leave and NYS Disability Insurance (DB-120.1) for all employees. Proof of coverage must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable. A person seeking an exemption must file a CE-200 Form with the state. The form can be completed and submitted directly to the WC Board online.
2. **Commercial General Liability Insurance**
\$1,000,000 per Occurrence/\$2,000,000 Aggregate with coverage for sexual misconduct
\$2,000,000 Products and Completed Operations
\$1,000,000 Personal and Advertising Injury
\$100,000 Fire Damage
\$10,000 Medical Expense
The general aggregate shall apply on a per-project basis.
3. **Owners Contractors Protective (OCP) Insurance:**
For Projects less than or equal to \$1,000,000 and work on 1 story (10 feet) only:
\$1,000,000 per occurrence, \$2,000,000 aggregate with the Owner as the named insured.

For Projects greater than \$1,000,000 or any contracts involving scaffolding or work above one story (10 feet): \$2,000,000 per occurrence, \$4,000,000 general aggregate with the Owner as the named insured.

The Owner will be the named insured on OCP Policies. There will be no additional insureds on any OCP Policies.
4. **Automobile Liability**
\$1,000,000 combined single limit for owned, hired, borrowed and non-owned motor vehicles.
5. **Builder's Risk**
Must be purchased by Contractor to include interest of the Owner and the Contractor jointly in a form satisfactory to the Owner. The limit to reflect the total completed value - all material and labor costs and provide coverage for fire,

lightning, explosion, extended coverage, vandalism, malicious mischief, windstorm, hail and/or flood.

6. **Umbrella/Excess Insurance**

\$5,000,000 each occurrence and aggregate for general construction (including plumbing, electrical and HVAC) and no work at elevation (1 story - 10 feet) or Project values less than or equal to \$1,000,000.

\$10,000,000 each occurrence and aggregate for high-risk construction, work at elevation (>1 story or 10 feet) or Project values greater than \$1,000,000.

Umbrella/Excess coverage shall be on a follow-form basis.

7. **Asbestos/Lead Abatement Insurance**

If the Project requires the removal of asbestos and/or hazardous materials, Contractor shall provide hazardous material liability insurance as follows:

\$2,000,000 per occurrence/\$2,000,000 aggregate, including products and completed operations. Such insurance shall include coverage for the Contractor's operations including, but not limited to, removal, replacement, enclosure, encapsulation and/or disposal of asbestos, or any other hazardous material, along with any related pollution events, including coverage for third-party liability claims for bodily injury, property damage and clean-up costs. If a retroactive date is used, it shall pre-date the inception of the Contract.

If the Contractor is using motor vehicles for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage (ISO endorsement CA 9948), as well as proof of MCS 90. Coverage shall fulfill all requirements of this Article 10 and shall extend for a period of three (3) years following acceptance by the Owner of the Certificate of Completion.

8. **Testing Company Errors and Omission Insurance**

\$1,000,000 per occurrence/\$2,000,000 aggregate for the testing and other professional acts of the Contractor performed under the Contract with the Owner.

Insurance Representative's Acknowledgment:

We have reviewed the insurance requirements set forth in the Bidding Documents and are capable of providing such insurance to our insured in accordance with such requirements in the event the contract is awarded to our insured and provided our insured pays the appropriate premium.

Insurance Representative: _____

Address: _____

Are you an agent for the companies providing the coverage: Yes _____ No _____

Date: _____
Insurance Representative

Bidder's Acknowledgment:

I acknowledge that I have reviewed the insurance requirements for this bid and have considered the costs, if any, of procuring the required insurance and will be able to supply the insurance required in accordance with the bid, if it is awarded. I understand that a certificate of insurance must be submitted with my bid; and if it is not, the Owner may reject my bid and award to the next lowest bidder.

Firm Name: _____

Address: _____

Date: _____
Bidder's Signature

QUALIFICATIONS OF BIDDERS

Experience and Qualifications of the Bidder: Each bidder is required to submit the following documentation to demonstrate its experience and qualifications for the work of the Project for which a bid is submitted:

- a. A description of its experience with projects of comparative size, complexity, and cost, together with documentary evidence showing that said projects were completed to the Owner's satisfaction and were completed in a timely fashion;
- b. Documentation from each of the projects it has performed capital work in the last five (5) years concerning the bidder's:
 - (i) timeliness of performance of the work of the project
 - (ii) evidence that the project was completed to the Owner's satisfaction;
 - (iii) whether or not any extensions of time were requested by the contractor and whether or not such requests were granted;
 - (iv) whether litigation and/or arbitration was commenced by either the Owner or the bidder as a result of the work of the project performed by the bidder;
 - (v) whether any liens were filed on the project by subcontractors or material suppliers of the bidder;
 - (vi) whether the bidder was defaulted on the project by the owner;
 - (vii) whether the bidder made any claims for extra work on the project, including whether said claim resulted in a change order;
- c. Documentation evidencing the bidder's financial responsibility, including a certified financial statement prepared by a certified public accountant.
- d. Documentation evidencing the bidder's existence under the same name for the last five (5) years.
- e. Documentation evidencing the bidder's Worker's Compensation Experience Modification.

STATEMENT OF BIDDER'S QUALIFICATIONS

IMPORTANT: BIDDERS ARE REQUIRED TO FURNISH A COMPLETE ANSWER TO ALL OF THE QUESTIONS IN THIS STATEMENT. IF ADDITIONAL SPACE IS REQUIRED TO FURNISH A COMPLETE ANSWER, BIDDER MAY ATTACH PAGES AS NECESSARY. IN THE EVENT THAT COMPLETE ANSWERS ARE NOT PROVIDED TO EVERY QUESTION, THE BID WILL BE REJECTED.

1. Name of Bidder

2. Type of Business Entity

3. If the bidder is a corporation, state the date and place of incorporation of the corporation.

4. For how many years has the bidder done business under its present name?

5. List the persons who are directors, officers, owners, managerial employees or partners in the bidder's business.

6. Have any of the persons listed in Number 5 owned/operated/been shareholders in any other companies? If so, please state the names of the other companies and the individuals who owned, operated, or have been shareholders:

7. Has any director, officer, owner or managerial employee had any professional license suspended or revoked? If the answer to this question is yes, list the name of the individual, the professional license he/she formerly held, whether said license was revoked or suspended and the date of the revocation or suspension.

8. Has the bidder been found guilty of any OSHA Violations? If the answer to this question is yes, describe the nature of the OSHA violation, an explanation of remediation or other steps taken regarding such violation(s).

9. Has the bidder been charged with any claims pertaining to unlawful intimidation or discrimination against any employee by reason of race, creed, color, disability, sex or natural origin and/or violations of an employee's civil rights or equal employment opportunities? If the answer to this question is yes, list the persons making such claim against the bidder, a description of the claim, the status of the claim, and what disposition (if any) has been made regarding such claim.

10. Has the bidder been named as a party in any lawsuit arising from performance of work related to any project in which it has been engaged? If the answer to this question is yes, list all such lawsuits, the index number associated with said suit and the status of the lawsuit at the time of the submission of this bid.

11. Has the bidder been the subject of an investigation and/or proceedings before the Department of Labor for alleged violations of the Labor Law as it relates to the payment of prevailing wages and/or supplemental payment requirements? If the answer to this question is yes, please list each such instance of the commencement of a Department of Labor proceeding, for which project such proceeding was commenced, and the status of the proceeding at the time of the submission of this bid.

12. Has the bidder been the subject of an investigation and/or proceeding before any law enforcement agency, including, but not limited to any District Attorney's Office? If the answer to this question is yes, please list each such instance, the law enforcement agency, the nature of the proceeding, the project for which such proceeding was commenced, if applicable to a project, and the status of the proceeding at the time of the submission of this bid.

13. Has the bidder been the subject of proceedings involving allegations that it violated the Workers' Compensation Law, including but not limited to, the failure to provide proof of worker's compensation or disability coverage and/or any lapses thereof? If the answer to this question is yes, list each such instance of violation and the status of the claimed violation at the time of the submissions of this bid.

14. Has the bidder, its officers, directors, owner and/or managerial employees been convicted of a crime or been the subject of a criminal indictment? If the answer to this question is yes, list the name of the individual convicted or indicted, the charge against the individual and the date of disposition of the charge.

15. Has the bidder been charged with and/or found guilty of any violations of federal, state, or municipal environmental and/or health laws, codes, rules and/or regulations? If the answer to this question is yes, list the nature of the charge against the bidder, the date of the charge, and the status of the charge at the time of the submission of this bid.

16. Has the bidder bid on any projects in the last five years preceding the date of this bid submission? If the answer to this question is yes, list the projects bid on, whether said bid was awarded to the bidder and the expected date of commencement of the work for said project. For those projects listed, if the bidder was not awarded the contract, state whether the bidder was the lowest monetary bidder.

IMPORTANT: BIDDERS ARE REQUIRED TO FURNISH A COMPLETE LIST OF PROJECTS AS REQUIRED BY THIS QUESTION #16 WITH ITS BID. IN THE EVENT THE LIST REQUESTED IS NOT SUBMITTED WITH THE BIDDER'S BID, THE BID WILL BE REJECTED.

17. Does the bidder have any projects ongoing at the time of the submission of this bid? If the answer to this question is yes, list the projects on which the bidder is currently working, the percentage complete, and the expected date of completion of said project.

IMPORTANT: BIDDERS ARE REQUIRED TO FURNISH A COMPLETE LIST OF PROJECTS AS REQUIRED BY THIS QUESTION #17 WITH ITS BID. IN THE EVENT THE LIST REQUESTED IS NOT SUBMITTED WITH THE BIDDER'S BID, THE BID WILL BE REJECTED.

18. Have the bidder and its bond surety ever been notified by a project Owner that the Owner is contemplating declaring a default and requested a conference to discuss the performance of the contract? If the answer to this question is yes, list the projects on which such a conference was held, and the result of the conference, and the status of the project in question.

19. Has the bidder ever been terminated from a Project by the Owner? If the answer to this question is yes, list the projects on which the bidder was terminated, the nature of the termination (convenience, suspension, for cause), and the date of said termination.

IMPORTANT: BIDDERS ARE REQUIRED TO FURNISH A COMPLETE LIST OF PROJECTS AS REQUIRED BY THIS QUESTION #19 WITH ITS BID. IN THE EVENT THE LIST REQUESTED IS NOT SUBMITTED WITH THE BIDDER'S BID, THE BID WILL BE REJECTED.

20. Has the bidder's surety ever been contacted to provide supervisory services in connection with an on-going project. If the answer to this question is yes, list the project(s) for which the surety provided supervisory services.

IMPORTANT: BIDDERS ARE REQUIRED TO FURNISH A COMPLETE LIST OF PROJECTS AS REQUIRED BY THIS QUESTION #20 WITH ITS BID. IN THE EVENT THE LIST REQUESTED IS NOT SUBMITTED WITH THE BIDDER'S BID, THE BID WILL BE REJECTED.

21. Bidder's Worker's Compensation Experience Modifier: _____

Dated:

By: _____
(Signature)

(Print Name and Title)

Sworn to before me this _____
day of _____, 20____.

Notary Public

AGREEMENT made as of the ____ day of _____ in the year of Two Thousand Twenty _____.

BETWEEN the Owner
(Name and address)

and the Contractor:
(Name and address)

The Project is:
(Name and location)

The Architect is:
(Name and address)

The Construction Manager is:
(Name and address)

The Owner and Contractor agree as set forth below.

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 Article 9 of this Agreement and Modifications issued after execution of this Agreement; these form the Contract and are 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

The Contractor shall execute the entire Work described in the Contract Documents or reasonably inferable by the Contractor as necessary to produce the results intended by the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3
DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

3.1 The date of commencement of the work and substantial completion of the work of this contract shall be in accordance with the schedule set forth in the Project Manual.

3.2 Time is of the essence respecting the contract documents and all obligations thereunder.

3.3 Upon the execution of this Agreement, the Contractor shall provide the Owner with copies of all contracts entered into between the Contractor and subcontractors or material suppliers. The Contractor's obligation to provide the Owner with said contracts shall continue for the duration of the Project.

ARTICLE 4
CONTRACT SUM

4.1 The Owner shall pay the Contractor in current funds for the Contractor's performance of the Contract the Contract Sum of \$_____, subject to additions and deductions as provided in the Contract Documents.

4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Bid Proposal Form (attached hereto) and are hereby accepted by the Owner:

4.3 Unit prices are as set forth in Exhibit A hereto.

ARTICLE 5

PROGRESS PAYMENTS

5.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

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

All progress payments shall be based upon an estimate and a certificate, made by the Architect, of the materials furnished, installed, and suitably stored at the site and the work done by the Contractor, and payment shall be made in installments of ninety-five percent (95%) of the amount certified as earned so that, at the completion of the work, there will be a retainage of five percent (5%) of the Total Contract Sum. Retainage shall be paid to the Contractor upon final completion of the work of this contract. All progress payments made previous to the last and final payment shall be based on estimates and the right is hereby reserved by the Architect for the Owner to make all due and proper corrections in any payment for any previous error.

The Contractor shall submit with each application for payment the following:

5.2.1 A current Sworn Statement from the Contractor setting forth all subcontractors and materialmen with whom the Contractor has subcontracted, the amount of such subcontract, the amount requested for any subcontractor or materialman in the application for payment and the amount to be paid to the Contractor from such progress payment.

5.2.2 Commencing with the second (2nd) Application for Payment submitted by the Contractor, duly executed so-called "after the fact" waivers of mechanics' and materialmen's liens from all subcontractors, materialmen and, when appropriate, from lower tier subcontractors, establishing receipt of payment or satisfaction of payment of all amounts requested on behalf of such entities and disbursed prior to submittal by the Contractor of the current Application for Payment, plus sworn statements from all subcontractors, materialmen and, where appropriate, from lower tier subcontractors, covering all amounts described in this Paragraph 5.2.

5.2.3 Such other information, documentation and materials as the Owner or the Architect may require.

5.3 Payment shall not be released to the Contractor until the Owner receives the following documentation:

5.3.1 Certified payroll for employees and employees of subcontractors performing work on the Project.

5.3.2 Copies of invoices submitted to the Contractor by its subcontractors and/or material suppliers.

ARTICLE 6 **FINAL PAYMENT**

Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when (1) the Contract has been fully performed including compliance with all provisions of the Contract Documents except for the Contractor's responsibility to correct nonconforming Work under Article 15(B) of the General Conditions and to satisfy other requirements, if any, which necessarily survive final payment; and (2) a final Certificate for Payment has been issued by the Architect; such final payment shall be made by the Owner not more than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows or as soon thereafter as is practicable.

ARTICLE 7 **MISCELLANEOUS PROVISIONS**

7.1 Where reference is made in this Agreement to a provision of the General Conditions or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

7.2 The Contractor represents and warrants the following to the Owner (in addition to any 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, any termination of this Agreement and the final completion of the Work:

7.2.1 that it and its Subcontractors are financially solvent, able to pay all debts as they mature and possessed of sufficient working capital to complete the Work and perform all obligations hereunder;

7.2.2 that it is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the Work and perform its obligations hereunder;

7.2.3 that it is authorized to do business in the State of New York and the United States and properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over it and over the Work and the Project;

7.2.4 that its execution of this Agreement and its performance thereof is within its duly authorized powers;

7.2.5 that its duly authorized representative has visited the site of the Project, is familiar with the local and special conditions under which the Work is to be performed and has correlated on-site observations with the requirements of the Contract Documents; and

7.2.6 that it possesses a high level of experience and expertise in the business administration, construction, construction management and superintendence of projects of the size, complexity, and nature of the particular Project, and that it will perform the Work with the care, skill, and diligence of such a contractor.

The foregoing warranties are in addition to, and not in lieu of, any and all other liability imposed upon the Contractor by law with respect to the Contractor's duties, obligations, and performance hereunder. The Contractor's liability hereunder shall survive the Owner's final acceptance of and payment for the Work. All representations and warranties set forth in this Agreement, including without limitation, this Paragraph 7.2, shall survive the final completion of the Work or the earlier termination of this Agreement. The Contractor acknowledges that the Owner is relying upon the Contractor's skill and experience in connection with the Work called for hereunder.

ARTICLE 8

TERMINATION OR SUSPENSION

8.1 The Contract may be terminated by the Owner as provided in the General Conditions.

8.2 The Work may be suspended by the Owner as provided in the General Conditions.

ARTICLE 9

ENUMERATION OF CONTRACT DOCUMENTS

9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:

9.1.1 The Agreement is this executed Agreement between Owner and Contractor.

9.1.2 The General Conditions are the General Conditions of the Contract for Construction as set forth in the Project Manual and attached hereto.

9.1.3 The Specifications are as set forth in the Project Manual and indexed in Exhibit "B" hereto.

9.1.4 The Drawings are those as indexed in Exhibit "C" hereto.

9.1.5 The Addenda, if any, are as follows:

Addendum No.	Date	Number of Pages

This Agreement is entered into as of the day and year first written above and is executed in at least three original copies of which one is to be delivered to the Contractor, one to the Architect for use in the administration of the Contract, and the remainder to the Owner.

OWNER

CONTRACTOR

By: _____

(printed name and title)

By: _____

(printed name and title)



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)

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

Company: (Corporate Seal)

Signature: _____

Name and

Title:

(Any additional signatures appear on the last page of this Performance Bond.)

SURETY

Company: (Corporate Seal)

Signature: _____

Name and

Title:

(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.

§ 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.

§ 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.

§ 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

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

SURETY

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____



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)

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

Company: (Corporate Seal)

SURETY

Company: (Corporate Seal)

Signature: _____

Name and

Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Signature: _____

Name and

Title:

(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.

§ 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.

§ 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.

§ 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

Company: _____ (Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

SURETY

Company: _____ (Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

GENERAL CONDITIONS
of the
CONTRACT for CONSTRUCTION

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The within document includes detailed provisions concerning the capital improvement work to be performed by the Contractors engaged by the Owner. This document contains provisions which relate particularly to capital improvement projects in the school district setting in New York State. The document is incorporated by reference into all contracts to be awarded and should be reviewed carefully by the Contractor and SubContractors to whom the award of contract is made. Consultation with an attorney and insurance representative is advised.

ARTICLE 1 DEFINITIONS

- A. "Addendum" or "Addenda" refers to revised Drawings and/or written requirements for the capital improvement work issued by the Architect prior to the time indicated for submission of a bid by a contractor.
- B. The "Architect" is the design professional engaged by the School District respecting the capital improvement projects to be performed in the School District.
- C. "Board" refers to the Board of the School District.
- D. "Central Administration" refers to the Superintendent of Schools or designee.
- E. The "Construction Manager" is the entity engaged by the School District to act as its representative during the course of construction of the Project.
- F. The "Contract Documents" are the Agreement between the Owner and the Contractor, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda which have been issued.
- G. The "Contractor" refers to the entity engaged by the School District to perform all or a part of the capital improvement project on its behalf.
- H. Where a contractor other than the General Contractor is the only contractor engaged to perform work, the responsibilities allocated to the General Contractor in these General Conditions shall be performed by such other contractor.
- I. The "Drawings" are the plans, elevations, sections, details, schedules, and diagrams developed by the Architect for the capital improvement projects to be performed in accordance with the Project manual of which these General Conditions of the Contract for Construction ("General Conditions") form a part.
- J. The "Project" refers to the entire capital improvement project to be performed in accordance with the Project Manual.

K. The “Project Manual” is the document which is issued simultaneously with the Drawings and includes the Notice to Bidders, Information to Bidders, Bid Proposal Form, Prevailing Wage Rate schedule and the written requirements for labor, materials, equipment, construction systems and the like necessary for the Contractor to complete the capital improvement work for which it has been engaged.

L. The “Owner” refers to the School District, the Board of Education, its officers, agents, and employees.

M. A “SubContractor” is a person or entity who has a direct contract with the Contractor to provide material and/or labor for the Project on or off the site, or to otherwise furnish labor, material or other services with respect to a portion of the Contractor’s work. A “Sub-SubContractor” is a person or entity who has a direct or indirect contract with a SubContractor engaged by the Contractor to perform a portion of the SubContractor’s work at the site, or to otherwise furnish labor, material, or other services with respect to a portion of the SubContractor’s work.

N. Accepted,” “directed,” “permitted,” “requested,” “required,” and “selected” mean, unless otherwise explained, “accepted by the Architect and/or the Owner” “directed by the Architect and/or the Owner,” “permitted by the Architect and/or the Owner,” “requested by the Architect and/or the Owner,” “required by the Architect and/or the Owner,” and “selected by the Architect and/or the Owner.” However, no such implied meaning will be interpreted to extend the Architect’s or the Owner’s responsibility into the Contractor’s area of construction supervision.

O. “As accepted” “or acceptable substitute,” and “for review” mean the Architect is the sole judge of the quality and suitability of the proposed substitutions. Where used in conjunction with the Architect’s response to submittals, requests, applications, inquiries, reports, and claims by the Contractor, the meaning will be held to the limitations of the Architect’s responsibilities and duties as stated in the General Conditions. In no case will “accepted by the Architect” be interpreted as an assurance to the Contractor that the requirements of the Contract Documents have been fulfilled.

P. “Furnish” means: (1) supply and deliver to the Project or other designated location, ready for unloading, unpacking, storing, assembly, installation, application, erection, or other form of incorporation into the Project, and ready for use; and (2) supply and deliver products requiring additional or supplemental fitting, assembly, fabrication, or incorporation into other elements of the Project directly to the fabricator, installer, or manufacturer as required.

Q. “Install” means unload, unpack, use, fit, attach, assemble, apply, place, anchor, erect, finish, cure, protect, clean, and similar operations required to properly incorporate work into the Project.

R. “Provide” means furnish and install.

S. “Replace” means remove designated, damaged, rejected, defective, unacceptable, or non-conforming work from the Project and provide new work meeting the requirements of the Contract Documents in place thereof.

T. The word “include,” in any form other than “inclusive,” is non-limiting and is not intended to mean all-inclusive.

ARTICLE 2 CONTRACTOR’S REPRESENTATIONS

A. Upon submission of its bid to the Owner, the Contractor expressly represents:

1. The Contractor represents and warrants that it performed a detailed investigation of the site(s) and that such investigation was sufficient to disclose the conditions of the site(s) at which work is to be performed by it and all improvements thereon, and the conditions under which the work is to be performed, including, but not limited to (a) the location, condition, layout and nature of the Project and surrounding areas; (b) the cost of labor, materials and equipment necessary to perform the work, the availability; (c) the areas of the work which will cause a disruption to the necessary and proper operation of the facilities by the Owner; and (d) other pertinent limitations on the performance of its work.

2. The Contractor represents and warrants that it has carefully studied and compared the Drawings and pertinent provisions of the Project Manual and that any errors, omissions, ambiguities, discrepancies, or conflicts found in said documents have been brought to the attention of the Architect for clarification prior to the Contractor’s submission of its bid. If, in the interpretation of Contract Documents, requirements within the Drawings and Specifications conflict, or it appears that the Drawings and Specifications are not in the Agreement, the requirement to be followed shall be decided by the Architect. Where there is a discrepancy in quantity, the Contractor shall provide the greater quantity; where there is a discrepancy in quality, the Contractor shall provide the superior quality. Addenda supersede the provisions that they amend.

3. Each contractor certifies that it is experienced and familiar with the requirements and conditions imposed during the construction of similar work in the area. This includes, but is not limited to, “out of sequence” or “come back” work for the removal of plant, equipment, temporary wiring, or plumbing, etc. This “out of sequence” work may also include phasing of construction activities to accommodate the installation of the work at various locations and orderly fashion and the completion of work at various locations and/or levels at various times. This “phasing,” “out of sequence,” or “come back” work shall be done at no cost to other contractors, the Owner, the Architect, or the Construction Manager.

B. The Contractor warrants to the Owner that: (1) the materials and equipment furnished under its contract will be of good quality and new, and of recent manufacture, unless otherwise required or permitted by the Contract Documents; (2) that its work will be free from defects not inherent in the quality required or permitted; and (3) that its work will conform with the terms

and conditions of the Agreement with the Owner. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective and shall be removed and replaced at the Contractor's cost and expense. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

C. Except as to any reported errors, inconsistencies, or omissions, and to concealed or unknown conditions, by executing the Agreement, the Contractor represents the following:

1. The Drawings and the Specifications found in the Project Manual issued simultaneously with said Drawings are sufficiently complete and detailed for the Contractor to: (a) perform the work required to produce the results intended by the Owner; and (b) comply with all the requirements of its contract with the Owner.

2. The work required to be performed by the Contractor including, without limitation, all construction details, construction means, methods, procedures and techniques necessary to perform its work, use of materials, selection of equipment and requirements of product manufacturers are consistent with: (a) good and prevailing and accepted industry standards applicable to its work; (b) requirements of any warranties applicable to its work; and (c) all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies which bear upon the Contractor's performance of its work.

3. The Drawings and the Specifications for the Contract have been prepared with care and are intended to show as clearly as is practicable the work required to be done. Work under all items in the Contract Documents must be carried out to meet field conditions to the satisfaction of the Architect and the Owner and in accordance with his instructions and the Drawings and the Specifications.

4. All dimensions shown on the Drawings are for bidding purposes only. It is the responsibility of the Contractor to verify all dimensions in the field to ensure proper and accurate fit of materials and items to be installed.

D. The representations set forth herein shall survive expiration and/or termination of the Contractor's Agreement with the Owner.

ARTICLE 3 CONTRACTOR'S CONSTRUCTION PROCEDURES

A.

1. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures required for the proper execution of its work on the Project. Where the Drawings, the Specifications, and/or the Project Manual make reference to particular construction means, methods, techniques, sequences or procedures or indicate or imply that such are to be used in connection with the Contractor's work, such reference is intended only to indicate that the Contractor's work is to produce at least the quality

of the work implied by the operations described, but the actual determination as to whether or not the described operations may be safely or suitably employed in the performance of the Contractor's work shall be the sole responsibility of the Contractor. All loss, damage, liability, or cost of correcting defective work arising from the employment of a specific construction means, method, technique, sequence, or procedure shall be borne solely by the Contractor.

2. Neither the Architect, the Construction Manager or the Owner will have control over or charge of and will not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided herein.

3. The Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, rigging, water, heat, utilities, light, transportation, and other facilities and services necessary for proper execution and completion of its work, whether temporary or permanent and whether or not incorporated or to be incorporated in its work.

B. The Contractor shall be responsible for coordinating the work of its own forces and the work of SubContractors engaged by it to perform the work of the Project on its behalf. The Contractor shall supply to its own work forces, and SubContractors engaged by it to perform portions of its work, copies of the Drawings, the Specifications, and the Project Manual for the work to be performed by such individuals/entities on its behalf. The Contractor shall review any specified or installation procedure with its employees and/or SubContractors, including those recommended by any product manufacturer, prior to the commencement of the relevant portion of the work to be performed. The Contractor shall be responsible to the Owner for the acts and/or omissions of the Contractor's employees, the Contractor's SubContractors, the Contractor's material suppliers, and/or their respective agents and employees, and any other persons performing portions of the work on behalf of the Contractor.

C. The Contractor shall be responsible for the inspection of portions of the Project performed by its own work force and/or SubContractors engaged by it for the purpose of determining that said work is in proper condition to receive subsequent work.

D. The Contractor shall perform its work in accordance with the standards of the construction industry applicable to work in the locale in which work is to be performed.

E. The Contractor shall only employ labor on the Project or in connection with its work capable of working harmoniously with all trades, crafts and any other individuals associated with the capital improvement work to be performed. There shall be no strikes, picketing, work stoppages, slowdowns, or other disruptive activity at the Project for any reason by anyone employed or engaged by the Contractor to perform its portion of the work. There shall be no lockout at the Project by the Contractor. The Contractor shall be responsible for providing the manpower required to proceed with the work under any circumstance. Should it become necessary to create and maintain a separate entrance for a contractor involved in a labor dispute, all costs associated with creating and maintaining that entrance shall be borne by the contractor involved in the dispute. Such costs shall include, but not be limited to, signage, fencing,

temporary roads, and security personnel as deemed necessary by the Owner for the safety of the occupants of the site.

F.

1. If the Contractor has engaged the services of workers and/or SubContractors who are members of trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage, or cost to the Owner and without recourse to the Architect, the Construction Manager, or the Owner, any conflict between its Agreement with the Owner and any agreements or regulations of any kind at any time in force among members or councils which regulate or distinguish what activities shall not be included in the work of any particular trade.

2. In case the progress of the capital improvement work to be performed by the Contractor is effected by any undue delay in furnishing or installing any items or materials or equipment required pursuant to its Agreement with the Owner because of a conflict involving any such labor agreement or regulation, the Owner may require that other material or equipment of equal kind and quality be provided pursuant to a Change Order or Construction Change Directive but in no case shall the amount of such change be charged by the Contractor to the Owner as an additional cost to perform the capital improvement work pursuant to its contract.

3. The Contractor shall ensure that its work continues uninterrupted during the pendency of a labor dispute.

4. The Contractor shall be liable to the Owner for all damages suffered by the Owner occurring as a result of work stoppages, slowdowns, disputes, or strikes.

G. The Contractor shall enforce strict discipline and good order among the Contractor's employees and its SubContractors' work forces and other persons carrying out the performance of its work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. The Owner reserves the right to object to any person to be hired or who is employed by the Contractor. Upon the request of the Owner, said person shall be removed from the Project and not again be assigned to perform the Contractor's work without the prior written permission of the Owner.

H. Within one (1) week after receiving notice of its award of the Contract, the Contractor shall employ a competent, full-time Project Manager and On Site Superintendent to be approved by the Owner or its representative, and such necessary assistants who shall be in attendance at each Project site whenever and wherever work is in progress to provide for the expeditious completion of the work. Said Project Manager and On Site Superintendent shall be employed until punch list and closeout of the Project. To the extent work is being performed contemporaneously at different facilities within the School District, the Contractor shall assign different superintendents for each facility at which work is being performed. The Project Manager and On Site Superintendent assigned by the Contractor shall not be changed except with the prior written consent of the Owner, unless the Project Manager or On Site superintendent or such assistant proves to be unsatisfactory to the Contractor and/or ceases to be in its employ. The Project Manager and On Site Superintendent shall represent the Contractor, and communications given to the Project

Manager or On Site Superintendent, whether verbal or written, shall be as binding as if given to the Contractor. Oral communications to the Superintendent(s) or his/her assistant(s) and/or Project Manager shall be confirmed in writing by the Owner or the Architect. The Contractor shall forward to the Owner a copy of the resumes for each of its superintendents, Project Managers, and their assistants. The Owner, the Construction Manager or the Architect shall have the right to have any supervisory or management staff removed from the Project with or without cause.

I. Each Contractor shall provide, or otherwise see that, the Project Manager, or On Site Superintendent Site Managers, and/or responsible workers of each contractor and major subcontractor are equipped with cellular phones and radios. Each contractor shall provide the Owner, the Construction Manager, and the Architect with the cellular telephone number for each phone and worker.

J. The Contractor's supervisory personnel, including superintendents and their assistants, shall be versed in the English language. In the event the Contractor's supervisory personnel, the superintendents, Project Managers, and/or their assistants are not versed in the English language, the Contractor shall employ the services of a full-time on-site interpreter to facilitate communications with such supervisory personnel, superintendents and/or assistants.

K. Prior to the commencement of work, the Contractor shall provide the Construction Manager and the Architect with:

1. a written list of the names, addresses and telephone numbers of the members of its organization who can be contacted in the event of an off-hours emergency at the building site, including cellular telephone numbers and personal/home telephone numbers.

2. a written list of SubContractors, Sub-SubContractors, suppliers and vendors with names, addresses, telephone numbers, and descriptions of the work they shall perform or furnish.

3. The name, address and telephone number of the bonding company, banking, and insurance company for the Prime Contractor including the name, address, and telephone number of each bonding company's primary contact representative for the Project.

4. Detailed subcontractor schedules indicating the approximate quantity of shop drawings, sequence, timing, and man loading.

5. A cash flow projection for the life of the Project, including a schedule and graph showing the amount of work projected to be completed each month or billing period and a dollar value for the anticipated billings each month or billing period. This shall be completed after an agreed upon schedule of values has been approved by the Construction Manager.

L.

1. Tests, inspections, and approvals of portions of the Contractor's work required by the Drawings and/or the Specifications shall be made at an appropriate time. Unless otherwise provided, the Contractor shall consult with the Architect and the Construction Manager

concerning the need for testing and/or inspection of its work pursuant to the Contract Documents and, after consulting with the Architect and the Construction Manager, the Construction Manager shall advise the Owner to 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. The Owner shall bear all costs associated with the tests, inspections or approvals required by the Drawings and/or the Specifications, except as set forth in subparagraph 3 hereof.

2. Tests, inspections, and approval of portions of the Contractor's work required by all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies of public authorities or governmental agencies having jurisdiction shall be made at an appropriate time. The Contractor shall consult with the Architect and the Construction Manager concerning the need for testing and/or inspection of its work pursuant to law, ordinance, regulation or orders of public authorities or governmental agencies and shall advise the Owner in writing that it has made arrangements for such tests, inspections and approvals with the appropriate public authority or governmental agency. The Contractor shall be solely responsible for making timely notice of the need for a test, inspection and/or approval with the relevant public authority or governmental agencies and shall bear all costs associated with such testing, inspection, or approval required by such public authority or governmental agency.

3. If the Architect, the Construction Manager, the Owner, or public authorities or governmental agencies having jurisdiction determine that portions of the Contractor's work require additional testing, inspection, or approval due to the Contractor's failure to perform its work in accordance with the requirements of the Contract Documents and/or all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies of public authorities or governmental agencies having jurisdiction, the Architect and the Construction Manager will advise the Owner of the need for such additional inspections or tests and the Owner shall make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner. The Contractor shall bear the costs of such additional testing as provided in Article 14(B).

M. The Contractor shall, if required by all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies of public authorities or governmental agencies having jurisdiction over the Project, retain a licensed professional engineer to supervise the construction of the Project including, but not limited to, foundations, structural work, soils, welding, reinforced masonry, and the like.

N. The Contractor recognizes and acknowledges that the Project is governed by and subject to the provisions of New York State General Municipal Law, Section 101, governing the award of contracts on public improvement projects. As such, the Contractor recognizes and acknowledges that other contractors will be performing work on the Project in conjunction with it. As such, the Contractor agrees to cooperate with such other contractors performing work on the Project and shall perform its work as follows:

1. The Contractor shall not interfere with the erection, installation, or storage upon the premises of any work, materials, supplies, or equipment which is to be performed and

furnished by other contractors, and the Contractor shall properly connect and coordinate its work therewith.

2. The Contractor shall not commit or permit any act which will interfere with the performance of the work of any other Contractor performing work on the Project. If the Contractor sustains any damage through any act or omission of other contractors having a contract with the Owner for the performance of work upon the site or of work which may be necessary to be performed for the proper execution of the work to be performed hereunder, or through any act or omission of a SubContractor of such contractor, the Contractor shall promptly notify the Owner and the Construction Manager of such damage.

3. When the work of the Contractor or its SubContractors overlap or dovetail with that of other contractors, materials shall be delivered and operations conducted to carry on the work continuously, in an efficient, workmanlike manner.

4. In case of interference between the operations of different contractors, the Construction Manager will be the sole judge of the rights of each contractor and shall have the authority to decide in what manner the work may proceed, and in all cases its decision shall be final. Any decision as to the method and times of conducting the work or the use of space as required in this paragraph shall not be basis of any claim for delay or damages by the Contractor.

5. The Contractor, including its SubContractors, shall keep itself informed of the progress of other contractors and shall notify the Architect or the Construction Manager immediately in writing of lack of progress on the part of other contractors where such delay will interfere with its own operations. Failure of the Contractor to keep informed of the work progressing on the Project and failure to give notice of lack of progress by others shall be construed as acceptance by the Contractor of the status of the work as being satisfactory for proper coordination with the Contractor's own work.

6. Delays or oversights on the part of any contractor or subcontractor in getting any or all of their work done in the proper way, thereby causing cutting, removing, and replacing work already in place, shall not be the basis for a claim for extra compensation.

7. If part of the Contractor's work depends upon construction or operations by the Owner or another contractor, the Contractor shall, prior to proceeding with that portion of its work, promptly report to the Architect and the Construction Manager apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or other contractor's completed or partially completed construction is fit and proper to receive the Contractor's work.

8. The Contractor shall promptly correct discrepancies or defects in its work which have been identified by other contractors as affecting proper execution and results of the work of such other contractor.

O.

1. The Contractor shall comply with and give notices required by all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies of public authorities or governmental agencies bearing on performance of the Work. If the Contractor fails to give such notices, it shall be liable for and shall defend, indemnify, and hold harmless: (a) the Owner, its consultants, employees, members of the Board, officers, and agents; (b) the Architect and its consultants, employees, officers, and agents; and/or (c) the Construction Manager and its consultants, employees, officers, and agents from and against any resulting fines, penalties, judgments, or damages, including reasonable attorney's fees, imposed on or incurred by the parties indemnified hereunder. The Contractor shall pay any costs or fees incurred in such compliance and any fines or penalties imposed for violation thereof and any costs or fees incurred by the Owner due to such violation.

2. The Contractor shall pay any costs or fees incurred in such compliance and any fines or penalties imposed for violation thereof and any costs or fees incurred by the Owner due to such violation. If the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and the Owner in writing, and necessary changes shall be accomplished by appropriate modification to the Drawings and/or the Specifications.

3. If the Contractor performs Work knowing it to be contrary to all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies of public authorities or governmental agencies without such notice to the Architect, the Construction Manager, and the Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs and shall bear the total cost for correction of same.

P. The Contractor recognizes and acknowledges that job meetings will be held at the job site as designated by the Owner or the Construction Manager, unless otherwise designated by the Owner or the Architect. The Contractor shall have responsible representation at the MANDATORY weekly job meetings held at the Construction Manager's job office. These meetings will be held to arrange for satisfactory coordination of all trades on the Project so as not to impede job progress. Contractors or SubContractors failing to attend job meetings shall be responsible for delays and/or expenses incurred due to coordination difficulty.

Q. The Contractor shall provide copies of its daily construction reports to the Construction Manager's Field Superintendent. These reports shall be submitted no later than 10:00 am the following workday. The daily reports shall provide detailed information concerning the Contractor's activities and operations, including work activities on site and manpower. A "Daily Construction" form shall be used for reporting these activities. In addition, the Contractor is required to submit a Two Week Look Ahead schedule for upcoming work.

ARTICLE 4 CONTRACTOR'S USE OF SITE

A. The Contractor shall confine operations at the site to the areas at which construction is to be performed and to such areas permitted by law, ordinances, permits and as set forth in detail in the Project Manual and the Drawings, the Specifications, and the Project Manual.

B. Five (5) days after receipt of the Notice to Proceed, the Contractor shall provide two (2) copies of a videotaped recording of all existing conditions to the Construction Manager. This taping shall provide a record of all existing buildings, grounds, exterior conditions, and interior conditions. The Contractor shall schedule a representative of both the Owner and the Construction Manager to be present at this taping. In the absence of this record, the Contractor shall be responsible for paying the costs associated with any and all repairs in an area where the Contractor is working or has worked, as may be deemed necessary by the Owner or the Construction Manager.

C. The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.

D. General Safety and Security Standards for Construction Projects:

1. All construction materials shall be stored in a safe and secure manner.
2. Fences around construction supplies or debris shall be maintained.
3. Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.
4. During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.
5. The Contractor shall exert utmost care and diligence when working in or near any existing buildings or sitework. The absence of protection around such items shall not excuse the Contractor from its liability to provide protection. Any damage to existing buildings, sitework, or facilities shall be repaired and charged to the Contractor responsible for the damage.
6. The Contractor shall be responsible for the removal and replacement of existing ceiling tiles and grid in areas of the existing building where its work is required, and new ceilings are not scheduled for installation. In the event that the existing ceilings are damaged and cannot be replaced to the satisfaction of the Owner, the responsible contractor shall be liable for the costs of replacing in kind, the existing ceilings with new tile and grid.
7. All disconnect and/or tie-in work involving any utilities that would interfere with the ongoing operations of the Owner shall be completed after hours when the facility is not in

use. The performance of this work shall be projected on all schedules required to be prepared by the Contractor. Additionally, the Contractor shall give the Construction Manager and the Owner at least forty-eight (48) hours advance written notice of its intention to perform this type of work. All overtime and standby personnel necessary to complete these tie-ins shall be the responsibility of the Contractor performing the work.

E.

1. Separation of construction areas from occupied spaces: Construction areas which are under the control of a contractor and therefore not occupied by district staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust, or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas. Methods of dust and fume control shall include, but not be limited to:

- a. adequate ventilation;
- b. wetting down;
- c. keeping bags of insulating materials, cement, etc., closed and sealed;
- d. controlled mixing of materials under field conditions;
- e. special attention should be utilized in sawing of insulation and certain acoustical materials and storage of materials;
- f. job housekeeping must be maintained; and
- g. advising all personnel of hazardous conditions, including supervisors and workers.

Each contractor is responsible for instituting the above policies to ensure minimal impact to surrounding occupied areas.

2. A specific stairwell and/or elevator should be assigned for construction worker use during work hours. In general, workers may not use corridors, stairs, or elevators designated for students or school staff.

3. Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.

4. All occupied parts of the building affected by renovation activity shall be cleaned at the close of each workday. School buildings occupied during a construction project shall maintain required health, safety, and educational capabilities at all times that classes are in session.

F.

1. Storage space will be allotted to the Contractor by the Owner to the extent such space, in the sole discretion of the Owner, is available. The Contractor shall be responsible for securing appropriate space for its material with the Construction Manager prior to delivery. If insufficient space is available on the site, the Contractor shall provide local off-site storage, storage containers, etc. at its own cost and expense. Should any of the material stored on-site obstruct the progress of any portion of the work or the Project, this material shall be removed by the Contractor without reimbursement of cost, from place to place or from the premises, as the Construction Manager may direct.

2. The Contractor shall schedule delivery of materials and equipment to minimize long term storage at the Project, to prevent overcrowding of construction spaces, and to ensure that under no circumstances will materials that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses be stored on site.

3. The Contractor shall deliver materials and equipment to the Project 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 installation. The Contractor shall inspect materials and equipment upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected. The Contractor shall store products to allow for inspection and measurement of quantity or counting of units. The Contractor shall store materials in a manner that will not endanger the project structure. The Contractor shall store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation. The Contractor shall comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

4. The Contractor shall not unreasonably encumber the site with materials or equipment during the performance of its work. Only materials and equipment which are to be used directly in the performance of the Contractor's work shall be brought to and stored on the premises of the School District. After equipment is no longer required for its work, the Contractor shall promptly remove such equipment from the premises of the School District. The Contractor shall be solely responsible for the protection of construction materials and equipment stored on the premises from weather, theft, damage, and all other adversity. The Contractor shall at all times provide the proper housekeeping to minimize potential fire hazards and shall provide approved spark arresters on all steam engines, internal combustion engines and flues.

5. A construction entrance will be designated for deliveries. A separate entrance will be established for entering and exiting the site only. All deliveries shall be scheduled and

coordinated with the Construction Manager and the Owner. Unexpected or uncoordinated deliveries may be turned away by the Owner or the Construction Manager at the discretion or necessity of the Owner. The Owner's enforcement of this provision shall not be construed by any contractor or subcontractor as the basis for a claim of delay in time or monetary damages alleged to have been incurred as a result of refusal of delivery.

6. The Contractor for General Construction shall provide necessary and required security measures to adequately safeguard the construction site from vandalism and intrusion of unauthorized persons. The Contractor for General Construction shall submit its means and methods of security to the Construction Manager for review and comment. The Project must be secured twenty-four (24) hours a day, seven (7) days a week including holidays. The General Construction Contractor's failure to secure the site as required by this paragraph will result in the Owner engaging the services of such necessary personnel so as to provide such security. No notice will be given the Contractor for General Construction of the Owner's intention to engage such security services and all costs and expenses associated with the Owner's security of the site in this regard will be back charged to the Contractor for General Construction. While the Owner may have security guards patrolling the Project, the function of such security guards is not for the purpose of specifically guarding the Contractor's property or operations of work.

G. The Contractor's right to entry and use of the School District premises arises solely from the permission granted by the Owner pursuant to the Agreement between the Contractor and the Owner. This permission shall be deemed to be withdrawn upon the termination of the Contractor's Agreement with the Owner.

H.

1. The Contractor shall be required to perform its work with no interruption to the School District's operations, including its administrative and business operations. Any work which will interfere with the School District's operations and/or which is to be performed when the School District's facilities are in operation shall be performed on evenings and weekends. Additionally, the Contractor shall conduct its work in compliance with federal, state, county, or local ordinances. All costs incurred by the Owner to make the facilities available during evening and weekends shall be borne by the Contractor. The Owner reserves the right to determine what work will "interfere" with its operations and said determination shall be final.

2. The Contractor may request access to the site during times beyond the work hours permitted. Approval is solely at the discretion of the Owner. If approval is given, the Contractor is responsible for paying all additional costs incurred by the Owner, the Architect, and the Construction Manager for providing the site to the Contractor during the additional time periods.

3. In the event the Contractor fails to complete all work under the Contract Documents by said scheduled dates, the Contractor will not be permitted to perform any work during normal school hours. Such work shall only be performed after school hours, Saturdays, Sundays, holidays, or periods when school is unoccupied at no additional cost of any kind to the Owner. In addition to damages incurred by the Owner in connection with the Contractor's delay, the Contractor shall be liable for all costs incurred by the Owner to provide staff and the

Architect's and the Construction Manager's personnel as required to make facility accessible by the Contractor and perform inspections during such off hours.

4. The Owner shall not be responsible for any overtime charges incurred by the Contractor during the course of the Project. Any and all costs associated with work which is performed at hours requiring the payment of such overtime by the Contractor to its workers shall be the Contractor's responsibility.

I. Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken.

J. The Contractor shall provide all required temporary access walkways, both interior and exterior, and the like necessary to complete its work. The Contractor shall maintain an unobstructed condition at all entrances and/or exits from present buildings. No equipment, other than equipment with rubber tires, will be allowed on any existing or new pavement, UNLESS THE CONTRACTOR HAS OBTAINED THE PRIOR WRITTEN APPROVAL OF THE CONSTRUCTION MANAGER AND THE PAVEMENT HAS BEEN FIRST PROTECTED WITH PLANKING OR BY OTHER MEANS APPROVED BY THE CONSTRUCTION MANAGER.

K. The Contractor and any entity for whom the Contractor is responsible shall not erect any sign on the premises of the School District without the prior written consent of the Owner, which consent may be withheld at the sole discretion of the Owner.

L.

1. Without the prior approval of the Owner, the Contractor shall not permit any workers to use any existing School District facilities, including, without limitation, lavatories, toilets, entrances, and parking areas other than those designated by the Owner. Employees, vehicles, and equipment of the Contractor and of all others engaged by the Contractor for the performance of its work shall enter onto the premises of the School District for which construction work is to be performed only at those locations designated or approved by the Construction Manager. The parking for construction personnel shall be limited to the designated trailer park area only. Failure to abide by this rule will result in towing of cars at the expense of the Contractor who employs the individual.

2. The Contractor shall ensure that its work, at all times, is performed in a manner that affords reasonable access to both vehicles and individuals, to the premises of the School District and all adjacent areas. The Contractor's work shall be performed, to the fullest extent possible, in such a manner that areas in and around the construction area shall be free from all debris, building materials and equipment likely to cause hazardous conditions, and do not close or obstruct walkways, roadways, pathways, or other occupied facilities or facilities to be used by the Owner. Without limitation to any other provision of the Agreement between the Contractor and the Owner, the Contractor shall use its best efforts to minimize any interference with the occupancy of areas, buildings, entrances, and parking areas in and around the premises at which work is being performed. Free access to fire hydrants and standpipe connections shall be

maintained at all times during construction operations, and portable fire extinguishers shall be provided by the Contractor and made conveniently available throughout the construction site.

3. The Construction Manager, in conjunction with the Owner and the Architect, shall designate locations at the site at which the Contractor, its SubContractors and employees may utilize in connection with its work. The Contractor's employees and the employees of the Contractor's SubContractors and others engaged by the Contractor to perform its work are prohibited from trespassing or leaving any vehicle on any property not assigned by the Owner as set aside for the use of the Contractor. The Contractor's employees and the employees of the Contractor's SubContractors and others engaged by the Contractor to perform its work are restricted to the immediate area at which work is to be performed. Only persons having official business will be admitted to the construction site. NO COMMUNICATION BETWEEN THE CONTRACTOR, ITS EMPLOYEES, SUBCONTRACTORS' EMPLOYEES, OR OTHERS ENGAGED BY THE CONTRACTOR FOR THE PERFORMANCE OF ITS WORK AND STUDENTS OR STAFF WILL BE PERMITTED.

4. The Contractor, its SubContractors, their respective employees or agents, and all others engaged by the Contractor in connection with the performance of its work are required to wear photographic identification badges at all times. The Contractor shall provide such individuals with said photographic identification badges. These badges shall be worn so as to be readily and easily visible. All workers and representatives of the Contractor, its SubContractors, or suppliers shall wear these badges while on school property. The information on these badges shall be as prescribed by the Owner and the Construction Manager. Each person seen without a photo identification badge (or otherwise failing to comply with this requirement in the opinion of the Owner or the Construction Manager) shall be ordered to leave school property. No warnings shall be necessary. The Contractor(s) and their SubContractor(s) employing the offending person(s) shall be solely responsible for making-up and paying for any loss of production or required progress in the Work resulting from this action (including any claims by other Contractors dependent on the work of this Contractor). All parties agree that any action taken to enforce this requirement shall not be construed by any Contractor or its SubContractors or suppliers as the basis for a claim (for either time or money) for delay to the Work or to the Contractor, its SubContractors, or Suppliers.

5. Without limitation of any other provision of the Agreement between the Owner and Contractor, the Contractor shall use its best efforts to comply with all rules, regulations, and policies promulgated by the Owner in connection with the use and occupancy of the premises of the School District. The Contractor shall immediately notify the Owner in writing if during the performance of its work, the Contractor finds compliance with any portion of such rules, regulations, and policies to be impracticable, setting forth the problems of such compliance and suggesting alternative through which the same results intended by such portion of the rules, regulations, and policies can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives, or require compliance with the existing requirements of the rules, regulations, and policies.

M. No drinking of alcoholic beverages, smoking, or use of cannabis, cannabinoid hemp, personal vaporizing devices, or controlled substances is permitted on the grounds. The Contractor shall ensure that none of its or its SubContractors, their respective employees, agents, and/or consultants report to the site impaired by alcohol, cannabis/cannabinoid hemp, or controlled substances. The Contractor bears the responsibility of determining if its, or its SubContractors' employees are in any way impaired and whether the safety of the public, the employees of other Contractors and their SubContractors, the Owner, the Architect, or the Construction Manager are jeopardized. Each contractor shall provide drinking water for its own employees.

N. The Contractor's employees, representatives, agents, and consultants, and all of its SubContractors' employees, representatives, agents, and consultants at the site are to refrain from using indecent language. All doing so will be removed from the site. Artwork or decoration found on vehicles belonging to the Contractor or the SubContractors' employees parked on or near the school property which contain indecent language or pictures shall either be covered or removed from the location.

O. The Contractor's employees, representative, agents, and consultants, and all of its SubContractors' employees, representatives, agents, and consultants at the site are to wear shirts, long pants, and proper footwear.

P. Each contractor shall keep the premises and surrounding area in which it is working free from accumulation of waste materials or rubbish caused by the performance of all of the work being performed on-site and in the buildings. On a daily basis at the conclusion of work on the Project, each contractor shall clean the areas in which it has performed work and shall remove all waste, materials, rubbish, its tools, construction equipment, machinery, and surplus materials. Each contractor shall broom sweep all construction areas in which it has performed worked every day. The Construction Manager shall perform an inspection each afternoon to determine that the work areas of the Contractors have been properly cleaned. In the event the work areas are not cleaned, the Construction Manager shall advise the offending contractor to provide cleaning as required herein. If any Contractor fails to keep the site safe and clean within four (4) hours of being notified by the Construction Manager, either verbally or in writing, the Construction Manager will have the clean-up work performed and back charged to the offending contractor without further notification to the Contractor. The cost of such cleaning company, together with the cost of any custodial costs of the School District, at prevailing overtime rates plus fifteen percent (15%) will be charged to the offending Contractor. Notice to field personnel shall be deemed notice to the Contractor.

Q. The Contractor shall provide ventilation of enclosed areas during construction as may be required to permit proper curing and drying out and to prevent excessive humidity, moisture, and condensation. Ventilation shall be by natural or artificial means as required by conditions involved.

R. The Contractor shall be responsible for the control of chemical fumes, gases, and other contaminants produced by welding, gasoline or diesel engines, roofing, paving, painting, etc. to ensure that they do not enter occupied portions of the building or air intakes.

S. The Contractor shall be responsible for ensuring that activities and materials which result in “off-gassing” of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc. are scheduled, cured, or ventilated in accordance with manufacturers’ recommendations before a space can be occupied.

T. From the commencement to the completion of the Project, the Contractor shall keep the parts of the work and the buildings free from accumulation of water no matter what the source or cause of water.

U.

1. The General Contractor shall construct temporary partitions where shown on the Contract Documents or where otherwise required for safety of the public or to prevent dust from entering occupied areas. Partitions shall be dust-proof from floor to slab or structure above (if existing condition is a drop in tile ceiling, the Contractor shall remove tile and install partition to structure above). In addition to framing and sheetrock, the Contractor shall install fire resistant plastic partitions on the work area side of its work. If an access door is required, an alternating three-layer plastic system shall be used. The door shall be a standard hollow metal door with lockset and closer. Keys shall be distributed to the Owner’s other contractors, the Owner, and the Architect.

2. All cutting and welding performed within an occupied building or adjacent to a window or intake vent shall be performed during off hours.

V.

1. The Contractor shall control the safe handling and storage of all welding materials, acetylene and oxygen tanks, and other equipment required for welding and cutting work at the job site. Such storage shall be in compliance with the Occupational Safety and Health Administration (“OSHA”) regulations.

2. Welding materials and equipment shall be removed promptly from the premises upon completion of the welding and cutting work.

W. The Contractor shall be responsible for all costs incurred by the Owner caused by false security/fire alarms set off by the Contractor. Costs shall include custodial response charges etc.

X. The Contractor shall be responsible for broken glass, and at the completion of the Work shall replace such damaged or broken glass. After damaged or broken glass has been replaced, the Contractor shall remove all labels, wash and polish both sides of all glass. In addition to general broom cleaning, the General Contractor shall perform the following final cleaning for all trades at completion of the Work:

1. remove temporary protections;
2. remove marks, stains, fingerprints and other soil or dirt from painted, decorated and natural finished woodwork and other Work;
3. remove spots, plaster, soil and paint from ceramic tile, marble and other finished materials, and wash or wipe clean;
4. clean fixtures, cabinet work and equipment, removing stains, paint, dirt and dust, and leave same in undamaged, new condition;
5. clean aluminum in accordance with recommendations of the manufacturer; and
6. clean all floors thoroughly in accordance with recommendations of the manufacturer.

ARTICLE 5 SUBCONTRACTORS

A.

1. As soon as practicable after receipt of Letter of Intent to Award, Notice to Proceed or other form of official notice of award of the Contract, but not more than ten (10) days after receipt of official notice of award of the Contract, the Contractor shall furnish the Owner and the Architect, in writing, with: (1) the name, trade, and subcontract amount for each SubContractor; and (2) the names of all persons or entities proposed as manufacturers of the products identified in the Specifications (including those who are to furnish materials or equipment fabricated to a special design) and, where applicable, the name of the installing SubContractor. Copies of all SubContractor contracts, fully executed, are to be provided to the Construction Manager, including but not limited to all addenda, appendices, and/or exhibits including scope of work sheets. All such subcontracts shall be submitted to the Construction Manager within ten (10) days of the Owner's award of the contract to the Contractor.

2. Upon review of the Contractor's list of SubContractors, the Architect will advise the Contractor in writing stating whether or not the Owner, the Construction Manager or the Architect, after due investigation, accepts or rejects, any proposed SubContractor. SubContractors will not be acceptable unless, when requested by the Architect, evidence is furnished that the proposed subcontractor has satisfactorily completed similar subcontracts as contemplated under this prime contract, and has the necessary experience, personnel, equipment, plant, and financial ability to complete the subcontract in accordance with the intent of the Documents. As verification of financial ability, the Owner reserves the right to request and receive up to five (5) years' worth of financial statements, bank references, bond/insurance company references and all other information required to assess financial ability.

3. If the Owner, the Construction Manager, or the Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom

the Owner, the Construction Manager, and the Architect have no objection. No increase in the Contract Sum shall be allowed where a SubContractor is rejected by the Architect, the Construction Manager, or the Owner who is: (1) deemed unqualified to perform the particular work subcontracted by the Contractor; (2) does not have the necessary experience, personnel, equipment, plant, and financial ability to complete the subcontract; (3) has a history of poor performance in work of similar nature; or (4) does not otherwise meet the requirements of this General Conditions. Upon receipt of a rejection of a SubContractor by the Architect, the Contractor shall have the right to request a meeting with the Architect, the Construction Manager, and the Owner to discuss the reasons it believes the SubContractor is or is not qualified to perform the work. Upon review of such reasons, the Architect shall re-consider its determination and shall advise the Contractor of its determination upon such review. If the Architect still finds that such SubContractor does not meet the requirements above stated, it shall advise the Contractor. The Architect's determination upon such review shall be final and binding on the Contractor and its SubContractor and the Contractor hereby waives any and all claims it or its SubContractor might have against the Owner, the Construction Manager, and/or the Architect concerning the rejection of such Contractor and shall require its SubContractors to execute such similar waiver in its Agreement with the Contractor.

4. The Contractor shall not change a SubContractor, person, or entity previously selected if the Owner, the Construction Manager, or the Architect makes reasonable objection to such change.

B. By appropriate Agreement, the Contractor shall require each SubContractor to be bound to the Contractor by terms of the Contractor's Agreement with the Owner, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by said Agreement, assumes toward the Owner and the Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, the Construction Manager, and the Architect under the Contractor's Agreement with the Owner so that subcontracting thereof will not prejudice such rights, and shall allow 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 its Agreement with the Owner, has against the Owner. However, the Subcontract Agreement between the Contractor and SubContractor shall not provide, nor shall this Agreement be deemed to provide any rights, remedies or redress by the SubContractor(s) against the Owner. Where appropriate, the Contractor shall require each subcontractor to enter into similar agreements with Sub-SubContractors.

C. The Contractor shall promptly notify the Owner, the Construction Manager, and the Architect of any material defaults by any SubContractors and/or whether it has terminated its Agreement with any of its subcontractors for any reason.

D. The Contractor hereby assigns all of its rights in its Agreements with its SubContractor(s) and hereby does assign, transfer, and set over to the Owner all of its rights and/or interests in its Agreements with its SubContractor(s), but only in the event of termination of the Contractor's Agreement with the Owner pursuant to Article 17, paragraph A of these General Conditions and only to the extent the Owner implements its rights to take such assignment of contract by

notifying the SubContractor in writing of its intention to do so. Such an assignment is subject to the prior rights of the surety, if any, obligated to the Owner pursuant to a performance bond submitted in connection with the Contractor's work.

E. If the Work in connection with a subcontract has been suspended for more than ninety (90) days after termination of the Contract by the Owner and the Owner accepts assignment of such subcontract, the SubContractor's compensation shall not be adjusted for any increase in direct costs incurred by such SubContractor as a result of the suspension.

F. It shall be the Contractor's responsibility, when subcontracting any portion of his work, to arrange or group items of work under particular trades to conform with then-prevailing customs of the trade, regardless of the particular Divisions and Sections of the Specifications in which the work is described.

G. All subcontracts must be in writing.

ARTICLE 6 CONTRACTOR'S USE OF DRAWINGS/SPECIFICATIONS

A. The Agreement between the Owner and the Contractor, and all documents incorporated therein by reference, including but not limited to, the Drawings and the Project Manual shall be signed by the Contractor and the Owner.

B. The intent of the Agreement between the Owner and the Contractor is to include all items necessary for the proper execution and completion of the work to be performed by the Contractor. The documents comprising the Agreement between the Contractor and the Owner are complementary, and what is required by one shall be as binding as if required by all.

C.

1. In the event of inconsistencies within or between parts of the Agreement between the Contractor and the Owner or between the Agreement between the Contractor and the Owner and applicable standards, codes, and ordinances, the Contractor shall (a) provide the better quality or greater quantity of Work or (b) comply with the more stringent requirement; either or both in accordance with the Architect's interpretation.

2. On the Drawings, given dimensions shall take precedence over scaled measurements and large-scale Drawings over small scale Drawings.

3. Before ordering any materials or performing any of its work, the Contractor and each SubContractor shall verify measurements at the Project and shall be responsible for the correctness of such measurements. No extra charge or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference which may be found shall be submitted to the Architect for resolution before proceeding with the performance of the work.

4. If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such departure for the approval by the Architect before making the change.

5. Drawings, in general, are made to scale, but all working dimensions shall be taken from the figured dimensions or by actual measurements at the job and in no case by scaling. The Contractor shall study and compare all drawings and verify all figures before laying out or constructing the work and shall be responsible for any and all errors in his work which might have been avoided thereby. Whether or not an error is believed to exist, deviation from the Drawings and the dimensions given thereon shall be made only after approval in writing is obtained from the Architect.

6. In the event addendum(a) are issued and contain changes to the Drawings and/or the Specifications, the provisions in the addendum(a) supersede previously issued Drawings and/or the Specifications.

D. Organization of the Specifications into divisions, sections, and articles, and arrangement of the Drawings shall not control the Contractor in dividing the work among the SubContractor or in establishing the extent of the Work to be performed by any trade.

E. Unless otherwise stated in the Agreement, words and abbreviations which have well-known technical or construction industry meanings are used in the Agreements in accordance with such recognized meanings.

F. The Contractor, and all SubContractors, shall refer to all of the Drawings, including those showing the work of others performing work in connection with the Project, including but not limited to the General Contractor (if any), the Plumbing Contractor, the Heating, Ventilation, Air Conditioning Contractor, Electrical Contractor and other specialized trades, and to all of the Divisions of the Project Manual, and shall perform all work reasonably inferable therefrom as being necessary to produce the indicated results.

G. All indications or notations on the Drawings which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials, or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Drawings or the Project Manual. All work mentioned or indicated in the Drawings or the Project Manual shall be performed by the Contractor unless it is specifically indicated therein that the work is to be performed by others.

H. The Drawings, the Specifications, and other documents prepared by the Architect are instruments of the Architect's service through which the Contractor's work is to be performed. The Contractor may retain one contract record set during the course of the Project. Neither the Contractor nor any SubContractor, Sub-SubContractor or material or equipment supplier shall own or claim a copyright in the Drawings, the Specifications, and other documents prepared by the Architect, and unless otherwise indicated, the Architect shall be deemed the author of them and will retain all common law, statutory, and other reserved rights, in addition to the copyright.

All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work.

I. The Drawings, the Specifications, and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any SubContractor, Sub-SubContractor or material or equipment supplier on other Projects without the specific prior written consent of the Owner and the Architect. The Contractor, SubContractors, Sub-SubContractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, the Specifications, and other documents prepared by the Architect appropriate to and for use in the performance of its work pursuant to its Agreement with the Owner. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, the Specifications, and other documents prepared by the Architect. 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 copyright or other reserved rights.

J. The Owner shall furnish surveys describing physical characteristics of the site, upon written request of the Contractor and to the extent such survey is in existence at the time of said request, legal limitations, and utility locations for the Project. Nothing herein shall be construed as requiring the Owner to generate any document which it does not possess at the time of the request by the Contractor. In the event that the survey provided does not clearly delineate the metes and bounds of the Owner's property, the Contractor shall stop work and immediately notify the Architect, the Construction Manager, and the Owner. The Contractor shall NOT proceed with its work until it receives written permission from the Construction Manager and/or the Architect. The Contractor shall be fully responsible for all costs arising from non-compliance with this provision. Any delays associated with this provision shall not serve as a basis for a claim by the Contractor.

K. From the basic data established by the Owner, the General Contractor shall establish reference control points and complete the layout of the work. Each contractor is responsible for utility markouts as it pertains to the scope of their work and maintaining markout during work. Sketch of layout with reference points to be given to the Construction Manager and the Architect at the time of markout.

L. The Contractor shall be responsible for all measurements that may be required for execution of the 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.

M. The General Contractor shall be responsible for the establishment of points, wall, and partition lines required by the various Prime Contractors and their respective SubContractors in laying out their work.

N. Each contractor shall furnish such stakes and other required equipment, tools, and materials, and all labor as may be required in laying out any part of the work from the base lines and benchmarks established by the Owner.

O.

1. The General Construction Contractor shall establish a baseline and benchmark system for each building addition, area of renovation or component using the services of a licensed professional surveyor. The surveyor(s) employed to establish this system or to extend and maintain an existing benchmark system for the work of other trades shall have not less than five (5) years of experience in performing construction surveys similar to the work they will perform for the Project. The remaining contractors and their respective subcontractors shall be responsible for extending these lines, levels, and grades, and for performing all layout for their own work. The Contractor is solely responsible for any damage or loss due to incorrect extension of lines, level, or grades in their layout. The Contractor and its SubContractors shall be responsible for the accuracy with respect to the layout of their work. Any discrepancies or errors in the Drawings, perceived by another contractor or subcontractor shall be immediately reported to the Construction Manager. If any corrections are necessary, they shall be executed in accordance with the terms and provisions of these General Conditions.

2. The Contractor and its SubContractors shall be responsible to offset or to protect their markings from anything that may disturb them.

3. Every contractor shall work off the lines and elevations established and maintained as the baseline and benchmark system.

4. Each contractor is responsible for the accuracy of his own work.

P. The Architect may require that construction work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit checking completed work or the work in progress.

Q. Except for the basic building permit, and other permits that the Architect may be required to obtain on behalf of the Owner, the Contractor shall be responsible for securing and maintaining for the life of the Project: all permits, P.E. Licenses, connection fees, inspections, etc. applicable to, or customarily secured for the work. This provision includes any permits to be issued in the name of the Contractor required for the work. Originals of all permits are to be issued in the name of the Contractor as required for the work. The Contractor shall furnish the Construction Manager with original copies of all permits prior to the commencement of the work, and shall prominently display a copy of all permits at a location approved by the Construction Manager.

R. The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies, or omissions discovered shall be reported to the Architect in writing at once.

S. The exactness of grades, elevations, dimensions, or locations given on any drawings issued by the Architect, or the work installed by other contracts, is not guaranteed by the Architect or the Owner. The Contractor shall, therefore, satisfy itself as to the accuracy of all grades, elevations, dimensions, utilities, and locations. In all cases of interconnection of its Work with existing or other work, it shall verify at the site all dimensions relating to such existing or other work. Any errors due to the Contractor's failure to so verify all such grades, elevations, locations, or dimensions shall be promptly rectified by the Contractor without any additional cost to the Owner.

T.

1. The Contractor shall give the Architect timely written notice of any additional design drawings, specifications, or instructions required to define its work in greater detail, or to permit the proper progress of its work. To the extent the Architect advises the Contractor that the Drawings, the Specifications and/or instructions given are sufficiently detailed for the Contractor to perform its work, the Architect shall be under no obligation to further clarify or define the work to be performed. In all other circumstances, the Architect shall issue a field order which responds to the request for information.

2. Requests for Information (RFIs) are for requests on clarifications or questions on the Drawings and/or the Specifications, not contract terms, scheduling items, or general correspondence nor, as a means to describe or request approval of alternate construction means, methods or concepts or substitution of materials, systems means and methods. The Contractor shall fill all RFIs out in accordance with the provisions of the Project Manual. Neither the Architect nor the Construction Manager shall fill said forms out on the Contractor's behalf.

U. The Contractor shall, prior to the start of any portion of the Work:

1. review any specified construction or installation procedures, including those as may be recommended by the proposed manufacturer;

2. advise the Architect if the specified procedure(s) deviates from good construction practice;

3. advise the Architect if following said procedure(s) will affect any warranty, including the Contractor's general warranty;

4. advise the Architect of any objections the Contractor may have to the specified procedure(s); and

5. propose any alternative procedure(s) which the Contractor will warrant.

V.

1. To the fullest extent possible, the Contractor shall provide products of the same kind, from a single source. When two or more items of same material or equipment are required (pumps, valves, air conditioning units, etc.), they shall be of the same manufacturer. Product

manufacturer uniformity does not apply to raw materials, bulk materials, pipe, tube, fittings (except flanged and grooved types), sheet metal, wire, steel bar stock, welding rods, solder, fasteners, motors for dissimilar equipment units, and similar items used in the work, except as otherwise indicated. The Contractor shall provide products which are compatible within systems and other connected items. If the Contractor is given option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

2. The Contractor is responsible for providing products and construction methods compatible with products and construction methods of other Contractors. If a dispute arises between contractors over concurrently selectable but incompatible products, the Architect will determine which products shall be used.

3. With respect to sitework materials, all products submitted for use and incorporated into the Project shall be on the Approved List of Materials and Equipment published by the NYSDOT Materials Bureau, most recent edition.

4. All products submitted for use and incorporated into the Project shall be asbestos free.

W. Equivalents. In the Specifications, one or more kinds, types, brands, or manufacturers or materials are regarded as the required standard of quality and are presumed to be equal. The Contractor may select one of these items or, if the Contractor desires to use any kind type, brand, or manufacturer or material other than those named in the Specifications, they shall indicate in writing, and prior to award of contract, what kind, type, brand or manufacturer is included in the base bid for the specified item. The Contractor shall follow the submission requirements for substitutions as set forth in Article 6.X below.

X.

1. Substitutions. If the Contractor desires to substitute any kind, type, brand, or manufacturer of material other than those named in the Specifications, the Contractor shall indicate the desired substitution in its bid, including the following:

- a. For which specified material or equipment the request for substitution is being made.
- b. What kind, type, brand, or manufacturer is sought to be substituted for the specified items.
- c. Written documentation evidencing that the substituted material or equipment meets or exceeds the Specifications for materials and/or equipment set forth in the Project Manual. Such documentation shall include, but not limited to, a full explanation of the proposed substitution, together with a submittal of all supporting data including technical information, catalog cuts, warranties, test results, installation instructions,

operating procedures, significant qualities of proposed substitution (*e.g.*, performance, weight, size, durability and visual effects), and other like information necessary for a complete evaluation of the substitution. Additionally, the Contractor shall provide material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated. All such data shall be provided to the Architect and the Owner at the Contractor's sole expense. The Contractor's written explanation shall also include a list of reasons the substitution is advantageous and necessary, including the benefits to the Owner and the Project in the event the substitution is acceptable. Additionally, the Contractor shall submit to the Architect information describing in specific detail how the proposed substituted product differs from the quality and performance required by the Specifications, and such other information as may be required by the Owner or the Architect.

- d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors that will be necessary to accommodate proposed substitution.
- e. Samples, where applicable or requested.
- f. Detailed comparison of the 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 lack of availability or delays in delivery.
- g. Detailed comparison of the difference in cost between the specified product and the proposed substitution, including any and all costs associated with changes or modifications needed to other parts of the work and to construction performed by the Owner and/or separate contractors that will be necessary to accommodate proposed substitution. In the event the substitution is accepted, the Contractor proposing the use of the substitution shall bear all costs associated with said changes or modifications.

2. By making said requests in conformance with procedures established herein and elsewhere in the Project Manual, the Contractor:

- a. represents that a representative of it has personally investigated the proposed substitute product and has determined that it is equal to or superior in all respects to that specified;

- b. represents that the warranty for the substitution will be the same, or greater than, that applicable to the specified product;
- c. certifies that the cost data is complete and includes all related costs under this contract, including professional services necessary and/or required for the Architect/Engineer to implement said substitution and waives any and all claims for additional costs related to the substitution which subsequently become apparent;
- d. represents that it will coordinate the installation of the accepted substitute, making all such changes to the Drawings effected by the change, including but not limited to the electrical, plumbing, site work, and heating and ventilating specifications as may be required for the work to be complete in all respects;
- e. will provide an affidavit stating that: (1) the proposed substitution conforms and meets all the requirements of the pertinent specifications and the requirements shown on the Drawings; and (2) the Contractor accepts the warranty and correction obligations in connection with the proposed substitution as if originally specified by the Architect; and the proposed substitution will have no effect on the construction schedule.

3. Proposals for substitutions shall be submitted with the Contractor's bid.

4. No substitutions will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated hereinbefore.

Y.

1. Submittal of shop drawings, product data, material safety data sheets, samples, or similar submittals shall be in accordance with the provisions of the Project Manual.

2. The Contractor represents and warrants that all shop drawings have been prepared by persons and entities possessing expertise and experience in the trade for which the shop drawing is prepared and, if required by the Architect or applicable law, by a licensed engineer, job specific, reviewed by the Contractor and stamped by the Contractor.

3. If the Contractor elects to perform its work without approvals, such work shall be at the Contractor's own risk and expense.

4. By approving and submitting shop drawings, product data, samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto and has checked and coordinated the information contained within such submittals with the requirements of its work.

5. The Contractor shall not be relieved of responsibility for deviations from requirements of its work by the Architect's approval of shop drawings, product data, samples, or similar submittals, unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors and/or omissions in the shop Drawings, product data, samples or other of its submittals to the Architect, by the Architect's approval thereof.

6. The Architect shall review, approve, reject, or take other appropriate action respecting submittals made by the Contractor as set forth in the Project Manual. The Architect shall check for conformance with information given in the Drawings and Project Manual and the design concept expressed in the Agreement between the Owner and the Contractor. Review of such submittals 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 designed by the Contractor, all of which remain the responsibility of the Contractor. Further, the Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of 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. When professional certification of performance characteristics of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon such certification to establish that the materials, systems, or equipment will meet the performance criteria required by the Contract Documents.

7. Upon the Architect's rejection of the Contractor's shop drawings, product data, samples, and/or other documentation submitted by the Contractor to the Architect, the Contractor shall review the rejection and re-submit such shop drawing, product data, sample and or other document in accordance with the Architect's instruction. The Contractor shall direct the Architect's specific attention in writing or on re-submitted shop drawings, product data, samples, or similar submittals, to revision which have been made, including revisions not specifically requested by the Architect. Resubmission of rejected documents shall be performed within two (2) calendar days. No claim for delay or cost shall be accepted as a result of rejected documents.

8. When professional certification of performance criteria of materials, systems, or equipment is required of the Contractor, the Architect shall be entitled to rely in a reasonable and professional fashion upon the accuracy and completeness of such calculations and certifications provided, however, if the Architect, in its reasonable and professional judgment considers it advisable, the Architect shall verify the accuracy and completeness of any and all such calculations and/or certifications. In the event any and all such calculations and/or certifications are found to be inaccurate and/or incomplete by the Architect, the Contractor shall assume full responsibility and bear all costs attributable or related thereto, including, without limitation, the expense of the Architect's additional services associated with the verification of such calculations and/or certifications and the expense of the Architect's additional service made necessary by the failure of such calculations and/or certifications to be accurate or complete.

9. If the Architect is required to review the Contractor's submittal more than twice, the Contractor shall bear the cost and expense associated with such additional review as set forth in the Project Manual.

Z. The Architect will interpret and decide matters concerning performance under and requirements of the Drawings and/or the Specifications on written request of the Contractor. Such interpretations may, at the Architect's option, be issued in the form of additional drawings or instructions indicating in greater detail the construction or design of the various parts of the Contractor's work. Such drawings or instructions may be forwarded by the Architect to the Contractor by field order, construction change directive or other notice to the Contractor. The Contractor shall execute the work for which it requested an interpretation in accordance with such additional drawings or instructions without additional cost or extension of its contract time. After a decision has been rendered by the Architect on a matter for which the Contractor sought the Architect's interpretation of the Drawings and/or the Specifications, the Contractor shall proceed with the work as directed by the Architect. Failure to proceed with the work in accordance with the Architect's interpretation may be used as a basis for termination of the Contractor's contract pursuant to Article 17 of these General Conditions.

AA. The Contractor shall maintain at the site one record copy of the Drawings, the Specifications, Addenda, Change Orders, and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved shop drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and the Construction Manager and shall be delivered to the Construction Manager for submittal to the Owner upon the completion of its work.

BB. The Contractor shall maintain at the site, and shall make available to the Owner, the Construction Manager, and the Architect, one record copy of the Drawings (the "Record Drawings") in good order. The record drawings shall be prepared and updated during the prosecution of the Contractor's work. The prints for record drawing use will be a set of black line prints provided by the Architect to the Contractor at the start of construction. The Contractor shall maintain said set in good condition and shall use colored pencils to mark up said set with "record information" in a legible manner to show: (i) deviations from the Drawings made during construction; (ii) details in the work not previously shown; (iii) changes to existing conditions or existing conditions found to differ from those shown on any existing drawings; (iv) the actual installed position of equipment, piping, conduits, light switches, electric fixtures, circuiting, ducts, dampers, access panels, control valves, drains, openings, and stub-outs, etc.; (v) architectural and/or structural changes in the design; and (vi) such other information as either the Owner or the Architect may reasonably request. At the completion of the work, the Contractor shall transfer all information on record drawings to reproducible drawings with new information clouded and noted. Such drawings shall be stamped with the Contractor's name and "AS-BUILT" in the lower right hand corner. The colored record drawing and the as-built reproducible drawing shall be forwarded to the Construction Manager for delivery to the Owner. Final payment and any retainage shall not be due and owing to the Contractor until the record and/or as built

drawings receive the approval from the Architect and the Owner (and all other closeout requirements are met).

CC. The Contractor shall maintain all approved permit drawings in a manner so as to make them accessible to government inspectors and other authorized agencies. All approved drawings shall be wrapped, marked, and delivered to the Owner within sixty (60) days of final completion of the Contractor's work.

DD. Each Prime Contractor shall be furnished, free of charge, three (3) copies of the Contract Documents and Project Manuals, including all Addenda. Any and all additional copies will be furnished to the Contractor at the cost of reproduction, postage, and handling.

ARTICLE 7 CONTRACTOR'S SAFETY/SECURITY PROGRAM

A.

1. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of its work. Prior to beginning any work, the Contractor shall submit a copy of its corporate safety plan to the Owner and the Architect. Two (2) weeks after receipt of the Notice to Proceed, the Contractor shall provide a Site Safety/Logistics Plan to the Owner and the Architect. The site logistics plan should minimally include locations of the eight-foot high temporary fence and gates, traffic plans for deliveries and removals, refuse container locations, crane locations, pick locations, boom radius, and lift locations, stockpiles, toilet locations, site water and power locations, and safety. This plan shall also show the location of all staging and storage areas, clearly separating construction and school areas. The logistical information represented by the construction documents shall serve as a minimal guide. Each contractor is required to submit their corporate safety policy within ten (10) days of receipt of the Notice to Proceed. Said policy must minimally meet OSHA standards and define details concerning the maintenance of a safe work environment and shall also define practices for the maintenance of hygiene and minimizing the spread of infectious/contagious diseases. The Contractor shall make the participation of its SubContractors in its safety program mandatory. A list of key personnel, with addresses and telephone numbers for emergency purposes shall be forwarded to the Owner and the Architect. The Owner and the Architect shall establish a fire coordination procedure and shall forward same to the Contractor for its use during the performance of its work.

2. Where applicable, the Contractor shall provide its COVID-19 Safety Plan to the Owner prior to the start of any work. The Contractor shall designate a person on its staff to be responsible for monitoring the wearing of Personal Protective Equipment ("PPE") by each person on site working with or for the Contractor. The Contractor shall strictly follow and ensure that its SubContractors follow Contractor's COVID-19 Safety Plan, as well as all applicable Center for Disease Control guidelines and Local, State & Federal Orders.

3. All laborers, workers, and mechanics employed in the performance of the work of the Project shall be certified as having successfully completed a course in construction safety and

health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration.

4. The Contractor and its SubContractors shall conduct their operation in accordance with the Safety Guides for Construction as issued by the New York State Education Department ("NYSED"), and the Contractors' Safety Program.

5. All safety equipment, including hard hats and weather protective gear required for the Contractor to perform its work, are to be supplied by the Contractor and/or its SubContractors. Within the designated construction areas, the Contractor's employees, superintendents, and/or other agents, and its SubContractors, employees, superintendents, and/or other agents are required to wear hard hats and other required and/or essential safety equipment. Each person seen without a hard hat, or otherwise failing to comply with this requirement, will be ordered to leave the Project. No prior warnings will be given by the Owner, the Construction Manager, and/or the Architect. The Contractor and its SubContractors shall be solely responsible for making up and paying for any loss of production or required progress resulting from the removal of personnel from the Project as set forth herein including any costs incurred by the Owner in connection with the work of other contractors.

6. The Contractor and its SubContractors shall provide blankets and auxiliary fire protection as part of its construction safety program to prevent damage to adjacent work or materials as a result of its welding or burning operations. Additionally, as part of its construction safety program, the Contractor and its SubContractors shall provide a fire watch, with a fire extinguisher, which is acceptable to the Owner and the Construction Manager.

7. The Construction Manager and/or the Owner reserve the right to have all operating equipment periodically inspected by an independent inspector whose finding will be binding. The Contractor, at its own expense, must make corrections within two (2) working days of receiving a written report.

8. All flagmen required for deliveries to the site are to be furnished by the Contractor or its SubContractors responsible for the delivery. Any and all deliveries crossing the site or student traffic areas shall be escorted by flagmen. All flagmen shall wear orange vests.

B. The Contractor shall schedule weekly safety meetings and each of its SubContractors must be properly represented at such meetings. The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. The Contractor shall notify the Construction Manager in writing of its "OSHA Competent Person Regarding Safety." Said person must be an individual capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. This person shall be the Contractor's Superintendent, unless otherwise designated by the Contractor in writing to the Construction Manager and the Architect. The Contractor shall take all necessary steps to prevent its employees from disturbing and/or damaging the facility and shall be responsible for preventing the escape of fires set in connection

with the construction. The Contractor shall notify its employees and its SubContractors of the location of the nearest fire alarm box at all locations where the work is in progress. On a weekly basis, the Contractor shall submit to the Construction Manager and the Architect minutes of its safety meetings, which minutes shall include a list of the individuals present at such meetings.

C. The Contractor and each of its SubContractors shall conduct its/their operation in accordance with all applicable federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies. The Contractor agrees, in order that the work will be completed with the greatest degree of safety to conform to the requirements of the Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, including all standards and regulations that have been since or shall be promulgated by the governmental authorities which administer such acts.

D. The Contractor shall give notices and comply with applicable federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies, of public authorities or governmental agencies bearing on safety of persons or property or their protection from damage, injury, or loss.

E. The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for surety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

F. The Contractor shall take reasonable precautions for the safety and protection of employees at the Project and other person who may be affected by its work, including but not limited to students, staff, employees and agents of the Owner, the Construction Manager, and the Architect.

G. The Contractor shall protect and secure its work and the materials and/or equipment to be utilized in connection with its work, whether stored on or off the site and whether in its care, custody and control or that of its SubContractors, subcontractors to its subcontractors, or material suppliers.

H. The Contractor shall take all steps necessary to protect all property at or adjacent to the site, including but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.

I. All delivery vehicles/trucks/machinery/etc. permitted on the site must be equipped with back-up alarms and enter through the designated access points. The Contractor's failure to demonstrate this ability will result in cancellation of delivery or stoppage of work. All delays associated with this cancellation will be the responsibility of the Contractor responsible for the work involved.

J. All crane picks, materials delivery, etc. must be coordinated so as not to lift over any occupied area of the building. If absolutely necessary, this work shall be done on off hours to ensure the safety of the building occupants. Crane location must be approved by the Construction

Manager and the Owner in writing prior to the use of same to ensure the safety of building occupants.

K. The Owner or the Construction Manager reserves the right to have all hoisting equipment periodically inspected by an independent inspector whose findings will be binding. The Contractor, at its own expense, must make corrections cited by the inspector before continuing work. The Owner or the Construction Manager will not assume any responsibility for the safe operation of any hoisting equipment by exercising this right. The Contractor and/or its SubContractor(s) shall cooperate with the inspector by allowing time for the inspection. The Contractor shall be notified twenty-four (24) hours prior to the time of the inspection. These inspections do not release the Contractor of its responsibility to provide all engineering, permits and inspections as required by OSHA or the NYSED prior to use of any hoisting equipment.

L. The Contractor shall use the entrances designated on the site logistic plans and Drawings for personal vehicles, trucks, equipment, deliveries, and the like.

M. All interior temporary partitions and emergency egress barriers (if required) are to be installed on an after-hours basis (weekends/school holidays).

N.

1. When use or storage of hazardous materials or equipment or unusual construction methods are necessary to perform its Work, the Contractor shall obtain the Owner and the Construction Manager's consent for the use of such materials, equipment, or unusual construction methods. In the event the Owner determines that the use of such hazardous material or equipment or unusual construction methods can be performed by the Contractor with alternative means, methods and/or techniques, the Contractor shall employ such alternate means of prosecuting its work at no additional cost to the Owner.

2. In the event the Owner approves the use or storage of such hazardous materials, equipment or unusual construction methods, the Contractor shall provide for the Owner's and the Construction Manager's use a full set of safety instructions relating to all such materials. Additionally, when the Owner and/or the Construction Manager reviews the use of storage of such hazardous materials, equipment, and or unusual construction methods, the Contractor shall exercise the highest degree of care and carry on such activities under supervision of properly qualified personnel.

3. Transportation, storage, and use of explosives shall be in strict accordance with all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies of public authorities or governmental agencies. All safety precautions as set forth in the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, Inc. shall be observed.

4. The Contractor is responsible for its own storage and personnel trailers at the site. The Contractor will be required to supply man trailers and storage box trailers as required. All costs related to delivery, construction, protection, power, etc. for said trailers are the

responsibility of the Contractor utilizing the space. The Owner WILL NOT PROVIDE STORAGE SPACE. The placement of personnel and/or storage trailer will be strictly limited to pre-determined locations. The Contractor shall obtain the prior written approval of the placement of any trailer or storage box from the Construction Manager.

O. During construction, the General Contractor shall be responsible for maintaining a watertight structure. This shall include additions and existing buildings. The General Contractor shall be responsible for temporary roofing, tarps, and other protection at roofs, cavity walls, etc. Should the General Contractor fail to provide adequate protection, causing flooding, damage, or other disturbance to the existing building, the Contractor shall be responsible for all costs associated with clean up and repairs. Inasmuch as flooding and damage have safety implications to the general public, clean up, and repairs may be made by the Owner without warning to the General Contractor. Administration costs incurred by the Owner and Architect will also be back charged to the General Contractor. The General Contractor, by entering into contract with the Owner agrees to be liable for these costs.

P. When all or a portion of the Contractor's work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the work, as necessary, from injury or damage by any cause.

Q.

1. The Contractor shall promptly remedy damage and loss to all property of the Owner, or adjacent to the Owner's property (other than damage or loss covered by insurance) 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, except damage or loss attributable to acts or omissions of the Owner or the Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor.

2. Title to all completed or partially completed work at the job site, and to all materials delivered to and stored at said job site which are intended to become a part of the completed work covered by the Agreement between the Contractor and the Owner, shall be in the name of the Owner. Notwithstanding the foregoing, and prior to acceptance of the completed work by the Owner, the Contractor shall be liable for all loss of or damage to said completed work, partially completed work, materials furnished by the Contractor, and/or materials or equipment furnished by others, the custody of which has been given to the Contractor, arising from any cause other than those against which the Owner herein undertakes to carry insurance. In the event of loss or damage caused by the Contractor, the Contractor shall replace or repair same at its own cost and expense, to the satisfaction of the Owner, the Construction Manager, and the Architect.

R. The Contractor shall promptly report in writing to the Owner, the Architect, and the Construction Manager all accidents arising out of or in connection with the Work which cause death, person injury, or property damage, giving full details and statements or any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident

shall be reported immediately by telephone or messenger to the Owner, the Construction Manager, and the Architect.

S. 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.

T. Any and all fines or citations levied against the Owner, the Architect, or the Construction Manager due to the failure of the Contractor to comply with regulations of any governing authority, shall be paid for by the Contractor. This shall include any interest or late charges which accrue due to the Contractor's failure to remit payment upon receipt of such levies.

U. The Contractor acknowledges that the Labor Law of the State of New York, and regulations adopted thereunder, place upon both the Owner and the Contractor certain duties and that liability for failure to comply therewith is imposed on both the Owner and the Contractor regardless of their respective fault. The Contractor hereby agrees that, as between the Owner and the Contractor, and to the extent permitted by law, the Contractor is solely responsible for compliance with all such federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies imposed for the protection of persons performing the Contract.

V. The Construction Manager, the Owner, and/or the Architect will not assume any responsibility for the safe operation of any cranes or equipment. The Contractor and its SubContractors shall cooperate with the inspector by allowing time for inspection. The Contractor will be notified twenty-four (24) hours prior to the time of the actual inspection. The Contractor is obligated to perform all engineering, obtain all permits (except as otherwise noted in Article 6(Q), and to have all hoisting equipment inspected as required by OSHA, Village, Town, County, State, and Federal regulations as well as any other agency having jurisdiction. Copies of all inspection reports and certificates must be transmitted to the Construction Manager as soon as possible.

ARTICLE 8 CHANGES IN THE WORK

A. Without invalidating the Agreement between the Owner and the Contractor, and without notice to the Contractor's surety, the Owner may, at any time or from time to time, order additions, deletions, or revisions in the Contractor's work. Such additions, deletions or revisions will be authorized by field order, change order, or construction change directive.

B. Field orders are an interpretation of the Drawings and/or the Specifications which order minor changes in the Contractor's work which will not result in an increase or decrease in the Contractor's total contract sum. From time to time, the Architect may issue field orders to the Contractor. The work included in such field order shall be performed by the Contractor at no additional cost to the Owner and shall not form the basis for a claim for an extension of time of the Contractor's time to complete its work. Hence, the Contractor shall perform the work included in field orders so as to cause no delay to its work and/or the work of other contractors

engaged by the Owner in connection with the Project. All field orders shall be given to the Contractor and the Construction Manager by the Architect in writing.

C.

1. When the Owner or the Architect (in association with the Construction Manager) request that the Contractor perform work which is not included in the contract Drawings or the Specifications and which will result in additional cost to the Owner, the Architect/Construction Manager shall issue a PCO Number and shall request that the Contractor submit its proposal for performing such additional work. The Contractor shall submit its proposal to the Construction Manager and the Architect for review. The Contractor's proposal shall include a complete itemization of the costs associated with performing its work including labor and materials. All proposals for any work that a contractor, its subcontractor(s) or subcontractor(s) of subcontractor(s) perform in connection with additional work shall be submitted using the following format and in no event shall the total for overhead and profit (Contractor and SubContractor Costs) on any change order exceed fifteen percent (15%) of the cost of the work.

1.	Materials (Itemized Breakdown) including quantities and cost	
2.	Labor (Itemized Breakdown)	
3.	Subtotal (Add lines 1 and 2)	
4.	Credit for work not required due to additional or changes to the work reflected in the within change order (if any)	
5.	Overhead (10% x line 3)	
6.	Subtotal (Add lines 3 through 5)	
7.	Sub-Contract Work (Include itemized breakdown. Sub-Contractor(s) overhead and profit allowed is 10%)	
8.	Subtotal (Add lines 6 and 7)	
9.	Profit (5% x line 8)	
10.	Subtotal (Add lines 8 and 9)	
11.	Rental Value of Equipment (Itemized Breakdown)	
12.	Actual additional charges for bonds	
13.	TOTAL CHANGE ORDER (Add lines 10, 11 and 12)	

2. All proposals submitted by the Contractor without the itemization indicated herein will be returned to the Contractor for re-submission by the Contractor. For any work performed by the Contractor's own forces, fifteen percent (15%) for overhead and profit will be allowed for labor and material related costs. Costs to which overhead is to be applied shall be limited to cost of labor and materials including the cost of delivery. Under no circumstances shall any change order proposal exceed fifteen percent (15%) of the cost of overhead and profit.

The Contractor shall not be entitled to recover overhead and profit on the rental value of equipment and machinery. "Equipment and machinery" shall not include: (1) tools customarily used by the Contractor's trade, including but not limited to hand tools; and/or (2) equipment and machinery already on site and being utilized by the Contractor for the original scope of work.

The Contractor shall submit with its change order proposals actual invoices from its insurance broker reflecting actual additional costs associated with the procurement of bonds.

3. The Contractor's SubContractor's proposal for any work it is to perform in connection with the additional work shall only include ten percent (10%) for the SubContractor's overhead and profit including sub-subcontracted work. The Contractor is entitled to five percent (5%) on work performed by its SubContractor in accordance with paragraph C(1) of this Article 8. Costs to which overhead is to be applied shall be limited to cost of labor and materials including the cost of delivery. Under no circumstances shall the Contractor or the Contractor's SubContractor(s) be entitled to be reimbursed for overtime, except when specifically approved by the Owner in writing and not as an Extraordinary Measure as set forth in Article 13, and in such event the Contractor shall be paid for by the Owner on the basis of premium payment.

4. Notwithstanding the foregoing, work which is performed pursuant to an allowance included in the Contractor's base contract, the provisions of Article 9, paragraph B, concerning itemization of such work shall be controlling.

5.

- a. A change in the Contract Sum shall be accomplished only by a written Change Order. Accordingly, no course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of any claim as defined in Article 18 of these General Conditions to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents. **No amount shall be payable by the Owner to the Contractor for performance of work without a written and fully executed Change Order.**
- b. Upon the Contractor's completion of the Change Order work, and prior to payment being made to the Contractor for such work, the Contractor shall provide the Owner with the following information:
 - (1) Certified payrolls itemizing the labor actually utilized in connection with the change order work.
 - (2) Copies of invoices from SubContractors supplying work in connection with the change order work.

D.

1. When the Owner or the Architect request that portions of the Contractor's work originally included in the Drawings or the Specifications be deleted and which will result in a reduction of the Contractor's original contract sum, the Architect shall request that the Contractor submit its proposal for deleting the scope of such work from its contract. The Contractor's proposal shall include a complete itemization of the costs associated with deducting such work including labor and materials and shall be submitted using the format set forth in Article 8,

paragraph C(1) or the schedule of values, whichever is greater. The Contractor shall not be entitled to retain its overhead and/or profit for such work nor shall any of its SubContractors which were to perform the work being deducted from the Contractor's scope of work. Additionally, the Contractor shall reflect the reduced cost of premiums on bonds which are to be supplied herein as a result of such change. 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/decrease with respect to that change.

2. The Owner may in its sole discretion deduct and/or reduce the scope of the Contractor's contract with or without any specific reasons therefor.

E.

1. In the event the Contractor and the Owner cannot agree on the sum by which its contract with the Owner is to be increased or reduced based upon changes to the scope of the work as described in this Article 8, the Architect shall issue a construction change directive reflecting the deduction and/or reduction of the scope of the Contractor's contract and the Contractor will (a) in the case of additional work to be performed by the Contractor, perform such additional work in an expeditious manner so as not to delay the work of this or other contractors working at the site, and (b) in the case of work to be deducted from the scope of the Contractor's work, refrain from taking any steps in connection with the work associated with the deduction and/or reduction of the scope of the Contractor's work. The construction change directive shall include (a) a description of the work being added or deducted from the Contractor's scope of work; (b) the amount the Owner has determined to be the cost associated with the additional work or deduction and/or reduction of the scope of the Contractor's contract until the Owner and the Contractor agree upon the increase or decrease in the Contractor's contract sum, or until a claim filed by the Contractor has been determined; (c) the extent to which the contract time will be adjusted as a result of the change in the scope of work. Any claims must be filed in accordance with the requirements set forth in Article 18 of these General Conditions. Failure to timely file any claim in accordance with requirements set forth therein shall constitute a waiver of such claim.

2. In the event the Contractor and the Owner reach Agreement on the amount by which the Contractor's contract sum is to be increased or decreased based upon changes to the scope of the Contractor's work as described in this Article 8, the Architect, the Owner, the Construction Manager, and the Contractor shall sign a change order reflecting such agreement. The change order shall include: (a) the description of the change in the scope of the Contractor's work; (b) the amount of the adjustment to the Contractor's contract sum, if any; and (c) the length of time by which the time to complete the contract will be adjusted, if any. Agreement between the Owner and the Contractor in connection with any change order shall constitute a final settlement of all matters relating to the change in the Contractor's work as reflected in said change order, including but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contractor's contract sum and the construction schedule. All such change orders for which the Owner and the Contractor have reached agreement shall be included as a separate line item in the Contractor's applications for payment as if originally part of the Contractor's agreement with the Owner.

F. Neither the Owner, the Construction Manager nor the Architect may issue instructions to the Contractor to change the amount of the Contract, except by properly executed Change Orders or Construction Change Directive. Instructions are issued by the Owner or the Construction Manager through the Architect, to the Contractor. The instructions shall not be carried out by the Contractor prior to a written order in the form of a Change Order, signed by the Owner, the Architect and the Contractor, authorizing a change in the Contract amount or an adjustment to the Contract Sum. No amount shall be payable by the Owner to the Contractor for performance of work without an executed Change Order.

ARTICLE 9 PAYMENTS

A.

1. Prior to commencing its work on the Project and within one (1) week of receipt of a Notice to Proceed, the Contractor shall submit to the Construction Manager and the Architect, a schedule of values which includes the amount of money it has allocated in its bid price for the following items of work which are applicable to the Contractor's work. Said schedule of values shall include each of the CSI division sections reflected in the Specifications and applicable to the contract for which the Contractor has been awarded the contract, together with the requirements for bonds/insurance (based upon actual invoice amount), general conditions, meeting attendance and meeting documentation (at least two percent (2%) of the contract sum), shop drawing/product data/sample submissions (at least one percent (1%) of contract sum), labor and materials on line items as applicable, temporary utilities and services, HVAC balance reports, coordination drawings, punch list (at least one percent (1%) of the contract sum), warranties/guarantees and close out of the Project (at least three percent (3%) of the contract sum), and allowance, where applicable.

2. Any schedule of values which fails to include sufficient detail, is unbalanced or exhibits "front loading" of the value of the Contractor's work will be rejected. Furthermore, if the schedule of values has been approved by the Construction Manager and the Architect and is subsequently used, but later is found by the Construction Manager or the Architect to be improper for any reason, sufficient funds shall be withheld from the Contractors' future applications for payment to ensure an adequate reserve (exclusive of normal retainage) to complete the Contractor's work.

3. The schedule of values shall be drafted so as to reflect multiple construction sites, multiple locations within each site, additions versus renovations of work, and the like so as to satisfy any NYSED requirements for the Project.

4. The schedule of values prepared by the Contractor must be approved by the Construction Manager and the Architect prior to the payment of any sums due the Contractor.

B. The Contractor shall include in its contract sum all allowances stated in the Specifications. However, the Contractor's costs for unloading and handling at the site, overhead, profit, and

other expenses contemplated for the stated allowance amounts shall be included in its contract sum and not in the allowances.

C. The Contractor shall submit its applications for payment to the Construction Manager and the Architect on a periodic basis. The form to be used by the Contractor shall be AIA G732 and 703/CMA approved by the Construction Manager, the Architect, and the Owner for use in connection with the Contractor's work. The form shall be divided in sufficiently in the same form as the Contractor's schedule of values and shall reflect in separate line items for the work:

1. Total value of the work listing labor and material separately.
2. Percentage of work completed at the time of submission of the application for payment.
3. Value of the work completed at the time of submission of the application for payment.
4. Percent of previous amount billed.
5. Previous amount billed.
6. Current percent completed.
7. Value of work completed to date.
8. Percent remaining to be completed by the Contractor.
9. Value of work remaining to be completed by the Contractor.

D.

1. Payments to the Contractor shall be based upon materials and equipment delivered and suitably stored at the site and/or incorporated into the Contractor's work, together with the labor utilized by the Contractor in connection with its work. The Contractor may be paid for materials and/or equipment which has been delivered to the Owner's facilities but which, at the time of submission of its application for payment, has not yet been incorporated into the Contractor's work upon such conditions and requirements as the Owner, the Construction Manager and/or the Architect may advise the Contractor it must satisfy.

2. The Construction Manager and the Architect shall review the application for payment submitted by the Contractor and shall advise the Contractor of any adjustments to be made thereto. The Construction Manager and/or the Architect may make such adjustments under the following circumstances:

- a. the Contractor's failure to remedy defective work;

- b. the filing of third-party claims or reasonable evidence that there is a probability that such claims will be filed;
- c. receipt by the Owner of a notice of withholding from the New York State Department of Labor or other administrative agencies having jurisdiction over the Project;
- d. the Contractor's failure to make proper payments to its SubContractors or material suppliers for labor, materials and/or equipment;
- e. reasonable evidence that the Contractor will not complete its work for the unpaid balance of the remaining monies on its contract;
- f. damages caused to the Owner, the Construction Manager, the Architect or another contractor as a result of the Contractor's performance of its work;
- g. reasonable evidence that the Contractor will not complete its work in accordance with its Agreement with the Owner, and/or that the remaining monies available on the Contractor's contract will not be sufficient to cover actual or liquidated damages for the anticipated delay;
- h. the Contractor's failure to carry out its work in accordance with the Drawings and/or the Specifications;
- i. the Contractor's failure to notify the Architect of errors or inconsistencies between and among the Drawings and the Specifications;
- j. the Contractor's and/or its SubContractors' failure to comply with the requirements for maintaining record drawings;
- k. the Architect's and/or the Construction Manager's discovery or observation of work which has been previously paid for by the Owner which is defective and/or incomplete;
- l. such other acts and/or omissions by the Contractor in connection with the performance of its work;
- m. the amount requested exceeds the percent completion of work on the site.

3. After any such adjustments are made to the Contractor's application for payment, the Contractor shall submit four (4) copies of the final draft of its application for payment to the Construction Manager and the Architect, which shall be accompanied by the following documentation:

- a. A current Contractor's lien waiver and duly executed and acknowledged sworn statement showing all SubContractors and material suppliers with whom the Contractor has entered into subcontracts, the amount of each such subcontract, the amount requested for any SubContractor and material suppliers in the requested progress payment and the amount to be paid to the Contractor from such progress payment, together with similar sworn statements from all such SubContractors and material suppliers;
- b. Duly executed waivers of public improvement liens from all SubContractors and material suppliers and lower tiered SubContractors or material suppliers establishing payment or satisfaction of payment of all amounts requested by the Contractor on behalf of such entities or persons in any previous application for payment; and AIA Form G706 or G706A.
- c. Certified payroll for employees of the Contractor and employees of SubContractors performing work on the Project.
- d. Copies of invoices submitted to the Contractor by its SubContractors and/or material suppliers.
- e. Such other information which the Owner, the Construction Manager and/or the Architect request the Contractor furnish in connection with its application for payment, including but not limited to, Contractor change order log, Contractor submittal log and as built drawings to date.

4. Upon submission of its application for payment, the Contractor represents that it is entitled to payment in the amount for which it seeks payment.

5. In addition to the right to make adjustments to the amount the Contractor claims is due (as set forth in subparagraph 2 of this Paragraph D), the Owner may withhold payment from the Contractor and the Architect and/or the Construction Manager may withhold certification for payment, if any of the reasons set forth in subparagraph 2 exist.

6. The Owner shall make payment to the Contractor within forty-five (45) days of receipt of the Contractor's requisition of payment unless such requisition of payment is not in accordance with the terms of the Construction Documents.

7. Upon receipt of payment by the Owner, the Contractor shall promptly make payment to each of its SubContractors and/or material suppliers for which it has received payment from the Owner. This provision does not obligate the Architect, the Construction Manager, and/or the Owner to ensure payment to the Contractor's SubContractors and/or material suppliers.

8.

- a. In the event a subcontractor and/or material supplier files with the Owner a public improvement lien, the Owner shall withhold payment on previously certified applications for payment which have not yet been paid or subsequent applications for payment submitted by the Contractor an amount equal to one hundred fifty percent (150%) of the amount set forth in such public improvement lien. This provision is in addition to and does not supersede the indemnity provisions set forth in Article 12 of these General Conditions.
- b. The Owner may release any payment withheld due to the filing of a public improvement lien if the Contractor obtains security acceptable to the Owner or a lien bond which is: (1) issued by a surety acceptable to the Owner; (2) in form and substance satisfactory to the Owner; and (3) in an amount not less the one hundred fifty percent (150%) of such lien claim. The cost of the premiums for any such bond posted shall be borne solely by the Contractor. By posting a lien bond or other acceptable security, however, the Contractor shall not be relieved of its obligations pursuant to these General Conditions, including but not limited to the indemnity provisions set forth in Article 12 of these General Conditions.

E.

1. The Contractor shall not be entitled to payment for materials and/or equipment stored off the site unless previously approved in writing by the Owner, the Architect, and/or the Construction Manager and upon the Contractor meeting any and all conditions which the Owner, the Architect, and/or the Construction Manager may impose in connection with such materials and/or equipment, including but not limited to insurance for such materials and cost of storage and transportation associated with such materials and/or equipment. No payment will be made for "commodity type" stored materials such as block, studs, sheetrock, roofing, insulation, piping, fittings, conduit work, etc.

2. In connection with materials and/or equipment stored off the Project site, the Contractor must submit with its application for payment the following information:

- a. Type of material must be specifically identified by the Contractor;
- b. The Contractor must furnish an invoice from its supplier showing the total value of material and/or equipment being stored off site and must provide the bill of lading for such material and/or equipment;
- c. The Contractor must provide a Certificate of Insurance in a form approved by the Owner for the full value of the item plus ten percent (10%).
- d. The Contractor must execute a security agreement, together with an executed UCC-1 form;

- e. The materials must be stored in a bonded warehouse;
- f. The Contractor must furnish a bill of sale for stored material and/or equipment;
- g. The Contractor still has liability for all materials whether paid or not until installed.

3. Any and all materials and/or equipment for which the Contractor has been paid shall be titled in the Owner upon installation by the Contractor and shall be stored in a bonded facility. For payment to be made to the Contractor, the Contractor must provide the Owner with a waiver of lien and general release from its supplier in connection with its provisions of such materials and/or equipment. Notwithstanding payment by the Owner, any and all warranties and/or guarantees required to be provided shall not begin to run until the Contractor has completed all of its work.

4. Prior to payment by the Owner, the Contractor may be required to provide the Architect and the Construction Manager with an opportunity to visually inspect the materials and/or equipment for the purpose of determining that such materials are in fact in storage, are the materials specified for the Contractor's work and for any other purpose which the Owner, Construction Manager, and/or the Architect deem necessary for payment to be made to the Contractor.

F. If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to its Agreement with the Owner, including but not limited to these General Conditions, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained herein to the contrary, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective work, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to: (1) deduct an amount equal to that which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner, or (2) issue a written notice to the Contractor reducing the Contractor's contract sum by an amount equal to that which the Owner is entitled.

G. The Contractor may not assign any monies due or to become due to it pursuant to its Agreement with the Owner without the Owner's prior written consent. Any such assignment shall be in a form acceptable to the Owner. If the Contractor attempts to make such an assignment without such consent from the Owner, the Contractor shall nevertheless remain legally responsible for all obligations under its Agreement with the Owner.

H. Progress payments and all other payments shall be made in accordance with Section 106 (b) of the General Municipal Law.

I. At the same time the Contractor submits its insurance certificate to the Owner and the Construction Manager, it shall also submit to the Construction Manager the labor rates of each category of labor for which it and/or its SubContractors shall employ (either directly or indirectly).

This information shall be itemized in the format shown below:

Contractor's Name					
Contractor's Address					
Contractor's Office Phone					
Contractor's Fax Number					
Contractor's Email Address					
Labor Rate Breakdown					
Worker's Title		Journeyman	1.5 Rate	Foreman	1.5 Rate
Base Hourly Rate					
Payroll Tax & Insurance:	\$ Per Hr.				
FICA					
Federal Unemployment					
State					
Workers Compensation					
Disability					
Other (Explanation Required)					
Subtotal					
Benefits:	\$ Per Hr				
Vacation					
Health & Welfare					
Pension					
Annuity					
401K Fund					
Other (Explanation Required)					
Other Explanation Required)					
Subtotal					
Hourly Labor Rate					

ARTICLE 10 INSURANCE REQUIREMENTS

A. Within ten (10) days of the award of the bid, the Contractor, at its sole cost and expense, shall provide the Owner with the following insurance coverage whether the operations to be covered thereby are through the Contractor or by a SubContractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

1. **Workers' Compensation, Paid Family Leave and NYS Disability Insurance**
Statutory Workers' Compensation (C-105.2 or U-26.3), NYS Paid Leave and NYS Disability Insurance (DB-120.1) for all employees. Proof of coverage must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable. A person seeking an exemption must file a CE-200 Form with the state. The form can be completed and submitted directly to the WC Board online.
2. **Commercial General Liability Insurance**
\$1,000,000 per Occurrence/\$2,000,000 aggregate with coverage for sexual misconduct
\$2,000,000 Products and Completed Operations
\$1,000,000 Personal and Advertising Injury
\$100,000 Fire Damage
\$10,000 Medical Expense
The general aggregate shall apply on a per-project basis.
3. **Owners Contractors Protective (OCP) Insurance:**
For Projects less than or equal to \$1,000,000 and work on 1 story (10 feet) only:
\$1,000,000 per occurrence, \$2,000,000 aggregate with the Owner as the named insured.

For Projects greater than \$1,000,000 or any contracts involving scaffolding or work above one story (10 feet): \$2,000,000 per occurrence, \$4,000,000 general aggregate with the Owner as the named insured.

The Owner will be the named insured on OCP Policies. There will be no additional insureds on any OCP Policies.
4. **Automobile Liability**
\$1,000,000 combined single limit for owned, hired, borrowed and non-owned motor vehicles.

5. **Builder's Risk**

Must be purchased by the Contractor to include interest of the Owner and the Contractor jointly in a form satisfactory to the Owner. The limit to reflect the total completed value - all material and labor costs and provide coverage for fire, lightning, explosion, extended coverage, vandalism, malicious mischief, windstorm, hail, and/or flood.

6. **Umbrella/Excess Insurance**

\$5,000,000 each occurrence and aggregate for general construction (including plumbing, electrical, and HVAC) and no work at elevation (1 story - 10 feet) or Project values less than or equal to \$1,000,000.

\$10,000,000 each occurrence and aggregate for high-risk construction, work at elevation (>1 story or 10 feet) or Project values greater than \$1,000,000.

Umbrella/Excess coverage shall be on a follow-form basis.

7. **Asbestos/Lead Abatement Insurance**

If the Project requires the removal of asbestos and/or hazardous materials, the Contractor shall provide hazardous material liability insurance as follows:

\$2,000,000 per occurrence/\$2,000,000 aggregate, including products and completed operations. Such insurance shall include coverage for the Contractor's operations including, but not limited to, removal, replacement, enclosure, encapsulation and/or disposal of asbestos, or any other hazardous material, along with any related pollution events, including coverage for third-party liability claims for bodily injury, property damage and clean-up costs. If a retroactive date is used, it shall pre-date the inception of the Contract.

If the Contractor is using motor vehicles for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage (ISO endorsement CA 9948), as well as proof of MCS 90. Coverage shall fulfill all requirements of this Article 10 and shall extend for a period of three (3) years following acceptance by the Owner of the Certificate of Completion.

8. **Testing Company Errors and Omission Insurance**

\$1,000,000 per occurrence/\$2,000,000 aggregate for the testing and other professional acts of the Contractor performed under the Contract with the Owner.

B. Notwithstanding any terms, conditions, or provisions, in any other writing between the parties, the Contractor hereby agrees to effectuate the naming of the Owner, the Architect, and the Construction Manager as an additional insured on the Contractor's commercial general liability and excess/umbrella insurance policies.

1. The policy naming the Owner, the Architect, and the Construction Manager as an additional insured shall:

- a. be an insurance policy from an A.M. Best A- rated insurer, licensed and admitted to conduct business in New York State; and
- b. state that the coverage shall be primary and non-contributory coverage for the Owner, its Board, employees, and volunteers with a waiver of subrogation in favor of the Owner.

2. Additional insured status shall be provided by standard or other endorsements that extend coverage to the Owner for on-going operations (CG 20 38) and products and completed operations (CG 20 37). The decision to accept an alternative endorsement rests solely with the Owner. A completed copy of the endorsement must be attached to the certificate of insurance.

3. There will be no coverage restrictions and/or exclusions involving New York State Labor Law statutes or gravity related injuries.

4. The certificate of insurance must describe the work that is covered by the liability policies.

5. At the Owner's request, the Contractor shall provide a copy of the declaration page of the liability and excess policies with a list of endorsements and forms. If so requested, the Contractor will provide a copy of the policy endorsements and forms.

6. The Contractor agrees to indemnify the Owner, the Architect and the Construction Manager for any applicable deductibles and self-insured retentions.

If written on a "claims-made" basis, the retroactive date must pre-date the inception of the Agreement. Coverage shall remain in effect for two (2) years following the completion of work. The testing company shall also provide proof of Workers' Compensation and NY State Disability Benefits Insurance, Commercial General Liability and Excess Liability with limits of \$2,000,000 each occurrence and in the aggregate.

C. Coverages shall be maintained without interruption from the date of commencement of the work until the date of final payment and termination of any coverage required to be maintained after final payment.

D. The Contractor will be permitted to commence work on the Project with the insurance certificates currently on file with the Owner. On or before July 15 of each year, the Contractor will substitute said insurance certificates with insurance in strict compliance with Article 10. In addition to any other rights or remedies that the Owner may have in law, equity or pursuant to the General Conditions of Construction set forth in the Agreement between the Owner and the Contractor, in the event the Contractor fails to provide evidence of the insurance required by

Article 10 by July 15, the Owner shall assess liquidated damages of \$1,000.00 for every day the Contractor fails to meet the requirements for insurance as set forth in Article 10 through final completion of the Project or the date the required insurance is submitted, whichever is earlier.

E. The insurance required to be procured pursuant to this Article shall be purchased from and maintained by an insurance carrier licensed and admitted to do business in the State of New York, with an AM Best rating of A-, VIII, or better. The Contractor must submit the Certificate of Insurance to the Construction Manager for the Owner's approval prior to the commencement of any work. **EXCESS OR SURPLUS LINE INSURANCE CARRIERS WILL NOT BE ACCEPTED.**

F. All insurance coverage to be provided by the Contractor, pursuant to paragraph A of this Article 10, shall include a cancellation notice to the Owner pursuant to the policy terms and conditions. All insurance coverage to be provided by the Contractor shall name the Owner, the Architect, and the Construction Manager as additional insureds on the policy, with the exception of Owners Contractors Policies. Additionally, the insurance coverage to be provided by the Contractor, pursuant to paragraph A of this Article 10, shall state that the Contractor's coverage shall be the primary and non-contributory coverage for the Contractor's work. A fully completed New York Construction Certificate of Liability Insurance Addendum (ACCORD 855 2014/15) must be included with the certificates of insurance. For any "Yes" answers on Items A through L on this Form -- additional details must be provided in writing. Policy exclusions may not be accepted.

G. The Contractor acknowledges that its failure to obtain or keep current the insurance coverage required by paragraph A of this Article 10 shall constitute a material breach of Contract and subjects the Contractor to liability for damages, including but not limited to direct, indirect, consequential, special, and such other damages the Owner sustains as a result of such breach. In addition, the Contractor shall be responsible for the indemnification to the Owner, the Architect, and the Construction Manager, of any and all costs associated with such lapse in coverage, including but not limited to reasonable attorney's fees.

H. In the event that any of the insurance coverage to be provided by the Contractor to the Owner contains a deductible, or a self-insured retention, or the insurance provided by the Owner contains a deductible, the Contractor shall indemnify and hold the Owner and the Architect harmless from the payment of such deductible or self-insured retention, which deductible shall in all circumstances remain the sole obligation and expense of the Contractor.

I. SubContractors are subject to the same terms and conditions as stated above and must submit same to the Owner for approval prior to the start of any work. In the event the Contractor fails to obtain the required certificates of insurance from the SubContractor and a claim is made or suffered, the Contractor shall defend, indemnify, defend, and hold harmless the Owner, Construction Manager, the Architect, Engineers, Consultants, and Sub-consultants and their officers, members of the Board, agents or employees from any and all claims for which the required insurance would have provided coverage. This indemnity obligation is in addition to any other indemnity obligation provided in the Contract.

J. The Contractor assumes responsibility for all injury or destruction of the Contractor's materials, tools, machinery, equipment, appliances, shoring, scaffolding, false and form work, and personal property of the Contractor's employees from whatever cause arises. Any policy of insurance secured covering the Contractor or SubContractors leased or hired by them and any policy of insurance covering the Contractor or SubContractors against physical loss or damage to such property shall include an endorsement waiving the right of subrogation against the Owner for any loss or damage to such property.

K. The Owner in good faith may adjust and settle a loss with the Contractor's insurance carrier.

L. The Owner and the Contractor waive all rights against each other and any of their SubContractors, Sub-SubContractors, agents, and employees for damages caused by fire or other perils to the extent of actual recovery of any insurance proceeds under any property insurance policy procured, pursuant to paragraph A of this Article 10, or other property insurance applicable to the Contractor's work.

M. Before commencement of its work, the Contractor shall obtain and pay for such insurance as may be required to comply with the indemnification and hold harmless provisions outlined under Article 12 of these General Conditions of the Contract for Construction.

N. Review and acknowledgment of the Certificate of Insurance by the Owner or the Architect shall not relieve or decrease the liability of the Contractor hereunder.

O. If the terms of policies expire, or the lives of the insurance companies terminate, before the Contract is completed or during the period of completed operations coverage, and the Contractor fails to maintain continuance of such insurance, the Owner is entitled to provide protection for itself, to pay premiums, and to charge the cost to the Contractor.

ARTICLE 11 REQUIRED BONDS FOR THE PROJECT

A. Within ten (10) days of the award of the bid, the Contractor shall furnish a Performance Bond, Labor and Material Payment Bond and Maintenance Bond (to be in effect during the warranty period) meeting all statutory requirements of the State of New York.

B. All Surety companies are subject to the approval of the Owner and may be rejected by the Owner without cause.

C. Except as otherwise required by statute, the form and substance of such bonds shall be satisfactory to the Owner in the Owner's sole judgment.

D. Bonds shall be executed by a responsible surety licensed to do business in New York with an A.M. Best Rating of "A-" or better as to Policy Holder Ratings, and "VIII" or better as to

“Financial Size Category.” Such bonds shall remain in effect for a period not less than three (3) years following final completion of the work by the Contractor.

E. Bonds shall further be executed by a surety that is currently listed on the U.S. Treasury Department Circular 570 entitled “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies,” as amended.

F. The Performance Bond and the Labor and Material Payment Bond shall each be in an amount equal to one hundred percent (100%) of the Contract Sum. The value of each bond shall be adjusted during the Project construction period to reflect changes in the Contract Sum.

G. Every Bond must display the Surety’s Bond Number.

H. Each bond must be accompanied by an original Power of Attorney, giving the names of Attorneys-in-fact, and the extent of their bonding capacity.

I. A rider including the following provisions shall be attached to each Bond:

1. Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, or other modification of the Contract Documents. Such addition, alteration, change, extension of time, or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety of its obligations hereunder and notice to the Surety of such matters is hereby waived.

2. Surety further agrees that in event of any default by the Owner in the performance of the Owner's obligations to the Contractor under the Contract, the Contractor or Surety shall cause written notice of such default (specifying said default in detail) to be given to the Owner, and the Owner shall have thirty (30) days from time after receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within thirty (30) days. Such Notice of Default shall be sent by certified or registered U.S. Mail, return receipt requested, first class postage prepaid, to Lender and the Owner.

3. 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 three (3) years after termination by the Owner of the Contractor’s contract or within three years after final completion by the Contractor. In the event the Contractor files for bankruptcy, the commencement of the three-year period shall not start to run until the bankruptcy proceeding is finalized or the Owner obtains relief from an automatic stay, whichever is later.

J. The Contractor shall deliver the required bonds to the Owner prior to beginning construction activity at the site, but no later than ten (10) days of issue date of Notice of Award of Contract. Said bonds shall be in the form set forth in the Project Manual. No work shall be performed by the Contractor until such bonds have been reviewed and approved.

K. The Owner may, in the Owner's sole discretion and without prior notice to the Contractor, inform surety of the progress of the Contractor's work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Contractor's work.

L. If the surety on any bond furnished by the Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of this Article, the Contractor shall within ten (10) days thereafter substitute another Performance and Payment Bond and surety, both of which must be acceptable to the Owner.

ARTICLE 12 INDEMNIFICATION

A. The Contractor and its SubContractors shall defend, indemnify and hold harmless: (1) the Owner, its consultants, employees, officers, members of the Board of Education, and agents; (2) the Architect and its consultants, employees, officers and agents; and (3) the Construction Manager, its consultants, employees, officers and agents from and against any and all claims, damages, losses, suits, obligations, fines, penalties, costs, charges and expenses, including but not limited to attorney's fees, which may be imposed upon or incurred by or asserted against any of them by reason of any act or omission of such contractor or any of its subcontractors or any person or firm directly or indirectly employed by such contractor, for the act(s) and/or omission(s) of any contractor or subcontractor in connection with the work of the Project.

B. To the fullest extent permitted by law, the Contractor and its SubContractors shall defend, indemnify and hold harmless: (1) the Owner, its consultants, employees, officers, members of the Board of Education, and agents; (2) the Architect and its consultants, employees, officers, and agents; and (3) the Construction Manager, its consultants, employees, officers, and agents from and against claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of its 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 including loss of use resulting therefrom, but only to the extent caused in whole or in part by 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 which would otherwise exist as to a party or person described in this Paragraph B. The Contractor's indemnity obligations under this Paragraph B shall, but not by way of limitation, specifically include all claims and judgments which may be made against the Owner, the Architect, the Architect's consultants and agents and employees of any of them under any applicable statute, rule or regulation including the New York Statute, Occupational Safety and Hazardous Act, and the Federal Occupational Safety and Hazardous Act. In claims against any person or entity indemnified under this Paragraph B 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 this Paragraph B 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' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

C. The Contractor and its SubContractors shall defend, indemnify and hold harmless: (1) the Owner, its consultants, employees, officers, members of the Board of Education, and its agents; (2) the Architect and its consultants, employees, officers, and agents; and (3) the Construction Manager, its consultants, employees, officers, and agents from and against any fines, penalties, judgments, or damages, including reasonable attorney's fees, imposed on or incurred by the parties indemnified hereunder which are incurred as a result of the Contractor's failure to give the notices required by Article 6(T) of these General Conditions of the Contract for Construction.

D. The Contractor and its SubContractors shall defend, indemnify and hold harmless: (1) the Owner, its consultants, employees, officers, members of the Board of Education, and agents; (2) the Architect and its consultants, employees, officers, and agents; and (3) the Construction Manager, its consultants, employees, officers and agents from and against any actions, lawsuits, or proceedings or claims of liens brought against each or any of them as a result of liens filed against the Contractor's Project funds, including all the cost and expense of said liens, and including but not limited to attorney's fees incurred by each or any of them.

E. The Contractor and its SubContractors shall defend, indemnify and hold harmless: (1) the Owner, its consultants, employees, officers, members of the Board of Education, and agents; (2) the Architect and its consultants, employees, officers, and agents; and (3) the Construction Manager, its consultants, employees, officers, and agents from and against any and all liability for violation of all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies applicable to the Contractor's work and shall defend any claims or actions which may be brought against the Owner as the result thereof.

F. The Contractor and its SubContractors shall defend, indemnify and hold harmless: (1) the Owner, its consultants, employees, officers, members of the Board of Education, and agents; (2) the Architect and its consultants, employees, officers, and agents; and (3) the Construction Manager, its consultants, employees, officers, and agents from and against any and all liability for claims made by third parties, including SubContractors, in connection with this Agreement and shall defend any claims or actions which may be brought against the Owner as the result thereof.

G. The Contractor shall defend, indemnify and hold harmless (1) the Owner, its consultants, employees, officers, members of the Board of Education, and agents; (2) the Architect and its consultants, employees, officers, and agents; and (3) the Construction Manager, its consultants, employees, officers, and agents from and against any and all claims, damages, losses, suits, obligations, fines, penalties, costs, charges, and expenses which may be imposed upon or incurred by or asserted against any of them by reason of any act or omission of such contractor or any subcontractor or any person or firm directly or indirectly or indirectly employed by such contractor, with respect to violations of OSHA requirements, rules, and/or regulations.

H. The indemnification obligations set forth herein shall become effective upon the Owner, the Architect or the Construction Manager's receipt of a claim for which the Contractor is required to provide indemnification to the Owner, the Architect, or the Construction Manager. In the event that the Contractor shall fail to refuse to defend any such action, the Contractor shall be liable to the Owner for all costs of the Owner in defending such claim or action and all costs of the Owner, including attorney's fees, in recovering such defense costs from the Contractor. In the event the Owner, the Architect, or the Construction Manager is required to bring an action to enforce the indemnification obligations set forth herein, the Contractor shall be liable to the Owner, the Architect, and/or the Construction Manager for all costs associated with said action including attorney's fees.

ARTICLE 13 TIME FOR COMPLETION OF WORK

A. The date of commencement of the Contractor's work shall be as indicated in the Agreement between the Contractor and the Owner. The date shall not be postponed or extended by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible to act. Time limits stated in the Agreement between the Owner and the Contractor 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.

B. The Contractor shall not commence work on the site until two certified copies of all insurance policies and bonds required by Articles 10 and 11 of these General Conditions are provided to the Owner and accepted by the Owner. The date of commencement and/or completion of the Contractor's work shall not be changed by the effective date of such insurance. The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the acceptance of the insurance and bonds required by Article 10 and Article 11 of these General Conditions.

C. The Contractor shall proceed expeditiously with adequate forces and shall achieve substantial completion of the work in accordance with the schedule set forth in the Agreement. The Contractor shall cooperate with the Owner, the Architect, the Construction Manager, and other contractors on the Project, making every reasonable effort to reduce the contract time.

D.

1. In the event the Owner determines that the performance of the Contractor's work, as of a milestone date, has not progressed or reached the level of completion required by its contract, the Owner shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation: (1) working additional shifts or overtime; (2) supplying additional manpower, equipment, facilities; and/or (3) other similar measures (hereinafter referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures shall continue until the Contractor progresses its work in compliance with the stage of completion required by the Agreement with the Owner. The Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the construction schedule.

2. The Contractor shall not be entitled to an adjustment in its contract sum in connection with Extraordinary Measures ordered by the Owner under or pursuant to Paragraph D(1).

3. The Owner may exercise the rights furnished the Owner under or pursuant to Paragraph D(1) as frequently as the Owner deems necessary to ensure that the Contractor's performance of its work will comply with any Milestone Date or completion date set forth in the Contractor's Agreement with it.

4. The Owner reserves the right to withhold payment from the Contractor until such time as the Contractor submits a daily schedule showing work to be again on schedule with the Construction Schedule and/or until its work is being installed according to the Project construction schedule, without additional cost to the Owner.

E. The Contractor shall achieve substantial completion of its work in accordance with the schedule for the work set forth in the Project Manual included as part of the Agreement with the Owner. Milestone Dates are dates critical to the Owner's operations that establish when a part of the work is to commence or be complete. All Milestone Dates are of the essence and shall have the same meaning as Substantial Completion for the purpose of Liquidated Damages in this Article 13.

F. Substantial completion shall be achieved by the Contractor when the Contractor has completed ninety-eight percent (98%) of its work. Work remaining to be completed after substantial completion shall be limited to items which can ordinarily be completed within the period between the payment at the time of substantial completion and final payment.

G.

1. The Project is to be physically completed in accordance with the time limits set forth in the Agreement between the Owner and the Contractor and as further set forth in the Project Manual and/or bidding documents. Liquidated damages will be assessed in the amount of One Thousand Two Hundred Fifty Dollars (\$1,250.00) for each and every calendar day after such time allowed for completion.

2. The Contractor realizes that time is of the essence on this Contract and the completion date and milestone date for each work item in its Agreement, a Milestone Date reflected on the Project schedule, or the date of substantial completion of the Contractor's work shall be no later than the date indicated therein. In the event the Contractor fails to complete any work or substantially complete the work under this contract by said schedule date, the sum per calendar day for each date not met, as delineated above, will be subtracted from the payment due the Contractor (or, if the amount due the Contractor as payment is insufficient, any deficiency shall be paid by the Contractor to the Owner), except in cases where the Contractor has applied for and been granted an extension of time in accordance with the provisions of this Article 13.

3. The said sum per calendar day shall constitute the Liquidated Damages incurred by the Owner for each day of delay beyond the agreed upon dates of substantial completion. Such Liquidated Damages shall be in addition to any other damages (other than by reason of delay) the Owner may incur as a result of the Contractor's breach of contract. In the event that substantial completion of its work is not achieved in accordance with the Project schedule, inspections will be performed once each week unless the Owner or the Architect determines, at their sole discretion, that additional inspections are not needed. All costs incurred by the Owner, the Construction Manager, and the Architect and the cost of additional inspections, at the rate of One Thousand Two Hundred Fifth Dollars (\$1,250.00) per inspection, will be subtracted from payment due the Contractor. If the amount due the Contractor for payment is insufficient, any deficiency shall be paid by the Contractor to the Owner.

H.

1. Within five (5) calendar days from the occurrence of same, the Contractor must apply in writing to the Owner, the Architect or the Construction Manager for an extension of time to complete its work where it has been delayed as a result of: unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including acts of God, acts of the public enemy, acts of the federal or state government in either their sovereign or contractual capacities, fires, floods, pandemics, epidemics, quarantine restrictions, priority or allocation orders duly issued by the federal government; and/or freight embargoes. The Contractor may not apply for an extension of time for delays in acquisitions of materials other than by reason of freight embargoes. All other delays of the Project, including but not limited to, the Architect's review and/or approval of shop Drawings and/or submittals, requests for information, clarifications, samples, and change orders; Owner schedule; Architect certification of payment; payment by the Owner of the Contractor's application for payment; coordination amongst contractors; unavailability of materials and/or equipment; surveying/testing; closeout, etc. are deemed to be foreseeable and, therefore shall not form the basis for a claim for an extension of time by the Contractor.

2. All claims for additional time shall be supported by documentation which demonstrates to the Architect's and the Construction Manager's satisfaction that the critical path of the Work has been significantly altered by the delays to the activities in question, and that the schedule cannot be maintained by re-ordering other activities within the Project at no cost. Upon receipt of the Contractor's request for an extension of time, the Owner will ascertain the facts and extent of the delay, and may, in its sole discretion, extend the time for completion of the Contractor's work when in its judgment such an extension is justified. The Owner's determination will be final and binding in any litigation commenced by the Contractor against the Owner which arises out of the Owner's denial of an extension of time to the Contractor. Any approval of an extension of the Contractor's time to complete its work shall be memorialized by written change order, signed by the Owner, the Contractor, the Architect, and the Construction Manager. Where the Owner determines that the Contractor will be granted an extension of time, such extension shall be computed in accordance with the following:

For each day of delay in the completion of its work, the Contractor shall be allowed one day of additional time to complete its contract.

The Contractor shall not be entitled to receive a separate extension of time for each one of several causes of delay operating concurrently; only the actual period of delay as determined by the Owner or its Architect may be allowed.

3. The Owner reserves the right to delay the commencement of Work or to otherwise modify the construction schedule set forth in the bid documents in order to comply with applicable federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies related to the COVID-19 pandemic. Contractor's remedies for any schedule modifications or delays caused directly or indirectly by the COVID-19 pandemic shall be an extension of time only, as further delineated in Article 13(H)(4), below.

4. Notwithstanding anything to the contrary in the Contract Documents, an extension in the contract time, to the extent permitted under this Article 13(H), shall be the sole remedy of the Contractor for any: (1) delay in the commencement, prosecution, or completion of the Work; (2) hindrance or obstruction in the performance of the Work; (3) loss of productivity or acceleration; (4) supply chain delays; or (5) other similar claims (collective referred to herein as "delay(s)"), unless a delay is caused by the Owner's active interference with the Contractor's performance of the Work, and only to the extent such acts continue after the Contractor furnishes the Owner with three (3) days' written notice of such interference. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any delay, including, but not limited to, consequential damages, lost opportunity costs, impact damages, or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including, but not limited to, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work), regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be construed as active interference with the Contractor's performance of the Work.

ARTICLE 14

DEFICIENT AND INCOMPLETE WORK

A. The Owner, through the Architect or the Construction Manager, will have the authority to reject work performed by the Contractor which does not conform to the requirements of the Drawings and/or the Specifications.

B. The Owner, through the Architect or the Construction Manager, shall have the authority to require additional inspection or testing of the Contractor's work whether or not such work is fabricated, installed, or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, its SubContractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the work to have performed additional inspection or testing of the work.

C.

1. If a portion of the Contractor's work is covered contrary to the Architect's request or to requirements specifically expressed in the Drawings and/or the Specifications, upon request by the Architect or the Construction Manager, the Contractor shall uncover such work for the Architect's or any governmental authority's observation and be replaced at the Contractor's sole expense without change in the Contract Time or Contract Sum.

2. If a portion of the Contractor's work has been covered which the Architect or any governmental authority has not specifically requested to observe prior to its being covered, the Architect or any governmental authority may request to see such work and it shall be uncovered by the Contractor. If such work is in accordance with the Drawings and/or the Specifications, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor, at its sole cost and expense, shall uncover and replace such work.

D. The Contractor shall promptly correct work rejected by the Owner, through the Architect or the Construction Manager, which fails to conform to the requirements of its contract with the Owner, whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed. The Contractor shall bear the all costs of correcting such rejected work, including but not limited to the cost of said additional testing and/or inspection, the cost of the Architect's services incurred in conjunction with such additional testing, and any cost, loss or damages to the Owner resulting from such actions. If prior to the date of Substantial Completion, the Contractor, a SubContractor or anyone for whom either is responsible uses or damages any portion of the Work or premises, including, without limitation, mechanical, electrical, plumbing and other building systems, machinery, equipment or other mechanical device, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner.

E. If the Contractor: (1) fails to correct work which is not in accordance with the requirements of its Agreement with the Owner; or (2) fails to carry out its work in accordance with the requirements of its Agreement with the Owner; or (3) fails or refuses to provide a sufficient amount of properly supervised and coordinated labor, materials, or equipment so as to be able to complete the work within the contract time; or (4) fails to remove and discharge (within ten (10) days) any lien filed upon the Owner's property by anyone claiming by, through, or under the Contractor; or (5) disregards the instructions of the Architect, the Owner or the Construction Manager, the Construction Manager, on behalf of the Owner may order the Contractor to stop its 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. This right shall be in addition to, and not in restriction of, other rights the Owner may have pursuant to these General Conditions or at law.

F.

1. If the Contractor defaults or neglects to carry out its work in accordance with its Agreement with the Owner and fails within a three (3) day period after receipt of written notice from the Construction Manager 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 deficiencies. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect, the Construction Manager and the Owner and such other consultants whose participation is deemed necessary by the Architect, for additional services and expenses made necessary by such default, neglect, or failure. Such action by the Construction Manager, including the amounts to be charged to the Contractor as a result of such action are subject to the prior approval of the Owner. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

2. Where the Contractor's default and/or neglect to carry out its work in accordance with its Agreement with the Owner threatens the health, safety and/or welfare of the occupants of the School District's facilities and/or threatens the structural integrity and/or preservation of the School District's facilities, the Owner may proceed to carry out the Contractor's work upon twenty-four (24) hours' notice of its intention to do so to the Contractor.

G. If the Owner prefers to accept work which is not in accordance with the terms and conditions of the Agreement between the Owner and the Contractor, the Owner may, in its discretion, accept such work and reduce the Contractor's contract sum accordingly.

ARTICLE 15

FINAL COMPLETION AND CLOSEOUT OF THE PROJECT

A.

1. When advised by the Construction Manager that the Contractor's work is near substantial completion, the Architect shall visit the site to determine whether the Contractor's work is substantially complete. If the Architect's observations of the Contractor's work discloses any item which has not been performed in accordance with the requirements of the Drawings and/or the Specifications and/or which has not been completed to the point indicated in Article 13(F) of these General Conditions, the Contractor shall complete or correct such items upon receipt of notification from the Architect that a deficiency exists. The Architect shall not issue a certificate of substantial completion for the work of the Contractor until the work has been completed in accordance with Article 13(F). Upon completion of the work outlined by the Architect to it in accordance with this paragraph A(1), the Contractor shall advise the Architect of the need for an inspection of the work. If the Architect is required to inspect the Contractor's work more than twice, the Contractor shall be liable to the Owner for cost of the services performed by the Architect or the Construction Manager as a result of additional inspections.

2. Upon determining that the Contractor's work has progressed to the point of Substantial Completion, the Architect shall prepare a punch list of the Contractor's work which shall include only minor items of work remaining to be performed by the Contractor to bring its work into compliance with the requirements of the Drawings and/or the Specifications. The Contractor shall proceed promptly to complete and correct items on the punch list issued by the Architect and shall complete said items within thirty (30) days of its receipt of the punch list from

the Architect. At the time of substantial completion, the Owner shall retain two hundred percent (200%) of the value of the punch list items from the Contractor's remaining contract sum. The value of said remaining work shall be determined by the Architect. Upon completion of the work reflected in the final punch list, the Owner shall release the monies withheld pursuant to this paragraph to the Contractor.

3. The Architect's failure to include an item of deficiency on the punch list issued to the Contractor shall not relieve the Contractor of its responsibility to perform its work in accordance with the Drawings and/or the Specifications.

B.

1. If within three (3) years after the date of Substantial Completion of the Contractor's work or designated portion thereof, or after the date for commencement of warranties established pursuant to these General Conditions, or by terms of in applicable special warranty required by the Agreement between the Owner and the Contractor, 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 written notice from the Owner, unless the Owner has previously given the Contractor a written acceptance of such condition. This period of three (3) years shall be extended with respect to portions of the Contractor's work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of such work. The obligation set forth hereunder shall survive acceptance by the Owner of the Contractor's and/or termination of the Contractor's Agreement with the Owner. The Owner shall give such notice within a reasonable period of time after discovery of the condition.

2. The Contractor shall, within a reasonable time after receipt of written notice thereof, but in no event no later than seventy-two (72) hours after receipt of such notice, commence to correct, repair, and make good any defects in its work.

3. The obligations of the Contractor pursuant to this paragraph shall cover any repairs to or replacement of work affected by the defective work.

4. In the case of any work performed in correcting defects pursuant to this paragraph, the guarantee periods specified herein shall begin anew from the date of acceptance by the Owner of such work.

C. Upon receipt of written notice from the Construction Manager that the Contractor's work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Contractor's work acceptable pursuant to the terms and conditions of its Agreement with the Owner and the Contract fully performed and upon receipt of the closeout documentation required by the Contract Documents and elsewhere in the Agreement between the Owner and the Contractor, the Architect will certify to the Owner that the Contractor is entitled to final payment on the Project.

D.

1. Prior to receipt of final payment from the Owner, the Contractor shall provide to the Architect the close out documentation required by the Contract Documents.

2. The Contractor shall schedule a close out meeting with the Architect and the Construction Manager for the purpose of delivering the close out documents required pursuant to the Contract Documents and elsewhere in the Agreement between the Owner and the Contractor.

E. If the Contractor's work is not accepted by the Owner after final inspection and additional time is required to complete items identified during the final inspection, the date starting the warranty periods described in the Contract Documents shall be set by the Architect at his discretion.

F. If the Architect is required to perform more than one final inspection because the Contractor's work fails to comply with the requirements of the contract, the amount of compensation paid to the Architect by the Owner for additional services shall be deducted from the final payment to the Contractor.

G. Acceptance of final payment by the Contractor, a SubContractor or material supplier shall constitute a waiver of claims by that payee except those claims previously made in writing in accordance with the terms of Article 18 hereof and identified by that payee as unsettled at the time of final Application for Payment.

H. The Contractor shall submit all documentation identified in this section within ninety (90) days from the date of Substantial Completion. If the documentation has not been submitted, the Owner will obtain same through whatever means necessary. The Contractor shall solely be responsible for all expenses incurred by the Owner in securing such documentation.

ARTICLE 16 RELEVANT STATUTORY PROVISIONS

A. The Contractor shall at all times observe and comply with all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies, in any manner affecting the work and all such orders decreed as exist at present and those which may be enacted later, by bodies or tribunals having jurisdiction or authority over the work, and in addition to any other indemnification set forth herein, the Contractor shall indemnify and save harmless the Owner, and its officers, members of the Board, agents, or servants against any claim or liability arising from, or based on, a violation of any such law, ordinances, regulation, order or decree, whether by its or by its employees or agents.

B. The Contractor and each of its SubContractors shall comply with prevailing wage rates as issued by the of New York State Department of Labor for the location and duration of the Project and shall comply with all requirements governing its payments to its employees as set forth in Labor Law, Section 220, *et seq.* of the New York State Labor Law.

C. The Contractor and each of its SubContractors shall post a notice at the beginning of the performance of every public work contract on each job site that includes the telephone number and addresses for the Department of Labor and a statement informing laborers, workers, or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her particular job classification.

D. The Contractor specifically agrees, as required by Labor Law, Sections 220 and 220-d, as amended, that:

1. No laborer, workman or mechanic in the employ of the Contractor, SubContractor or other person doing or contracting to do the whole or any part of the work contemplated by the Contract, shall be permitted or required to work more than eight (8) hours in any one calendar day or more than five (5) days in any one week, except in the emergencies set forth in the Labor Law.

2. The wages paid for a legal day's work shall not be less than the prevailing rate of wages as defined by law.

3. The minimum hourly rate of wages to be paid shall not be less than that stated in the Project Manual, and any re-determination of the prevailing rate of wages after the Contract is approved shall be deemed to be incorporated herein by reference as of the effective date of re-determination and shall form a part of this Contract. The Labor Law provides that the Contract may be forfeited and no sum paid for any work done thereunder on a second conviction for willfully paying less than:

- a. the stipulated wage scale as provided in Labor Law, Section 220, Subdivision 3, as amended; or
- b. the stipulated minimum hourly wage scale as provided in Labor Law, Section 220-d, as amended.

E. The Contractor specifically agrees, as required by the provisions of the Labor Law of New York, Section 220-E, as amended that:

1. In the hiring of employees for the performance of this contract or any subcontractor hereunder, no contractor, subcontractor, nor any person acting on behalf of such contractor or sub-contractor shall by reason of race, creed, color, or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates.

2. No contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, color, creed, sex, or national origin.

3. There may be deducted from the amount payable to the Contractor a penalty of fifty dollars for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of the Contract.

4. This Contract may be canceled or terminated by the Owner and all monies due or to become due hereunder may be forfeited for a second or any subsequent violation of the terms or conditions of this section of the Contract.

F. The Contractor shall comply with all of the provisions of the Immigration Reform and Control Act of 1986 and regulations promulgated pursuant thereto and shall require its SubContractors to comply with same. In addition to the other indemnification obligations set forth herein, the Contractor shall and does hereby agree to defend, indemnify, and hold harmless the Owner, the Owner's agents, officers, members of the Board, and its employees from and against any penalties, fees, costs, liabilities, suits, claims, or expenses of any kind or nature, including reasonable attorney's fees, arising out of or resulting from any violation or alleged violation of the provisions of said laws in connection with the work performed hereunder.

G. This Contract shall be void if the Contractor fails to install, maintain, and effectively operate appliances and methods for the elimination of harmful dust when a harmful dust shall have been identified in accordance with Section 222-a of the Labor Law of the State of New York.

H. The Contractor shall ensure that absolutely no asbestos containing material is used in conjunction with the performance of its work. The Contractor bears the sole responsibility to provide assurances that no asbestos containing material is built into the construction, or that any equipment used in the construction contains any asbestos containing material. If asbestos containing material is found, at any time during or after the construction is completed, it shall be the responsibility of the Contractor who installed said material to remove it and replace it with new non-asbestos containing material, as per federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies.

I. Large and small asbestos abatement projects as defined by 12 N.Y.C.R.R. 56 shall not be performed while the building is occupied. As referenced in this section, the term "building" shall mean a wing or major section of a building that can be completely isolated from the rest of the building with sealed non-combustible construction. The isolated portion of the building must contain exits that do not pass through the occupied portion, and ventilation systems must be physically separated and sealed at the isolation barrier. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required, and complete isolation of ventilation systems and windows is provided. Work must be scheduled so that classes are not disrupted by noise or visual distraction.

J. Surfaces that will be disturbed by reconstruction must have a determination made as to the presence of lead. Projects which disturb surfaces that contain lead shall have in the Specifications a plan prepared by a certified Lead Risk Assessor or Supervisor which details provisions for occupant protection, worksite preparation, work methods, cleaning, and clearance testing which are in general accordance with the HUD Guidelines.

K. As set forth in Article 4(M), no smoking is allowed anywhere on school property per New York State and County law. Violators are subject to a \$1,000.00 fine and/or banishment from the property.

L. Applicable codes and standards for material furnished and work installed shall include all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies of public authorities or governmental agencies having jurisdiction, and applicable requirements of following codes and standards, including but not limited to:

1. New York State Uniform Fire Prevention and Building Code, and amendments thereto.
2. New York State Energy Conservation Construction Code.
3. State Education Department Manual of Planning Standards.
4. New York State Department of Transportation, Office of Engineering, Standard Specification, Construction and Materials, latest edition.
5. Life Safety Code - NFPA.

M. Wherever in the Specifications reference is made to ANSI or ASTM Standards, Federal Specifications, Consumer Product Standards, or similar recognized standards, the latest edition of the respective publishing agency in effect at the date of "Bid Issuance" shall be accepted as establishing the technical requirements for which compliance is required.

N. The Owner shall be entitled to request that the Contractor or its successor in interest adequate assurance of future performance in accordance with the terms and conditions of its Agreement in the event: (1) an order for relief is entered on behalf of the Contractor pursuant to Title 11 of the United States Code; (2) any other similar order is entered under any other debtor relief laws; (3) the Contractor makes a general assignment for the benefit of its creditors; (4) a receiver is appointed for the benefit of its creditors; or (5) a receiver is appointed on account of its insolvency. Failure to comply with such request within ten (10) days of delivery of the request shall entitle the Owner to terminate the Contract in accordance with Article 17 hereof. In all events, pending receipt of adequate assurance of performance and actual performance in accordance therewith, the Owner shall be entitled to proceed with the Contractor's work with its own forces or with other contractors on a time and material or other appropriate basis, the cost of which will be back charged against the Contractor.

O. The Contractor shall maintain policies of employment as follows:

1. The Contractor and the Contractor's SubContractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed, and that

employees are treated during employment without regard to their age, race, creed, color, national origin, sexual orientation, gender identity or expression, military status, sex, reproductive health decisions, disability, predisposing genetic characteristics, or material status. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

2. The Contractor and the Contractor's SubContractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, sexual orientation, gender identity or expression, military status, sex, reproductive health decisions, disability, predisposing genetic characteristics, or material status.

ARTICLE 17 TERMINATION OR SUSPENSION

A.

1. The Owner may terminate the Contractor's Agreement in the event the Contractor:
 - a. refuses or fails to supply sufficient skilled workers or suitable materials or equipment to complete the Work in a diligent, efficient, timely, workmanlike, skillful, and careful manner;
 - b. refuses or fails to correct deficient work performed by it;
 - c. fails to make prompt payments to SubContractors for labor, materials, and/or equipment in accordance with the respective agreements between the Contractor and the SubContractors;
 - d. disregards all federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies of public authorities or governmental agencies having jurisdiction;
 - e. disregards the instructions of the Architect, the Construction Manager or the Owner (when such instructions are based on the requirements of the Contract Documents);
 - f. is adjudged a bankrupt or insolvent, or makes a general assignment for the benefit of the Contractor's creditors, or a trustee or receiver is appointed for the Contractor or for any of its property, or files a petition to take advantage of any debtor's act or to reorganize under bankruptcy or similar laws; or

- g. breaches any warranty made by the Contractor under or pursuant to the Contract Documents.
- h. fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with all the requirements of the Contract Documents; or
- i. fails after commencement of the Work to proceed continuously with the construction and completion of the Work for more than ten (10) days, except as permitted under the Contract Documents.
- j. fails to keep the Project free from strikes, work stoppages, slowdowns, lockouts, or other disruptive activity;
- k. or otherwise does not fully comply with the Contract Documents.

2. When any of the above reasons exists, the Owner may, without prejudice to any other rights or remedies, terminate employment of the Contractor upon three (3) days' written notice and may, subject to any prior rights of the surety:

- a. take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- b. take possession of materials stored off site by the Contractor;
- c. take assignments of the Contractor's SubContractors in accordance with these General Conditions;
- d. finish the Work by whatever reasonable method the Owner may deem expedient.

3. When the Owner terminates the Contract for one of the reasons stated in Article 17(A)(1), the Contractor shall not be entitled to receive further payment until the completion of the Contractor's work. If the Owner's costs to complete the Contractor's work, including the expenses incurred by the Owner in connection with the services of the Architect, the Construction Manager and/or other consultants, exceed the contract balance remaining on the Contractor's contract, the Contractor shall be liable to the Owner for such excess costs. This provision shall survive termination of the Contractor's Agreement with the Owner.

B.

1. In addition to the Owner's right to carry out the work of the Contractor pursuant to the Agreement with the Contractor, the Owner may at any time, at will and without cause, terminate any part of the Contractor's work or all of the Contractor's remaining work for any reason whatsoever by giving three (3) days' written notice to the Contractor, specifying the portion of the Contractor's work to be terminated and the effective date of termination.

2. Upon receipt of a notice of termination for convenience, the Contractor shall immediately, in accordance with instructions from the Owner, proceed with performance of the following duties regardless of delay in determining or adjusting amounts due it:

- a. Cease operation as specified in the notice.
- b. Place no further orders and enter into no further subcontracts for materials, labor, services, or facilities except as necessary to complete continued portions of the Contract.
- c. Terminate all subcontracts and orders to the extent they relate to the Work terminated.
- d. Proceed to complete the performance of the remaining work on its contract which has not been so terminated.
- e. Take actions that may be necessary, or that the Owner may direct, for the protection and preservation of the terminated Work.

3. The Contractor shall continue to prosecute that portion of its work which has not been terminated by the Owner pursuant to this paragraph. If the Contractor's work is terminated, the Owner shall not be liable to the Contractor by reason of such termination, except that the Contractor shall be entitled to payment for the work it has properly executed in accordance with the Agreement and prior to the effective date of termination (the basis for such payment shall be as provided in the Contract) and for costs directly related to work thereafter performed by the Contractor in terminating such Work, provided such work is authorized in advance by the Architect and the Owner in writing. No payment shall be made by the Owner, however, to the extent that such work is, was, or could have been terminated under the Contractor's Agreement with the Owner.

4. In case of a termination pursuant to this paragraph B, the Owner will issue a Construction Change Directive or authorize a Change Order, making any required adjustment to the Date of Substantial Completion and/or the sum of contract monies remaining to be paid to the Contractor. The Owner shall be credited for: (1) payments previously made to the Contractor for the terminated portion of the Work; (2) claims which the Owner has against the Contractor under the Contract; and (3) the value of the materials, supplies, equipment or other items that are to be disposed of by the Contractor that are part of the Contract Sum; multiplied by fifteen percent (15%) representing the Contractor's overhead and profit.

5. For the remaining portions of the Contractor's work which have not been terminated pursuant to this paragraph B, the terms and conditions of the Contractor's Agreement with the Owner shall remain in full force and effect.

6. Upon termination of the Contractor's work or a portion of the Contractor's work pursuant to this paragraph B, the Contractor shall recover as its sole remedy, payment for work which it has properly performed in connection with the terminated portion of the Work prior to the effective date of termination and for items properly and timely fabricated off the Project site, delivered and stored in accordance with the Owner's instructions. The Contractor hereby waives and forfeits all other claims for payment and damages, including, without limitation, overhead and profit related to work terminated by the Owner pursuant to this paragraph B.

C.

1. In addition to the Owner's right to suspend, delay, or interrupt the Contractor from proceeding with any portion of its work pursuant to the terms and conditions of its Agreement with the Owner, the Owner may at any time, at will and without cause suspend, delay, or interrupt any part of the Contractor's work or all work for any reason whatsoever for such period of time as the Owner may determine by giving three (3) days' prior written notice to the Contractor, specifying that portion of the Contractor's work which is to be suspended, delayed, or interrupted, and the effective date of such suspension, delay, or interruption, as the case may be.

2. The Contractor shall continue to prosecute that portion of its work which has not been suspended, delayed, or interrupted, and shall properly protect and secure the portion of its work so suspended, delayed, or interrupted.

3. The Owner shall incur no liability to the Contractor by reason of such suspension, delay, or interruption except that the Contractor may request an extension of its time to complete its work in accordance with Article 13 hereof.

D. The Contractor agrees and acknowledges that payments for the work have been obtained through obligations or bonds which have been sold after public referendum. In the event the work is suspended or canceled as a result of the order of any court, agency, department entity, or individual having jurisdiction, or in the event the work is suspended or canceled due to the fact that a court, agency, department, entity, or individual having jurisdiction has issued an order, the result of which is that the aforesaid obligations or bonds are no longer available for payment for the work, the Contractor expressly agrees that it shall be solely entitled to payment for work accomplished until a notice of suspension or cancellation is served upon it. The Contractor expressly waives any and all rights to institute an action, claim, cause of action or similar for any damages it may suffer as a result of the suspension or cancellation of the Work and/or its contract pursuant to this section.

ARTICLE 18 CLAIMS AND DISPUTES

A. Definition. A "Claim" is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of 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 the Contractor arising out of or relating to the Contract.

B. Time Limits on Claims. Claims by the Contractor must be made within thirty (30) days after occurrence of the event giving rise to such Claim, or within thirty (30) days after the claimant first recognizes the condition giving rise to the Claim, whichever is earlier. An additional Claim made after the initial Claim has been decided by the Owner will not be considered unless submitted in a timely manner. Failure of the Contractor to give timely notice of claim shall constitute waiver of the claim. Claims must be made by written notice to the Construction Manager, the Architect, and the Owner. The responsibility to substantiate Claims shall rest with the Contractor.

C. Pending final resolution of a Claim, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

D. Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are: (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents; or (2) unknown physical conditions of an unusual nature, which 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, then written notice by the Contractor shall be given to the Owner and the Architect promptly before conditions are disturbed and in no event later than five (5) days after first observance of the conditions; and (3) in the case of a condition at the site which involves a hazardous or toxic substance, as those terms are defined by OSHA or AHERA, written notice to the Owner, the Construction Manager and the Architect shall be given immediately upon discovery of such hazardous or toxic substance. The Architect and/or the Construction Manager will promptly investigate such conditions and, if 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 an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect 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 so notify the Contractor in writing, stating the reasons.

E. Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum as a result of a Change in the Work pursuant to Article 8 of these General Conditions, written notice as provided in this Article 18 shall be given before proceeding to execute the Work.

F. Claims for Additional Time. If the Contractor wishes to make Claim for an increase in the Contract Time, the Contractor shall comply with the requirements set forth in Article 13(H).

G. Nothing contained in the Contract Documents shall relieve the Contractor from compliance with any statutory requirement, including, but not limited to those contained in Education Law Section 3813.

ARTICLE 19

MISCELLANEOUS PROVISIONS

A. The Agreement between the Owner and the Contractor shall be governed by the law of the place where the Project is located; venue to be in the County in which the Project is located.

B. Historical lack of enforcement of any federal, state, and local laws, ordinances, regulations, rules, codes, orders, and policies shall not constitute a waiver of Contractor's responsibility for compliance with such law in a manner consistent with its Agreement with the Owner unless and until the Contractor has received prior written consent for the waiver of such compliance from the Owner and the Agency responsible for the enforcement of such law.

C. All notices to be given hereunder shall be in writing and may be given, served, or made: (1) by depositing the same for first class mail delivery in the United States mail addressed to the authorized representative of the party to be notified; (2) by depositing the same in the United States mail addressed to the authorized representative of the party to be notified, postpaid and registered or certified with return receipt requested; (3) by depositing the same for overnight delivery (prepaid by or billed to the party giving notice) with the United States Postal Service or other nationally recognized overnight delivery service addressed to the authorized representative of the party to be notified; or (4) by delivering the same in person to the said authorized representative of such party. Notice deposited in the mail by certified mail or overnight delivery in accordance with the provisions hereof shall be effective from and after the fourth (4th) day next following the date postmarked on the envelope containing such notice, or when actually received, whichever is earlier. All notices to be given to the parties hereto shall be sent to or made at the addresses set forth hereinbelow. By giving the other parties at least seven (7) days' written notice thereof, the parties hereto shall have the right to change their respective addresses and specify as their respective addresses for the purposes hereof any other address in the United States of America.

D. Except as expressly provided in the Agreement between the Owner and the Contractor, duties and obligations imposed by such Agreement 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, or in equity or by other Agreement, and such rights and remedies shall survive acceptance of the Contractor's work and/or any other termination of the Contractor's Agreement with the Owner.

E. No action or failure to act by the Owner, 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 in writing.

F. The headings denoting the separately numbered Articles of these General Conditions are specifically set forth for reference purposes only and are not in any way to be deemed explanatory of or limiting of the contents of any paragraph or subparagraph. Furthermore, said headings are

not to be deemed part of this Agreement for purposes of interpretation, litigation or as defining or limiting the rights or obligations of the parties.

G. In case any provision of this Agreement should be held to be contrary to, or invalid, under the law of any country, state or other jurisdiction, such illegality or invalidity, shall not affect in any way, any other provisions hereof, all of which shall continue, nevertheless, in full force and effect in any country, state, or jurisdiction in which such provision is legal and valid.

H. The rights stated in these General Conditions and the documents which form the Agreement between the Owner and the Contractor are cumulative and not in limitation of any rights of the Owner at law or in equity.

I. The Owner shall not be responsible for damages or for loss of anticipated profits on work not performed on account of any termination of the Contractor by the Owner or by virtue of the Owner's exercise of its right to take over the Contractor's work pursuant to its Agreement with the Contractor.

J. The Owner shall not be liable to the Contractor for punitive damages on account of its termination of the Contractor or any other alleged breach of the Agreement between it and the Contractor and the Contractor hereby expressly waives its right to claim such damages against the Owner.

K. The Contractor hereby expressly waives any rights it may have in law or in equity to lost bonding capacity as a result of any of the actions of the Owner, the Architect, or the Construction Manager taken in connection with the Contractor's work on the Project.

L. Upon determination by legal means (*e.g.*, court action, etc.) that termination of Contractor pursuant to Article 17.A.1 was wrongful, such termination will be deemed converted to a termination for convenience pursuant to Article 17.B.1 and Contractor's remedy for such termination shall be limited to the recovery of the payments permitted for termination for convenience as set forth in Article 17.B.1.

M. As between the Owner and the Contractor:

1. Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

2. Between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and

3. After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to warranties provided in accordance with its Agreement with the Owner, the date of any correction of work performed by the Contractor or failure to correct its work, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or the Owner, whichever occurs last.

N.

1. The Owner may occupy or use any completed or partially completed portion of the Contractor's work at any stage when such occupancy is authorized by public authorities having jurisdiction over the Project.

2. Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of the Contractor's work, nor does it waive the Owner's right to liquidated damages. Further such occupancy alone shall not determine when Substantial Completion and performance has been reached.

3. Immediately prior to such partial occupancy or use, the Owner, the Contractor, and the 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 Contractor's work, and in order to prepare a complete punch list of omissions of materials, faulty workmanship, or any items to be repaired, torn out or replaced.

O. The Contractor agrees not to assign, transfer, convey, or sublet or otherwise dispose of this Contract or his right, title, and interest therein or his power to execute such Contract, to any other person, firm, or corporation without the previous consent in writing of the Owner.

P. The Owner is a tax exempt organization and will take title to materials used in the Project in order to permit tax exemption.

Q. The Owner will furnish a certificate with the Owner's Tax Exemption Number to the Contractor for use in purchasing tangible personal property required for the Project.

R. This exemption shall not apply to machinery, equipment, tools, and other items purchased, leased, rented, or otherwise acquired for the Contractor's use even though the machinery, equipment, tools, or other items are used either in part or entirely on the Work. This exemption shall apply only to materials fully incorporated into the Work of the Contract as accepted and approved by the Architect.

S. The Contractor shall, upon request by the Owner, furnish a bill of sale or other instrument indicating the quantities and types of materials purchased directly by the Contractor or SubContractor for incorporation into the Work. Upon delivery of the materials to the site, the

Contractor shall mark or otherwise identify the materials to be incorporated into the Work. This exemption shall apply only to materials so identified and accepted.

END OF GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

NEW YORK STATE WAGE RATE SCHEDULES

1.1 GENERAL

- A. The following minimum prevailing rate of wages, health and welfare and pension fund contributions are as determined by the Industrial Commissioner of the State of New York in accordance with the provisions of Section 220 of the Labor Law of New York State.
- B. It shall be the sole responsibility of each Contractor to pay wages at least equal to current and future Wage Rate Schedules which are applicable to this project throughout the entire duration of the Contract without claiming extra costs.
- C. Current Wage Rate Schedules are included herein. The Owner and the Architect do not warrant the accuracy or pertinency of the wage rates stated. The Contractor shall be solely responsible for verifying the accuracy of the current and future Prevailing Wage Schedule.
- D. Prevailing Rate Case Number (PRC# 2023011134) has been assigned to the project. To access the PDF file of your schedule, click on the following link or copy and paste into your browser, type in the PRC number, and click in the Wage Schedule button.

<https://apps.labor.ny.gov/wpp/doFindProject.do>

- E. Notice of Award: Each Prime Contractor shall submit a notice of award of contract to the Department of Labor upon signing of contract. The above link for the PRC has a tab to submit such notice.



Prevailing Wage

[Home](#) > Prevailing Wage[Wage Schedule](#) · [Submit Notice Of Award](#) · [Submit Notice Of Project Completion](#)

PRC#: 2023011134
Type of Contracting Agency: Local School District

Acceptance Status: Accepted Article 8

Contracting Agency

Katonah-Lewisboro School Dist.
Michael Lavoie
Director of Facilities
60 North Salem Road
285 Main Street
Cross River NY 10518

(914) 763-7000
mlavoie@klschools.org

Send Reply To

Richard Markgraf
Project Manager
KG+D Architects, PC
285 Main Street
Mount Kisco NY 10549

(914) 666 -5900
sannar@kgdarchitects.com

Project Information

Project Title ES Electrical & HVAC Upgrades
Description of Work New electrical service at all 3 Elementary Schools, and mechanical upgrades at Increase Miller ES and Meadow Pond ES.
Contract Id No. 2023-1058 & 9
Project Location(s) KES, IMES, MPES
Route No / Street Address
Village / City
Town
State / Zip NY
Nature of Project Other Reconstruction, Maintenance, Repair or Alteration
Approximate Bid Date 03/01/2024
Checked Occupation(s) Construction (Building, Heavy & Highway, Sewer, Water, Tunnel)

Applicable Counties

Westchester

Department of Labor

Accessibility

Contact

Language Access

Privacy Policy



SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Intent of the Contract Documents
4. Type of contract
5. Work schedule and phasing
6. Access to site.
7. Coordination with occupants.
8. Work restrictions.
9. Specification and drawing conventions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: The project consists of HVAC Upgrades at the Meadow Pond Elementary School and the Increase Miller Elementary School located as follows:

1. Meadow Pond Elementary School located at 185 Smith Ridge Road, South Salem, NY 10590.
2. Increase Miller Elementary School located at 186 Waccabuc Road, Goldens Bridge, NY 10526.

B. Owner: Katonah-Lewisboro School District in Cross River, NY.

C. Architect: The Contract Documents were prepared for Project by KG+D Architects, PC.

D. Construction Manager: Triton Construction Management has been engaged as Construction Manager for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for Construction between Owner and Contractor, according to a separate contract between Owner and Construction Manager.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and consists of the following:

1. The scope of the Work of this project is removal of existing Gas-fired Rooftop HV units serving the Gym and provision of new All Electric Rooftop HVAC units and Heat Pump units to serve the Gym. Project scope provides necessary upgrades to HVAC systems by replacing RTUs and ERUs in student occupied spaces.
- B. Work in Existing Building at Existing Site: Existing conditions are shown on the drawings to the best knowledge of the Architect. The Architect, however, cannot guarantee the correctness of the existing conditions shown and assumes no responsibility therefore. It shall be the responsibility of the Contractor to verify all existing conditions.
 1. Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

1.4 INTENT OF THE CONTRACT DOCUMENTS

- A. If, in the interpretation of Contract Documents, requirements within the Drawings and Specifications conflict, or it appears that the Drawings and Specifications are not in agreement, the Contractor shall provide (1) the greater quantity, where there is a discrepancy in quantity, and (2) the superior quality, where there is a discrepancy in quality. All discrepancies shall be brought to the attention of the Architect. The Architect's decision on resolving the discrepancy shall be final.

1.5 TYPE OF CONTRACT

- A. The Work of the project will be let in a single Prime Contract.

1.6 WORK SCHEDULE AND PHASING

- A. The Work shall be substantially complete on or before the date(s) indicated in the Project Milestone Schedule attached to this Section. It is extremely important that the Owner resume its full use of the buildings and sites on the completion date(s) specified. Liquidated damages will be assessed by the Owner for each day the work continues past the Substantial Completion date.
- B. The Work shall be conducted in accordance with the logistics drawing PH-1 and the milestone schedules included in the contract documents.
- C. Work may be commenced in the building and on the site on the date(s) indicated in the Project Milestone Schedule attached to this Section.

1.7 ACCESS TO SITE

- A. Limits: Confine constructions operations to areas within contract limits indicated. Do not disturb portions of the building and site beyond the areas in which the Work is indicated. All areas of the building and site with the exception of the project area where the Work is being performed are off limits to Contractor and his employees.

1. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, students, the public and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - c. Coordinate staging, parking and storage areas with the Construction Manager.
 - B. Damages: Promptly repair damages caused to adjacent facilities by work of the Contract to a good-as-new condition acceptable to the Owner.
 - C. Existing Facilities: The following facilities are specifically noted as not to be used by Contractor or his employees:
 1. Toilet facilities.
 2. Food service facilities, including kitchen and dining areas.
 3. Parking lots (outside of the parking areas designated for Contractor's use).
 4. Telephones.
 - D. Security: The Contractor and all employees of the contractor shall be subject to the security provisions required by the Owner. Such provisions shall include, but not be limited to, the following:
 1. Contractor and all their employees shall use a single means of access and egress to the building, except in the case of emergency, as designated by the Construction Manager.
 2. Photo identification badges shall be procured for all persons entering the Project building or site and shall be worn continuously while the person is in the building or on the site.
 3. All persons entering the building or site shall be subject to the Owner's visitor management system, and may be subject to fingerprinting or other security-related screenings.
 4. Contractor shall maintain a daily list of their personnel at the Project site.
- 1.8 COORDINATION WITH OCCUPANTS
- A. Full Owner Occupancy: Owner will occupy site and building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations.
 1. Maintain access to existing adjacent occupied or used facilities. Do not close or obstruct adjacent drives, walkways, or other occupied or used facilities other than those obstructions currently indicated on the Contract Documents without written permission from Owner and approval of authorities having jurisdiction.

2. Occupancy level will be reduced during summer months when school is not in session.
- B. Utility Shutdowns: Coordinate all utility shut downs and cross overs with the Construction Manager, schedule during off hours and non-occupied times only.
1. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations. Include planned shut-downs and interruptions in Construction Schedule.
 2. Electrical and mechanical services to functioning spaces shall be maintained at all times. Swing-overs to new services shall be made so as to cause the least interruption to the facilities' operations
- C. 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.

1.9 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 and Days: Limit work on the site and in the building to working hours indicated below, Monday through Friday, unless otherwise indicated.
1. The school will be closed on Saturdays, Sundays, regularly scheduled district holidays and school vacations, and at night after cleaning crews have finished. If any Contractor wishes to work at any time when the school is normally closed, that Contractor must receive prior approval by the Owner and also shall arrange and pay for custodial services for the building at the applicable district pay rates. All work taking place within the schools/buildings/grounds on weekends, holidays and school vacations must be approved in advance by the Owner.

2. Summer Work Period Hours and Days: During the Summer work will be permitted between 7:00 AM and 4:00 PM all days except Saturday and Sundays. Any special work arrangements must be made through the Owner.
 3. School-in-Session Period Hours and Days: Work during the School Year must be scheduled after School Hours between 3:00 PM until 10:00 PM. During the school year the school will be closed at 11:00 PM. Any requests to work during school hours must be submitted in writing to the School District for approval. Non disruptive work may take place between 7:00 AM and 4:00 PM upon receiving permission from the Owner. The submission must include a diagram showing how the construction area will be separated from occupied areas. Additionally, it must show temporary measures to be installed such as ventilation, screening, dust protection, fire separation, etc. The School District reserves it's right to accept or reject the request at their discretion.
 4. Blackout Dates (No work is permitted at the building or site): Concerts and testing dates, other days as directed by the Owner. Allow for 5 blackout days, taken during the weekdays, as selected by the Owner.
 5. The school district's academic calendar listing school-in-session period, summer period, school holidays and vacation days, and Regents Exam days can be found here <https://echalk-slate-prod.s3.amazonaws.com/private/districts/328/site/fileLinks/20314eeb-005c-4fcc-80a0-1d6d3f124006?AWSAccessKeyId=AKIAJSZKIBPXGFLSZTYQ&Expires=2000400339&response-cache-control=private%2C%20max-age%3D31536000&response-content-disposition=%3Bfilename%3D%222023-2024%2520School%2520Year%2520Calendar%2520-%2520BOE%2520Approved%25201%252019%25202023.pdf%22&response-content-type=application%2Fpdf&Signature=4EyRfVpoy1msJ5yxpmSZi3cbjdg%3D>
- C. Delivery Restrictions: Coordinate with the Owner for permissible times and locations/truck access for deliveries on site. Large deliveries shall be made after hours.
- D. Noise, Vibration, and Odors: Notify Owner and coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to surrounding spaces.
1. Notify Architect and Owner not less than two days in advance of proposed disruptive operations.
 2. Construction activity noise levels for a period extending from the reading days before exams until the final day of exams (ten days) shall not exceed 60 dBA
- E. Comply with Owner's standards for construction projects as follows:
1. Interaction with employees, students and the public is strictly forbidden.
 2. Use of offensive or inappropriate language is strictly forbidden .
 3. The use of radios, tape and CD players is prohibited on the site and in the buildings.
 4. Smoking is prohibited on the site and in the buildings.
 5. Fraternizing with students or staff at the University is prohibited.
 6. Use of controlled substances on Project site is not permitted.

1.10 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 scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

Attachment: Project Milestone Schedule

Act ID		Description												Orig Dur	
KLUSFD- HVAC UPGRADES AT IMES AND MPES															
GENERAL															
154	BID OPENING	0	BID OPENING 19DEC23 *												
164	CONTRACT AWARDS	15	CONTRACT AWARDS 20DEC23 11JAN24												
CONSTRUCTION AT INCREASE MILLER ES															
160	SHOP DRAWINGS AND FABRICATION	121	SHOP DRAWINGS AND FABRICATION 12JAN24 28JUN24												
162	MOBILIZATION AND LOGISTICS	2	MOBILIZATION AND LOGISTICS 01JUL24 02JUL24												
163	REMOVE AND REPLACE ROOFTOP UNITS AND CURBS	10	REMOVE AND REPLACE ROOFTOP UNITS AND CURBS 03JUL24 17JUL24												
180	ROOFTOP UNIT FINAL CONNECTIONS	10	ROOFTOP UNIT FINAL CONNECTIONS 18JUL24 31JUL24												
183	START UP AND COMMISSIONING	10	START UP AND COMMISSIONING 01AUG24 14AUG24												
193	INSTALL ELEC. PANELS AND POWER FOR HVAC EQUIP.	32	INSTALL ELEC. PANELS AND POWER FOR HVAC EQUIP. 01JUL24 14AUG24												
CONSTRUCTION AT MILLER POND ES															
165	SHOP DRAWINGS AND FABRICATION	121	SHOP DRAWINGS AND FABRICATION 12JAN24 28JUN24												
170	MOBILIZATION AND LOGISTICS	2	MOBILIZATION AND LOGISTICS 01JUL24 02JUL24												
190	REMOVE AND REPLACE ROOFTOP UNITS AND CURBS	10	REMOVE AND REPLACE ROOFTOP UNITS AND CURBS 03JUL24 17JUL24												
200	ROOFTOP UNIT FINAL CONNECTIONS	10	ROOFTOP UNIT FINAL CONNECTIONS 18JUL24 31JUL24												
205	START UP AND COMMISSIONING	10	START UP AND COMMISSIONING 01AUG24 14AUG24												
220	INSTALL ELEC. PANELS AND POWER FOR HVAC EQUIP.	32	INSTALL ELEC. PANELS AND POWER FOR HVAC EQUIP. 01JUL24 14AUG24												
CLOSE OUT															
250	SUBSTANTIAL COMPLETION- INCREASE MILLER ES	0	SUBSTANTIAL COMPLETION- INCREASE MILLER ES 14AUG24												
270	PUNCH LIST/ CLOSE OUT- INCREASE MILLER ES	12	PUNCH LIST/ CLOSE OUT- INCREASE MILLER ES 15AUG24 30AUG24												
280	SUBSTANTIAL COMPLETION- MEADOW POND ES	0	SUBSTANTIAL COMPLETION- MEADOW POND ES 14AUG24												
300	PUNCH LIST/ CLOSE OUT- MEADOW POND ES	12	PUNCH LIST/ CLOSE OUT- MEADOW POND ES 15AUG24 30AUG24												
Company name Triton															
Project name KLUSFD- IM and ...															
Project title IMES AND MPES UPGRADES TO HVAC															
Run date 28NOV23															
Number/Version BID- 11-29-23															
Page number 1A															
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SECTION 011011 - REGULATIONS OF THE COMMISSIONER OF EDUCATION - 8 NYCRR 155.5 - UNIFORM SAFETY STANDARDS FOR SCHOOL CONSTRUCTION AND MAINTENANCE PROJECTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes Regulations of the Commissioner of Education - 8 NYCRR 155.5 - Uniform Safety Standards for School Construction and Maintenance Projects.

1.2 REGULATIONS OF THE COMMISSIONER OF EDUCATION - 8 NYCRR 155.5 - UNIFORM SAFETY STANDARDS FOR SCHOOL CONSTRUCTION AND MAINTENANCE PROJECTS

- A. This Article indicates requirements for school construction and maintenance projects required under New York Codes Rules and Regulations, Regulations of the Commissioner of Education, Part 155, Section 155.5, and are binding on all Contracts of this Project.
- B. The occupied portion of the school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.
- C. Comply with general safety and security standards for construction projects as follows:
 - 1. Store all construction materials in a safe and secure manner.
 - 2. Provide and maintain fences around construction supplies or debris.
 - 3. Maintain all gates locked at all times when school is in session, unless a worker is in attendance to prevent unauthorized entry.
 - 4. Provide overhead protection during exterior renovation work, for any sidewalks or areas immediately beneath the work site, or fence off such areas and provide with warning signs to prevent entry.
 - 5. Provide all workers with photo-identification badges that are required to be worn at all times for identification and security purposes while working at the project site.
- D. Separation of Construction Areas from Occupied Spaces: Separate construction areas which are under the control of a contractor and therefore not occupied by district staff or students from occupied areas. Provide dust proof partitions to prevent dust and contaminants into occupied parts of the building. Provide periodic inspection and repairs of the containment barriers to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.

1. Workers may not use corridors, stairs or elevators designated for students or school staff.
 2. Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. No movement of debris through halls of occupied spaces of the building is permitted. No material shall be dropped or thrown outside the walls of the building.
 3. Clean all occupied parts of the building affected by renovation activity at the close of each workday. Maintain required health, safety and educational capabilities at all times for school buildings occupied during a construction project when classes are in session.
- E. Exiting: Maintain all building exits during construction. Comply with exiting plans incorporated in the Construction Documents. If exiting is modified other than as shown on the Contract Documents, provide a plan for Architect's review detailing how exiting required by the applicable building code will be maintained during construction. The plan shall indicate temporary construction required to isolate construction equipment, materials, people, dust, fumes, odors, and noise during the construction period. Temporary construction details shall meet code-required fire ratings for separation and corridor enclosure. At a minimum, required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times.
- F. Ventilation: Comply with the ventilation plan incorporated in the Construction Documents. The plan shall indicate ductwork which must be rerouted, disconnected, or capped in order to prevent contaminants from the construction area from entering the occupied areas of the building. The plan shall also indicate how required ventilation to occupied spaces affected by construction will be maintained during the project.
- G. Fire and Hazard Prevention: Areas of buildings under construction that are to remain occupied shall maintain a certificate of occupancy. In addition, the following shall be strictly enforced:
1. No smoking is allowed on public school property, including construction areas.
 2. During construction daily inspections of district occupied areas shall be conducted by the Contractor's personnel to assure that construction materials, equipment or debris do not block fire exits or emergency egress windows.
 3. Proper operation of fire extinguishers, fire alarm, and smoke/fire detection systems shall be maintained throughout the project.
- H. Noise Abatement During Construction Activities: Contain noise from construction operations so as to not produce noise in excess of 60 dba in occupied spaces when school is in session, or schedule work for times when the building or affected building spaces are not occupied (school is not in session), or provide acoustical abatement measures to reduce noise to acceptable levels.
1. Noise level measurements (dba) shall be taken with a type 2 sound level meter in the occupied space in a location closest to the source of the noise.

- I. Control of Chemical Fumes, Gases, and Other Contaminants during Construction and Maintenance Projects: Control exhaust fumes from welding, gasoline engines, roofing, paving, painting, VOC fumes, or other fumes to assure they do not enter occupied portions of the building or fresh air intakes.
 - 1. Schedule, cure or ventilate materials and activities to allow for "off-gassing" of volatile organic compounds introduced during construction before occupancy of school. Specific attention is warranted for materials and activities including, but not limited to, glues, paint, furniture, carpeting, wall coverings, and drapery.
 - a. Air out building materials or furnishings which "off-gas" chemical fumes, gases, or other contaminants in one of the following manners:
 - 1) Air out in a well-ventilated heated warehouse before they are brought to the project for installation.
 - 2) Air out installed products in accordance with the manufacturer's recommended "off-gassing" periods by allowing this period of time to elapse prior to Substantial Completion date.
 - b. If the work will generate toxic gases that cannot be contained in an isolated area, the work must be done when school classes and programs are not in session. The building must be properly ventilated and the material must be given proper time to cure or "off-gas" before re-occupancy.
 - 2. Manufacturer's Material Safety Data Sheets (MSDS) shall be maintained at the site for all products used in the project. MSDS must be provided to anyone who requests them.
- J. Large and small asbestos abatement projects as defined by 12NYCRR56 shall not be performed while the building is occupied. Note, It is The State Education Department's interpretation that the term "building", as referenced in this Paragraph, means a wing or major section of a building that can be completely isolated from the rest of the building with sealed non combustibile construction. The isolated portion of the building must contain exits that do not pass through the occupied portion and ventilation systems must be physically separated and sealed at the isolation barrier.
 - 1. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required, and complete isolation of ventilation systems and at windows is provided. Care must be taken to schedule work so that classes are not disrupted by noise or visual distraction.
- K. Lead-Based Paint Sampling and Analysis Notification: Surfaces containing lead will not be disturbed during construction.

22 November 2023
Bid Documents

Katonah-Lewisboro Union Free School District
HVAC Upgrades
SED No. Increase Miller ES: 66-01-01-03-0-004-019
Meadow Pond ES: 66-01-01-03-0-007-018

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011011

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 012300 "Alternates" for products selected under an alternate.
 - 2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and assemblies which deviate from the requirements of the Contract Documents and proposed by Contractor which the Contractor deems will perform the same function and have equal capabilities, service life, economy of operations, and suitability for the intended purpose.
 - 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.

1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit requests for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use the electronic version of form included as an attachment to this Section; submit in portable document format (.pdf).
 - 2. 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 in .pdf format.
 - 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. Research reports evidencing compliance with building code in effect for Project, from ICC-ES
 - j. 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.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. 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.
 - m. 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.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven 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. Forms of Acceptance: Change Order.

1.4 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.

1.5 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 15 days after Notice of Award.
 - 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 does not require revisions to the Contract Documents.
 - 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 or superior warranty.
 - i. Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule; or 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.
 - j. Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
 - k. Maintenance service and source of replacement parts, as applicable, is available similar to the specified product.
 - l. Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
 - m. Proposed substitution does not affect dimensions and functional clearances.
 - n. Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 15 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.
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 revisions to the Contract Documents or, if revisions are required, the Contractor acknowledges that the cost of the Architect's redesign fee will be deducted from the Contract Price.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified or superior warranty.
 - j. Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule; or 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.
 - k. Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
 - l. Maintenance service and source of replacement parts, as applicable, is available similar to the specified product.
 - m. Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
 - n. Proposed substitution does not affect dimensions and functional clearances.
 - o. Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects

22 November 2023
Bid Documents

Katonah-Lewisboro Union Free School District
HVAC Upgrades
SED No. Increase Miller ES: 66-01-01-03-0-004-019
Meadow Pond ES: 66-01-01-03-0-007-018

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

ATTACHMENT: SUBSTITUTION REQUEST FORM

SUBSTITUTION REQUEST FORM

To:

Project:

<u>Section</u>	<u>Page</u>	<u>Paragraph</u>	<u>Specified Item</u>

THE UNDERSIGNED REQUESTS CONSIDERATION OF THE FOLLOWING SUBSTITUTION:

Attached data shall include, in a tabular format to provide a line by line comparison - product description, specifications, drawings, photographs, performance and laboratory tests and the like with applicable portions of said data clearly identified.

FURTHER, The Proposed Substitution WILL (OR WILL NOT) Affect:

Dimensions indicated on the drawings? _____

Wiring, piping, ductwork, or other building services indicated on the drawings? _____

Other trades and abutting or interconnection work? _____

Manufacturer's guarantees and warranties? _____

The construction schedule? _____

Maintenance and service parts locally available? _____

(NOTE - If Substitution WILL affect any item above, explain in detail.)

In addition to the above, the undersigned agrees to pay for -

- Any and all changes to the building design, including structural, civil or electro/mechanical systems engineering (if any), detailing; and
- Any and all additional construction costs caused by the requested substitution.

The undersigned further states that the function, appearance and quality of the Proposed Substitution are equivalent or superior to the Specified Item.

SUBMITTED:		DESIGN PROFESSIONAL'S COMMENTS	
By:		Accepted	Accepted as Noted
Firm: _		Not Accepted	Received Too Late
Address:			
			By:
Date:			Date:
Telephone/Fax:			Remarks:
Approved For Subcontractor Submittal:			
By:		Contractor:	Date:

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.2 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within 10 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.4 ADMINISTRATIVE CHANGE ORDERS

- A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

22 November 2023
Bid Documents

Katonah-Lewisboro Union Free School District
HVAC Upgrades
SED No. Increase Miller ES: 66-01-01-03-0-004-019
Meadow Pond ES: 66-01-01-03-0-007-018

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

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 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.3 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 and Construction Manager within 10 days after Notice of Award of Contract or at the preconstruction meeting, whichever comes first.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Name of Construction Manager
 - d. Architect's project number.
 - e. SED number
 - f. Contractor's name and address.
 - g. Date of submittal.
 - 2. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:

- a. Related specification section or division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that reflect value.
 - g. Dollar value as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum. No line item should exceed 10% of the contract sum.
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.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
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. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. 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.
9. Include a line item for each of the following in the specified percentage of the Contract Sum:
 - a. Bonds/insurance, general conditions, meeting attendance, and meeting documentation: 2% minimum
 - b. Submittals and shop drawings: 1% minimum
 - c. Labor and materials on line items, temporary utilities and services, HVAC balance reports, coordination drawings and punch list: 1% minimum
 - d. Warranties/guarantees and close out: 3%
10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when fully executed Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

- A. General: Refer to Article 9(C) of the General Conditions.
- B. Payment Application Times: Refer to Article 9(C) of the General Conditions
- C. Application for Payment Forms: Refer to Article 9(C) of the General Conditions.
- D. Application Preparation: Refer to Article 9(C) of the General Conditions.
- E. Stored Materials: Refer to Article 9(E) of the General Conditions.
- F. Payrolls and Payroll Records: Refer to Article 9(I) of the General conditions
- G. Waivers of Mechanic's Lien: Refer to Article 9(D)(3) of the General Conditions.
- H. Attachments to Applications for Payment: In addition to other requirements stated in the Contract Documents, include with each Application for Payment fully executed Partial Release and Waiver of Liens and Payroll Certification on the forms included at the end of this Section. In addition, provide a current copy of the approved Contractor's Construction Schedule, signed by all Prime Contractors, indicating agreement to the schedule.
- I. Transmittal: Submit two signed and notarized original copies of each Application for Payment to the Construction Manager by a method ensuring receipt within 24 hours. Both copies shall include waivers of lien, payroll certification forms and all other required attachments.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- J. Initial Application for Payment: Administrative actions and submittals (that have been previously approved) 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.
 - 4. Products list.
 - 5. Submittal schedule.
 - 6. List of Contractor's staff assignments.
 - 7. List of Contractor's principal consultants.
 - 8. Copies of building permits.
 - 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 10. Initial progress report.
 - 11. Report of preconstruction conference.
 - 12. Certificates of insurance and insurance policies.
 - 13. Performance and payment bonds.

14. Data needed to acquire Owner's insurance.
 15. Initial settlement survey and damage report if required
- K. 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 Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- L. 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, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

Attachments: Partial Waiver of Liens Form
Payroll Certification Form

REQUISITION FOR PARTIAL PAYMENT - WAIVER OF LIENS

PROJECT	OWNER
GENERAL CONTRACTOR	SUBCONTRACTOR/VENDOR
CONTRACT	WORK COMPLETE
PROJECT:	CONTRACT - \$
TRADE:	CHANGE ORDERS - \$
CONTRACT - \$	TOTAL COMPLETE - \$
CHANGE ORDERS - \$	RETAINAGE (%) - \$
TOTAL CONTRACT - \$	LESS PRE. REQ. - \$
	THIS REQUISITION - \$

Waiver of Lien

The undersigned, upon receipt of the above requisition payment hereby releases and discharges the Owner of and from any liability or obligation in any way related to or arising out of this project up to and including the date of this document.

The undersigned further covenants and agrees that it shall not in any way claim or file a mechanic's or other lien against the premises of the above designated project, or any part thereof, or against any fund applicable thereto for any of the work, labor, materials heretofore furnished by it in connection with the improvement of said premises.

The undersigned further warrants that, in order to induce the Owner to release this partial payment, they have paid all claims for labor, material, insurance, taxes, equipment, etc., employed in the prosecution of the work above, to date of this requisition.

The undersigned hereby releases and agrees to hold the Owner harmless from any and all claims in connection with the furnishing of such labor and materials, etc., for the construction of the aforementioned project.

The undersigned further guarantees that all portions of the work furnished and/or provided by them are in accordance with the contract and that the terms of the contract with respect to these guarantees will hold for the period specified in said contract.

IN WITNESS WHEREOF, we have executed under seal this release on the date below and to be legally bound hereby:

WITNESS: _____ FIRM: _____

BY: _____ DATE: _____

CORPORATE ACKNOWLEDGEMENT

State of

)SS.
)

County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____; that he is the officer of the said corporation executing the foregoing instrument, that he knows the seal of said corporation, that the seal affixed to said instrument is such corporate seal, that it was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

Notary Public

INDIVIDUAL ACKNOWLEDGEMENT

State of

)SS.
)

County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____ that he is the individual who executed the foregoing instrument.

Notary Public

PARTNERSHIP ACKNOWLEDGEMENT

State of

)SS.
)

County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____; that he is the partner in the firm of _____ doing business under the name of _____ and that he executed the foregoing instrument on behalf of said partnership.

Notary Public

PAYROLL CERTIFICATION

_____ am an officer with the title of _____

in the firm of _____ and am authorized by that firm to sign and swear, under penalty of perjury, to the validity and accuracy of the statements below.

(1) I pay or supervise the payment of laborers, workers and mechanics employed by _____ on the _____ project. During the payroll period commencing on the _____ day of _____ 20__ and ending the _____ day of _____ 20__ all laborers, workers and mechanics employed on said project were paid the wages and supplements recorded as earned on the attached payroll records. No deductions have been made either directly or indirectly from the wages and supplements other than deductions shown on the payroll records.

(2) The payroll records submitted for the above project and attached hereto are correct and complete, and the wage rates for laborers, workers, and mechanics contained therein are not less than the applicable wage rates stated in the Contract and as designated by the State Labor Department. The number of hours shown for each employee reflects the actual hours worked by that employee. The classification shown for each employee is accurate and conforms with the work he or she performed.

(3) Supplements required in the Contract that are in addition to the basic hourly wages have been or will be paid to the appropriate plans, funds or programs.

(4) Such statement so to be filed shall be verified by the oath of the Contractor that he or she has read such statement subscribed by him or her and knows the content thereof, and that the same is true of his or her own knowledge except with respect to wages and supplements owing by subcontractors which may be certified upon information and belief.

(5) All employees of this firm have submitted completed Form I-9, Employment Eligibility Verification Form which has been reviewed and signed by authorized representatives of the firm and are kept in the employees' file. Also, any and all subcontractors have certified to us that all of their employees have submitted completed Form I-9 Employment Eligibility Verification Form, which have been reviewed and signed by authorized representatives of the firm and are kept in the employees' file.

By: _____

Firm
Name _____

Title: _____

Firm _____

Date: _____

Address _____

Prime

Subcontractor

NOTARY

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Requests for Information (RFIs).
 - 3. Project Information Management (PIM) software.
 - 4. Project meetings.
- B. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.2 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.
- B. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.3 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.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
 - 4. Submit list of subcontractors within 10 days after Notice of Award of Contract or at the preconstruction meeting, whichever comes first.
- 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, and by each temporary telephone. Keep list current at all times.

1.4 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, Multiple Prime Contracts: 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
- 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.

- E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.
- F. Use of the Site: The Construction Manager will administer allocation of available space equitably among separate Prime Contractors and other entities needing access and space, so as to produce the best overall efficiency in performance of the total work of the project. Each Contractor shall schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

1.5 REQUESTS FOR INFORMATION (RFIs)

- A. Requests for Information (RFI's) are requests for clarifications or questions regarding the contract drawings and specifications, not contract terms, scheduling items, or general correspondence, nor, are they to be as a means to describe or request approval of alternate construction means, methods or concepts or substitution for materials, systems means and methods.
 - 1. Carefully study and compare the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, and prior Project correspondence and documentation prior to submitting a Request for Information.
- B. 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. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response. 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.
- C. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Architect and Construction Manager
 - 6. RFI number, numbered sequentially.
 - 7. RFI subject.
 - 8. Specification Section number and title and related paragraphs, as appropriate.
 - 9. Drawing number and detail references, as appropriate.
 - 10. Field dimensions and conditions, as appropriate.

11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. 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.
- D. RFI Forms: Architect will furnish electronic version of form bound in Project Manual.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- E. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven 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. Based upon the amount of RFI's received and their level of content, the Architect will establish the level of importance of each RFI and allow sufficient time in the Architect's professional judgment to permit adequate review.
 2. 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.
 3. 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.
 4. 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 a change proposal according to the General Conditions of the Contract
 - a. If the Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 15 calendar days of receipt of the RFI response.
- F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly; include the following: .
1. Project name.
 2. Name and address of Contractor.

3. Name and address of Architect and Construction Manager.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

- G. 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.

1.6 PROJECT INFORMATION MANAGEMENT (PIM) SITE

- A. Use Architect's Project Information Management (PIM) software transmission server software for purposes of hosting and managing project communication and documentation until Final Completion. Project Information Management (PIM) software site includes the following functions:

1. Project directory.
2. Project correspondence.
3. Meeting minutes.
4. Contract modifications forms and logs.
5. RFI forms and logs.
6. Task and issue management.
7. Photo documentation.
8. Schedule and calendar management.
9. Submittals forms and logs.
10. Payment application forms.
11. Drawing and specification document hosting, viewing, and updating.
12. Online document collaboration.
13. Reminder and tracking functions.
14. Archiving functions.

- B. Architect will provide Project Information Management (PIM) software user licenses for use of the Owner, Contractor, Construction Manager, and Architect's consultants.
- C. The Architect utilizes Submittal Exchange Project Information Management (PIM) software to track submittals and RFI's.
- D. Post electronic submittals as PDF electronic files directly to Architect's submittal Exchange server, specifically established for Project.

1.7 PROJECT MEETINGS

- A. General: The Construction Manager will schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Construction Manager will inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Construction Manager will notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Construction Manager will prepare the meeting agenda and distribute the agenda to all invited attendees.
 3. Minutes: Construction Manager will record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned, including Owner, and Architect, within three days of the meeting.
- B. Preconstruction Conference: Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 14 days after Notice to Proceed.
- a. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - b. Agenda: Discuss items of significance that could affect progress, including the following:
 - 1) Tentative construction schedule.
 - 2) Phasing.
 - 3) Critical work sequencing.
 - 4) Designation of responsible personnel.
 - 5) Procedures for processing field decisions and Change Orders.
 - 6) Procedures for processing Applications for Payment.
 - 7) Distribution of the Contract Documents.
 - 8) Submittal procedures.
 - 9) Preparation of Record Documents Procedures for RFIs.
 - 10) Use of the premises and existing building.
 - 11) Work restrictions.
 - 12) Working hours.
 - 13) Owner's occupancy requirements.
 - 14) Procedures for moisture and mold control.
 - 15) Procedures for disruptions and shutdowns.
 - 16) Construction waste management and recycling.
 - 17) Parking availability.
 - 18) Office, work, and storage areas.
 - 19) Equipment deliveries and priorities.
 - 20) First aid.
 - 21) Progress cleaning.
 - 22) Responsibility for temporary facilities and controls.
 - 23) Security
 - 24) Waste management protocols.
 - c. Contractor shall submit the following items at this meeting:

- 1) Preliminary Contractor's Construction Schedule (if schedule has not yet been submitted).
 - 2) List of Subcontractors.
 - 3) Schedule of Values.
 - 4) Submittal Schedule.
 - 5) Products List (Proposed products and manufacturers including any substitution products proposed).
 2. Minutes: Construction Manager will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Construction Manager of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Contractor, Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
1. Construction Manager will conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Preparation of Contractor's punch list.
 - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - i. Submittal procedures.
 - j. Coordination of separate contracts.
 - k. Owner's partial occupancy requirements.
 - l. Installation of Owner's furniture, fixtures, and equipment.
 - m. Responsibility for removing temporary facilities and controls.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Construction Manager will conduct progress meetings at bi-weekly or twice monthly intervals.
1. Coordinate preparation of payment requests with dates of meetings.
 2. Attendees: In addition to representatives of Owner, Contractor and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

- a. A representative of Contractor shall be present at every progress meeting, regardless of whether or not that Contractor is performing work at the site at the time.
 - b. Any decision reached at a job meeting shall be binding on a Contractor, whether or not he or his representative is present at such job meeting.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period (2-week look ahead schedule)
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of proposal requests.
 - 15) Pending changes.
 - 16) Status of Construction Change Directives.
 - 17) Status of Change Orders.
 - 18) Pending claims and disputes.
 - 19) Documentation of information for payment requests.
 - 20) Waste management.
4. Minutes: Construction Manager will record and distribute the meeting minutes to each party present, to others affected by decisions or actions resulting from each meeting 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
- F. Coordination Meetings: Construction Manager will conduct Project coordination meetings at bi-weekly intervals or as required by the Construction Manager. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of Owner, Construction Manager and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work
 2. Agenda: Coordinate work for the ensuing two weeks. Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. At the close of the meeting, each prime Contractor shall, in an agreed format, provide a summarized two week work plan to the Construction Manager.
 3. Any decision reached at a job meeting shall be binding on a Contractor, whether or not he or his representative is present at such job meeting
 4. Reporting: Construction Manager will record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

ATTACHMENT:

REQUEST FOR INFORMATION FORM

REQUEST FOR INFORMATION (RFI FORMAT)

Contractor:		Architect: KG&D Architects, PC
Address:		Address: 285 Main Street, Mt. Kisco, NY 10549
Telephone:		Telephone: 914-666-5900
Fax:		Fax: 914-666-0051
Email:		Email: rmarkgraf@kgdarchitects.com
Project Name:		Project Location:
RFI Number:	Date of Request:	Requested Date of Response (5 business days minimum):
Description, complete with backup data as necessary attached hereto:		
Sketches of Conditions	Specification Paragraph Reference(s):	Drawing Reference(s):
Proposed Solution:		
Cost Impact:		Time Impact:
Trade/Specialty Contractors Affected:		
Trade/Specialty Contractors Coordinated With:		
Submitted By:		
Architect's Response:		
By:		Date of Response:

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's construction schedule.
 - 3. Construction Manager's construction schedule.
 - 4. Project construction schedule
 - 5. Construction schedule updating reports.
 - 6. Daily construction reports.
 - 7. Site condition reports.
 - 8. Special reports.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting schedules and reports.
 - 2. Section 014000 "Quality Requirements" for submitting a schedule of tests and inspections.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Event: The starting or ending point of an activity.
- E. Float: The measure of leeway in starting and completing an activity.

1. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 2. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- F. Milestone: A key or critical point in time for reference or measurement.
- G. Contractor's Construction Schedule: A construction schedule for the Work of a Prime Contractor, prepared by that Prime Contractor.
- H. Construction Manager's Construction Schedule: A construction schedule for the Project, prepared by the Construction Manager with no input from Prime Contractors, indicating milestones, Phasing, and other general requirements for the prosecution of the Work of all Contracts.
- I. Project Construction Schedule: A coordinated construction schedule for the Project, prepared and maintained by the Construction Manager, indicating an overall construction schedule for the entire Project with input from all Prime Contractors, coordinated by the Construction Manager, and accepted by all Prime Contractors.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
1. PDF electronic file.
- B. Startup construction schedule.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals
 2. Construction Manager will review schedule for compliance with Construction Manager's Construction Schedule
- E. Construction Schedule Updating Reports: Submit with Applications for Payment.
- F. Daily Construction Reports: Submit at monthly intervals.
- G. Site Condition Reports: Submit at time of discovery of differing conditions.
- H. Special Reports: Submit at time of unusual event.
- I. Qualification Data: For scheduling personnel.

1.4 QUALITY ASSURANCE

- A. Scheduling Personnel Qualifications: A consultant or a person in the Contractor's employ who is experienced in CPM project scheduling and reporting, with capability of reviewing Construction Manager's Construction Schedule and Project Construction Schedule, correlating them with Contractor's Construction Schedule, and providing feedback reports within time schedule specified.
- B. Prescheduling Conference: After receipt of preliminary Contractor's Construction Schedule from all Prime Contractors, Construction Manager will conduct a schedule review and coordination conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Construction Manager will review methods and procedures related to the Project Construction Schedule including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Review submittal requirements and procedures.
 - 4. Discuss constraints, including phasing, area separations, interim milestones and partial Owner occupancy.
 - 5. Review delivery dates for Owner-furnished products.
 - 6. Review schedule for work of Owner's separate contracts
 - 7. Review time required for review of submittals and resubmittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for completion and startup procedures.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review procedures for updating schedule.
 - 12. Discuss constraints, including phasing work

1.5 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. The form of the Contractor's Construction Schedule will be a CPM schedule.
- B. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

- C. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.
1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- D. Time Frame: Extend schedule from date established for the Notice of Award to date of final completion.
1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- E. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- F. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.

- b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use-of-premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
- 6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.
- G. Milestones: Include milestones indicated in the Contract Documents and in the Construction Manager's Construction Schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and the interim milestones indicated on the Schedule.
- H. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
- I. Contractor's Construction Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate final completion percentage for each activity.
 4. In no event shall any progress report constitute an adjustment in the Contract Time, any Milestone Date or the Contract Sum unless any such adjustment is agreed to by the Owner and authorized pursuant to Change Order.
- J. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- K. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.7 PROJECT CONSTRUCTION SCHEDULE

- A. Form: The form of the Project Construction Schedule will be a CPM schedule.
- B. Responsibilities: The Construction Manager will provide services as the overall project scheduling coordinator for Project planning, scheduling and control. The Construction Manager will prepare and maintain the overall Project Construction Schedule with input from the Prime Contractors.
- C. Preparation: The procedure for the preparation of the Project Construction Schedule shall be as follows:
1. Within 10 days after Notice of Award of Contract or at the preconstruction meeting, whichever comes first, each Prime Contractor shall prepare and submit to the Construction Manager, for review and coordination, a detailed start up Contractor's Construction Schedule for his Work showing the details of his compliance with the Construction Manager's Construction Schedule. Contractor's Construction Schedule shall indicate that the Phases of the Project be Substantially Complete by the dates indicated in the Construction Manager's Construction Schedule.
 2. The Construction Manager will review the Contractor's Construction Schedule and shall advise the Contractor if its schedule is acceptable for incorporation into the Project Construction Schedule, or if revisions will have to be made.
 3. Each Prime Contractor shall cooperate with each other and with the Construction Manager in coordinating each Contractor's Construction Schedule to produce the Project Construction Schedule.

4. When the coordinated Project Construction Schedule is produced by the Construction Manager, each Prime Contractor shall signify acceptance of Schedule by signing the schedule.
- D. Updates/Revisions: The Construction Manager will update the Project Construction Schedule at bi-weekly intervals to reflect actual construction progress and activities, based on feedback reports of Prime Contractors. Each Prime Contractor shall issue revised scheduling report (update) to the Construction Manager one week before each regularly scheduled progress meeting.
1. Construction Manager will revise Project Construction Schedule immediately after each meeting or other activity where revisions have been recognized or made. Construction Manager will issue updated schedule concurrently with the report of each such meeting.
 2. As the Work progresses, Project Construction Schedule will indicate Actual Completion percentage for each activity.
 3. The Contractor shall monitor the progress of its work for conformance with the requirements of the construction schedule and shall promptly advise the Construction Manager of any delays or potential delays.
 4. If a schedule update is not submitted by the Contractor in a timely fashion, the Contractor shall accept the Project Construction Schedule prepared by the Construction Manager as the construction schedule to be used in carrying out its work and the Contractor waives its rights to claim damage or delay associated with the time requirements set forth in the updated Project Construction Schedule.
 5. The Owner reserves the right to adjust the Project Construction Schedule from time to time during construction to mitigate unavoidable problems and ensure that the Project Completion Date is achieved. Contractor shall comply with the adjusted Project Construction Schedule without additional cost.
 6. When an updated Project Construction Schedule is produced by the Construction Manager, each Prime Contractor shall signify acceptance of Schedule by signing the schedule.
- E. Distribution: Construction Manager will distribute copies of approved schedule to Prime Contractors, Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Construction Manager with a need-to-know schedule responsibility.
1. Construction Manager will post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, Construction Manager will distribute updated schedules to the same parties and post in the same locations. Parties will be deleted from distribution list when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.
- F. Prime Contractors' Acceptance of Project Construction Schedule: The initial and each updated Project Construction Schedule shall be signed by each Prime Contractor, indicating acceptance of such schedule.

1. A copy of the initial Project Construction Schedule signed and accepted by Prime Contractor shall be attached to the initial Application for Payment. No payment will be processed by the Owner until such document has been received.
2. A copy of the most current Project Construction Schedule signed and accepted by Prime Contractor shall be attached to each succeeding Application for Payment. No payment will be processed by the Owner until such document has been received.

1.8 STARTUP CONSTRUCTION SCHEDULE

- A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within 10 days after Notice of Award of Contract or at the preconstruction meeting, whichever comes first.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 CPM SCHEDULE REQUIREMENTS

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice of Award. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's construction schedule using a time-scaled CPM network analysis diagram for the Work.
 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for the Notice of Award.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.

- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Preparation and processing of coordination drawings.
 - c. Mobilization and demobilization.
 - d. Purchase of materials.
 - e. Delivery.
 - f. Fabrication.
 - g. Utility interruptions.
 - h. Installation.
 - i. Work by Owner that may affect or be affected by Contractor's activities.
 - j. Testing and commissioning.
 - k. Punch list and final completion.
 - l. Activities occurring following final completion.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.

8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
 - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
 - b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.10 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (see special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.

13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions.

1.11 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION

END OF SECTION 013200

SECTION 013233 – PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for the following work by the Contractor:
 - 1. Preconstruction photographs.
 - 2. Preconstruction videos.

1.2 SUBMITTALS

- A. Key Plan: Submit key plan of Project site and buildings with notation of vantage points marked for location and direction of each photograph and video. Indicate elevation or story of construction. Include same label information as corresponding set of photographs or video.
- B. Photographs: Submit two prints of each photographic view
 - 1. Format: 8-by-10-inch smooth-surface matte prints on single-weight commercial-grade photographic paper, enclosed back to back in clear plastic sleeves that are punched for standard 3-ring binder.
 - 2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
 - a. Name of project.
 - b. Name of Architect and Construction Manager
 - c. Name of Contractor.
 - d. Date photograph was taken if not date stamped by camera.
 - e. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - f. Unique sequential identifier.
 - 3. Digital Images: Submit a complete set of digital image electronic files with each submittal of prints as a Project Record Document on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, uncropped.
- C. DVD's: Submit 2 copies of each DVD with protective sleeve or case within seven days of recording.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.

- b. Name of Architect and Construction Manager.
- c. Name of Contractor.
- d. Date video was recorded.
- e. Description of vantage point, indicating location, direction (by encompass point), and elevation or story of construction.
- f. Weather conditions at time of recording.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Photographic Film: Medium format, 2-1/4 by 2-1/4 inches
- B. Digital Images: Provide images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1600 by 1200 pixels.
- C. Digital Video Recordings: Provide high-resolution, digital video disc in format acceptable to the Owner.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of photographs that identifies each photographic location.
- B. Film Images:
 - 1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
 - 2. Field Office Prints: Retain one set of prints of photographs in the field office at Project site, available at all times for reference.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in filename for each image.
 - 2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference.

- D. Preconstruction Photographs: Before commencement of demolition, or starting construction, take color and digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.
1. Take 20 photographs of each existing building to accurately record physical conditions at start of demolition or construction.
 2. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

3.2 CONSTRUCTION DIGITAL VIDEO

- A. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video, record weather conditions from local newspaper or television and the actual temperature reading at Project site.
- B. Narration: Describe scenes on video by audio narration by microphone while video is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.
1. Confirm date and time at beginning and end of recording.
 2. Begin each video with name of Project, Contractor's name, videographer's name, and Project location.
- C. Preconstruction Video: Before starting demolition or construction record video of Project site and surrounding properties from different vantage points.
1. Show existing conditions adjacent to Project site before starting the Work.
 2. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of demolition, or construction.
 3. Show protection efforts by Contractor.

END OF SECTION 013233

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. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 3. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 4. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 5. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

2. All submittals shall be submitted to Architect and Construction Manager within 25 days of contract signing.
 3. Allow sufficient processing time; as a minimum, as indicated in this Section.
 4. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include all submittals for the project in the initial submittal schedule.
 5. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 6. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
 - g. Scheduled date of fabrication.
 - h. Scheduled dates for purchasing.
 - i. Scheduled dates for installation.
 - j. Activity or event number.
- B. Architect will review Submittal Schedule for concentrations, overloading and similar conflicts which will impact the Architect's ability to meet the schedule and propose revisions to the duration of processing time to the Contractor.
- C. No payment will be made to Contractor until complete Schedule of Submittals has been received and accepted by Owner and Architect.
- D. 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 if the Contractor fails to submit a Submittal Schedule.
- 1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS
- A. Architect's Digital Data Files:
1. Any request for digital data files shall be solely and exclusively for use related to this Project.
 2. CAD Background Drawings: Electronic copies of CAD Background Drawings of the Contract Documents in editable file format will be available from the Architect as a convenience to the Contractor for use in preparing shop drawings for this Project. Refer to "Contractor Request for Electronic Drawing Files" attached to the end of this Section for procedures for ordering and transfer of files and for Architect's limitations of liability for transfer.
 - a. CAD Background Drawings files requested will be delivered in editable file format indicated, and will not be further altered by the Architect prior to delivering them to any said party.
 3. Each contractor requesting electronic data file shall submit a request for Electronic Drawing Files, prior to delivery of said files. No contractor, shall transfer these

- Electronic Files received from the Architect, or any portion thereof to any third party ("Transferee") without written permission of the Architect.
4. The Architect will transfer files to the requesting entity via the Project Information Management (PIM) software.
 5. All files are a schematic representation of elements within the project. All Contractors are responsible for field verification and coordination with other trades.
 6. Use of these files does not relieve the Contractor from producing Coordination Drawings and Shop Drawings required by the Contract.
- 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. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Submit product data, shop drawings and samples relating to a complete assembly at one time. Partial submittals will be returned without action.
 5. Interrelated color selections will not be made until all pertinent samples are received by the Architect.
 6. 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 reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow sufficient 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 a minimum of 15 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Resubmittal Review: Allow a minimum of 15 working days for review of each resubmittal.
 3. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow a minimum of 21 calendar days for initial review of each submittal. Any sequential reviews shall be identified on the Submittal Schedule by the Architect and agreed upon by the Project team.
- 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. Place fully executed "Submittal Cover Sheet" attached to the end of this Section as first page of every paper submittal. Complete all required information before submitting to Architect. Submittals received without Submittal Cover Sheet or with incomplete information on cover sheet will be returned for resubmission.
 3. Include Contractor's stamp indicating information complies with Contract Document requirements.
 4. Submittals indicating less than complete review by Contractor will be returned for Contractor's compliance without Architect's review.
 5. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 6. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form acceptable to Architect and Owner. Architect will return without review submittals received from sources other than Contractor.
 - a. Transmit all submittals to Architect with a copy to the Construction Manager unless otherwise indicated.
 - b. When submittal requires review of data by Structural Engineer or Mechanical or Electrical Engineers, submit a copy directly to such engineer with a copy to the Architect and the Construction Manager.
- 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. Place fully executed "Submittal Cover Sheet" attached to the end of this Section as first page of every electronic submittal. Complete all required information before submitting to Architect. Submittals received without Submittal Cover Sheet or with incomplete information on cover sheet will be returned for resubmission.
 3. 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).
 4. Transmittal Form for Electronic Submittals: Use software-generated form from electronic project management software or electronic form acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Contractor.
 - e. Name of firm or entity that prepared submittal.
 - f. Names of subcontractor, manufacturer, and supplier.
 - g. Category and type of submittal.
 - h. Submittal purpose and description.
 - i. Specification Section number and title.

- j. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - k. Drawing number and detail references, as appropriate.
 - l. Location(s) where product is to be installed, as appropriate.
 - m. Related physical samples submitted directly.
 - n. Indication of full or partial submittal.
 - o. Submittal and transmittal distribution record.
 - p. Other necessary identification.
 - q. Remarks.
- F. Options: Identify options requiring selection by Architect.
- G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Resubmittals: Make resubmittals in same form and manner 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 action stamp.
 - 4. Architect's Re-review of Submittals: When resubmittals are required due to Contractor's failure to properly coordinate submittals, including coordination with other Prime Contractors, Contractor shall reimburse the Owner for fees paid to the Architect for re-review of submittals through a credit change order, in accordance with the Architect's current fee schedule.
- 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 action stamp.
- 1. The Contractor shall perform no portion of its work requiring submittal and review of shop drawings, product data, samples or similar submittals until the respective submittal has been approved by the Architect. Such work shall be in accordance with approved submittals.
 - 2. The Contractor shall supply shop drawings to other Contractors engaged by the Owner to perform work in connection with the project to ensure proper coordination of its work with theirs.
 - 3. Do not proceed with installation until an applicable copy of the submittal is in the installer's possession.
 - 4. Do not permit use of unmarked copies of submittals in connection with construction.

- K. Project Information Management System: The submittal process will be implemented through the use of a digital processing and tracking software similar to "Submittal Exchange". Use this Project Information Management (PIM) software to transmit all submittals. Contractors must participate in and become capable in using this system.

1.5 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections. All submittals shall be submitted to Architect and Construction Manager within 25 days of contract signing.
1. Post electronic submittals as PDF electronic files directly to Architect's project information transmission web based software specifically established for Project.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Action Submittals: Submit electronic file except where paper copies of submittals are specifically required.
 3. Informational Submittals: Submit electronic file except where paper copies of submittals are specifically required.
 4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- 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. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Mark each copy of each submittal to show which products and options are applicable. Strike extraneous information prior to submittal
 4. 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.
 5. 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.
 - 6. Submit Product Data before or concurrent with Samples.
 - 7. Submit Product Data in the following format:
 - a. PDF electronic file, unless requested by Architect.
- 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, unless submittal based on Architect's digital data drawing files is otherwise permitted. Standard information prepared without specific reference to the Project is not considered a Shop Drawing. Verify field measurements prior to preparation of shop drawings.
 - 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 (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
 - 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file, unless requested by Architect.
 - b. In addition to submission of electronic files, submit 3 paper copies of fire alarm shop drawings and sprinkler shop drawings with Contractor approval stamps applied, for submittal to the AHJ Code Review for review and comment, as required.
 - c.
- 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.
 - e. Specification paragraph number and generic name of each item.
 - 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

4. 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.
 5. 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 will return submittal with options selected.
 6. 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 will retain two Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013115 "Coordination Drawings."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Section 01 7823 "Operation and Maintenance Data."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- O. 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.
- P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- R. 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.
- S. 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.
- T. Research/Evaluation Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.

2. Date of evaluation.
 3. Time period when report is in effect.
 4. Product and manufacturers' names.
 5. Description of product.
 6. Test procedures and results.
 7. Limitations of use.
- U. 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.
- V. 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.
- W. 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.
- X. 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.
- 1.6 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.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file of certificate, 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 2 - EXECUTION

2.1 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 .
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 01 7700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

2.2 ARCHITECT'S ACTION

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Architect's Actions:
 - 1. Contractor may proceed with fabrication on submittals marked "No Exception Taken" or "Make Corrections Noted" provided that the Contractor adheres to the corrections noted.
 - 2. Contractor may not proceed with fabrication on shop drawings noted "Revise and Resubmit" or "Rejected" until "No Exception Taken" or "Make Corrections Noted" stamp is received on resubmitted drawing.
 - 3. Contractor may not proceed with fabrication on the specific shop drawings noted "Partial Resubmit" until "No Exception Taken" or "Make Corrections Noted" stamp is received on resubmitted drawing.
 - 4. Do not permit submittals marked "Revise and Resubmit," or "Rejected," to be used at Project site, or elsewhere where Work is in progress.
 - 5. Other Action: Where submittal is primarily for information or record purposes, special processing or other activity, submittal will be returned, marked "No Action Taken."
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

- F. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

ATTACHMENTS:

Submittal Cover Sheet

Contractor's Request for Electronic Drawing

SUBMITTAL COVER SHEET

Contractor: _____

Address: _____ Telephone: () _____

Owner: _____

Name of Project: _____

TYPE OF SUBMITTAL:

- ☐ Shop Drawings
☐ Technical Data
☐ Test Report

- ☐ Schedule
☐ Certificate
☐ Warranty

- ☐ Physical Sample
☐ Color Sample
☐ _____

Submission #: (circle one) 1st 2nd 3rd 4th

Description:

Product Identification: _____

Manufacturer: _____

Subcontractor/Supplier: _____

DOCUMENT REFERENCES: (Must be fully filled out)

Spec Section No.: _____ **Drawing No(s):** _____

Paragraph: _____ **Rm. Or Det. No(s):** _____

Contractor Remarks:

Contractor Submittal Review Stamp

THE ATTACHED MATERIAL HAS BEEN REVIEWED BY THE UNDERSIGNED AND IS BELIEVED TO COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE UNDERSIGNED UNDERSTANDS VERIFICATION OF FIELD DIMENSIONS, AND COORDINATION WITH OTHER TRADES, REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.

DATE: _____ BY (SIGN): _____

Consultant use below this line:

Architect Submittal Review Stamp

- ☐ NO EXCEPTIONS
☐ REJECTED
☐ EXAMINED

- ☐ MAKE CORRECTIONS NOTED
☐ REVISE AND RESUBMIT
☐ SUBMIT SPECIFIED ITEM

CHECKING IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE PLANS & SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS WHICH SHALL BE CONFIRMED & CORRELATED AT THE JOB SITE; FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATION OF HIS WORK WITH THAT OF ALL OTHER TRADES & THE SATISFACTORY PERFORMANCE OF HIS WORK

KG+D ARCHITECTS, P.C.

DATE _____ BY _____

CONTRACTOR REQUEST FOR ELECTRONIC DRAWING FILES

The Architect, for the convenience of the Client/Owner, has electronic copies or representations of Drawings, Specifications and Project Manuals. Requests for electronic copies of such Drawings, Specifications and Project Manuals by the Contractor, for the Contractors use or the use of Subcontractors, shall be made in writing to the Client/Owner as outlined hereinbelow and shall outline the benefit derived from such a request. The Contractor shall be prepared to reimburse the Client/Owner for any costs involved in preparing such electronic documents for the Contractors use.

Architect's Project Number:	
Project Name:	
Architect:	
Client/Owner:	
Contractor/Recipient's Name:	
Attention to:	
Contractor/Recipient's Address:	
Date of Request:	
Date of Release:	

As requested, attached is a list of electronic drawing files. For the release of these electronic drawing files to the recipient, the following items shall be understood, acknowledged and signed by the authorized personnel of the recipient with the fee included.

- A. The electronic drawing files are the property of the Architect and the Contractor is granted a license to use the electronic files only in connection with the subject project.
- B. The electronic drawing files do not necessarily represent the Contract Documents associated with the referenced project. These files are solely for the use of the recipient and are not a representation of the scope of work for the project. Any use by contractors, subcontractors or fabricators shall be on all of the same terms and conditions being applicable to such users who shall acknowledge the same in writing. The Recipient may use the electronic drawing files only. Electronic drawing files or portions thereof, shall not be provided to anyone else without the written approval of the Client/Owner. The use of the electronic drawing files, documents and any reprographics shall not identify any member of the Architect or Architect's consultants or sub-consultants or the Client/Owner without the written approval from the parties.
- C. The entire risks as to the results and performance of the package including the electronic drawing files, are assumed by the Contractor/recipient. The Client/Owner, the Architect

and the Architect's consultants and sub-consultants, including directors, employees, representatives, and licensors of the company, shall not have any liability to the Contractor/recipient or any other person or entity for any direct, indirect, incidental special or consequential damages whatsoever, including, but not limited to, the loss of revenue or profit, lost data, or any other personnel, commercial or economic loss, and claims by third parties. Even if the Client/Owner and Architect and the Architect's consultants and sub-consultants has been advised of the possibility of such damages; said Client/Owner and Architect and the Architect's consultants and sub-consultants shall not be held liable as stated above.

- D. The Contractor/recipient hereby agrees to indemnify and hold the Client/Owner, the Architect and the Architect's consultants and sub-consultants harmless from and against any cost, damage, liability, loss or claim arising from violation of this license. The Contractor/recipient and all subcontractors of all tiers also agrees that, in addition to all other remedies hereunder, the Contractor/recipient and such parties grant the Client/Owner the right to seek injunctive or other equitable relief to prevent the violation or require the performance of any of the Contractor's/recipient's obligations under this license, and the Contractor/recipient hereby consents to the issuance of such relief by any court of competent jurisdiction without the need to post any bond or security.
- E. The electronic files requested are as follows:

Electronic file name	Corresponding Drawing (close approximation)
1.	
2.	
3.	
Etc.	
Total number of files:	

CONTRACTOR'S/RECIPIENT'S AGENT SIGNATURE: _____

NAME IN BLOCK LETTERS: _____

AUTHORIZED POSITION HELD: _____

DATE OF SIGNATURE: _____

****End of Attachment****

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
 - 1. This Section does not include requirements for performing Special Inspections and Tests in compliance with Chapter 17 of the Building Code of New York State; refer to Section 014100.
- 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, Construction Manager or authorities having jurisdiction are not limited by provisions of this Section.

1.2 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 or Owner.
- C. 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.
- D. 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.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. 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).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five 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.
- J. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.
 - 1. Mockups are used for one or more of the following:
 - a. Verify selections made under Sample submittals.
 - b. Demonstrate aesthetic effects.
 - c. Demonstrate the qualities of products and workmanship.
 - d. Demonstrate successful installation of interfaces between components and systems.
 - e. Perform preconstruction testing to determine system performance.
 - 2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
 - 3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

1.3 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.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated Design Services Statement: Submit a statement 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, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

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 INFORMATIONAL SUBMITTALS

- A. Qualification Data For Contractor's quality-control personnel.
- B. Contractor's Statement of Responsibility: Submit copy of written statement of responsibility, acknowledging awareness of the special requirements contained in the Statement of Special Inspection, to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspection.
 - 2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspection.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.

1.6 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.

2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

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. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, an agency accredited by the International Accreditation Service, Inc. or an equivalent accreditation agency accrediting in accordance 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.
- H. 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.
- I. 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.

- J. 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. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies; 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, Construction Manager and Owner's Commissioning Authority, through Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. 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 of size indicated.
 2. Build mockups in location indicated or, if not indicated, as directed by Architect.
 3. Notify Architect and Construction Manager minimum seven days in advance of dates and times when mockups will be constructed.
 4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
 5. Demonstrate the proposed range of aesthetic effects and workmanship.
 6. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.
 - a. Allow minimum seven days for initial review and each re-review of each mockup.
 7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
 8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

10. Demolish and remove mockups when directed or incorporate approved in-place mock-ups in the finished work, as specifically instructed in each specification section where a mock-up is required.

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, and the Contract Sum will be adjusted by Change Order.
- B. 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. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Notify testing agencies at least 48 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 01 3300 "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/Reinspecting: 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, Construction Manager and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect, Construction Manager 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. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Delivery of samples to testing agencies.
 - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. 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.
- I. 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, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.9 SPECIAL INSPECTIONS

- A. Special Inspections: Owner will engage qualified testing agency(ies) and special inspectors to conduct special inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in Division 01 Section "Special Inspections and Tests".

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 and Construction Manager'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 Division 01 Section "Cutting and Patching."
- 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 014100 - SPECIAL INSPECTIONS AND TESTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for performing Special Inspections and Tests in accordance with requirements of Chapter 17 of the *Building Code of New York State* (BCNYS). Testing and inspecting services are required to verify compliance with requirements specified or indicated in the contract documents. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1.2 DEFINITIONS

- A. Registered Design Professional: The Registered Architect whose seal appears on the Construction Drawings.
- B. Testing/Inspecting Agency: An agent retained by the Owner and coordinated by the Special Inspector, to perform some of the testing and/or inspection services on behalf of the Special Inspector. (An example of an Inspecting Agency would be a Geotechnical Engineer).
- C. Statement of Special Inspections: A document prepared by the Registered Design Professional that includes the Schedule of Special Inspections listing the materials and work requiring Special Inspections. A copy of this document is included at the end of this Section.
- D. Continuous Special Inspection: The full-time observation of work requiring Special Inspections by the Special Inspector who is present in the area where the work is being performed.
- E. Periodic Special Inspections: The part-time or intermittent observation of work requiring Special Inspections by the Special Inspector who is present in the area where the work has been or is being performed and at the completion of the work

1.3 CONTRACTOR RESPONSIBILITIES

- A. Contractor shall cooperate with the Special Inspector and his agents so that Special Inspections and testing may be performed without hindrance.
- B. Contractor shall notify the Special Inspector and/or Testing/Inspecting Agency at least 48 hours in advance of a required inspection or test. Contractor shall coordinate sequence of activities to accommodate required inspection and testing 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.
- C. The Contractor shall provide incidental labor and facilities to provide access to the work to be inspected or tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.
- D. The Contractor shall keep at the project site the latest set of Construction Drawings, field sketches, accepted shop drawings, and specifications for field use by the Inspectors and Testing Technicians.
- E. The Special Inspection program shall in no way relieve the Contractor of his obligation to perform work in accordance with the requirements of the Contract Documents or from implementing an effective Quality Control program.

1.4 QUALITY CONTROL

- A. Construction Manager will hold a Special Inspections preconstruction meeting at least 7 days prior to the initial planned date for start of construction.
1. Discussion shall include review of specifications and Schedule of Special Inspections for work requiring Special Inspections; responsibilities of Contractor, Owner, Testing Agency, Special Inspector, and Registered Design Professional; notification procedures; and reporting procedures.
 2. Attendees shall include the Contractor, Owner's representative, Testing Agency, Special Inspector, and Registered Design Professionals for Structural Engineering and for Architecture.

1.5 LIMITS ON AUTHORITY

- A. The Special Inspector or Testing/Inspecting Agency shall not release, revoke, alter, or enlarge on the requirements of the Contract Documents.
- B. The Special Inspector or Testing/Inspecting Agency shall not have control over the Contractor's means and methods of construction.
- C. The Special Inspector or Testing/Inspecting Agency shall not be responsible for construction site safety.
- D. The Special Inspector or Testing/Inspecting Agency shall not have the authority to stop the work.

1.6 STATEMENT OF SPECIAL INSPECTIONS

- A. The Statement of Special Inspections and Tests, on the form included at the end of this Section, will be prepared by the Registered Design Professional.
- B. Required inspections and tests are described in the Schedule of Special Inspections and Tests attached to the end of this Section and in the individual specification sections for the items to be inspected or tested .

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used).

END OF SECTION 014100

ATTACHMENTS

SPECIAL INSPECTION NON-CONFORMANCE REPORT FORM

NYS ED STATEMENT OF SPECIAL INSPECTIONS AND TESTS

22 November 2023
Bid Documents

Katonah-Lewisboro Union Free School District
HVAC Upgrades
SED No. Increase Miller ES: 66-01-01-03-0-004-019
Meadow Pond ES: 66-01-01-03-0-007-018

SPECIAL INSPECTION NON-CONFORMANCE REPORT NO.

DATE:

TO: Registered Design Professional (RDP)
KG+D Architects, PC
285 Main St., Mount Kisco, NY 10549

CC: Contractor:

FROM: _____, Special Inspector

PROJECT: HVAC Upgrades to Increase Miller Elementary School and Meadow Pond
Elementary School for Katonah-Lewisboro School District

PART I: REFERENCE SPECIAL INSPECTION REPORT NO. _____.

(Attach copy of report.)

DESCRIPTION OF NON-CONFORMANCE:

RDP RESPONSE: (PROVIDE ATTACHMENTS IF NECESSARY)

RDP SIGNATURE _____ **DATE** _____

IS REINSPECTION BY SPECIAL INSPECTOR REQUIRED ☐ YES ☐ NO

PART II: CONTRACTOR VERIFICATION (To be completed by either the **[General Contractor or Construction Manager]** or Subcontractor and returned to the Special Inspector and the RDP.)

I verify that as of the date listed, the non-conforming item noted above has been corrected as required.

SIGNATURE _____ **DATE** _____

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Refer to Drawing PH-1 for additional requirements.

1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.

1.3 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
 - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
 - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with

water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

- D. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
1. HVAC system isolation schematic drawing.
 2. Location of proposed air-filtration system discharge.
 3. Waste handling procedures.
 4. Other dust-control measures.

1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Project Meeting Space: Project progress meetings will be held in the building at a location determined by the Owner.
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
1. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to campus system.
- C. Water Service: Connect to Owner's existing water service source. Install water service distribution piping in sizes and pressures adequate for construction. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Toilets: Use of Owner's existing toilet facilities will not be permitted
- E. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

- b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- F. Electric Power Service: Connect temporary service to Owner's existing power source, as directed by Owner. Provide separate metering. Provide electric power service distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 1. Install electric power service underground unless otherwise indicated.
- G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- H. Telephone Service: Provide telephone service for field office. If land-line telephone service is desired, arrange with Owner to have this service installed. Cost of installation and use of temporary telephone land-line service shall be borne by Contractor.
 1. Post a list of important telephone numbers in the field office including:
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Engineers' offices.
 - g. Owner's office.
 - h. Principal subcontractors' field and home offices.
 2. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.
- I. Electronic Communication Service:
 1. Internet Service: Contractor may not connect to the Owner's data network. Cost of the connection shall be borne by the Contractor.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Parking: Use Owner designated areas of existing parking lots for construction personnel; Contractor shall pay for parking at rate established by Owner
- C. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.
1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- D. Temporary Use of Permanent Roads and Paved Areas: Limit use of existing roads on campus to those designated by Owner as assigned construction route. Maintain roads in clean dust-free and dirt-free condition; clean roads of mud and debris caused by construction traffic.
- E. Traffic Controls: Provide traffic control signage of type approved by Owner to direct traffic at and around construction site. Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations.
- G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. Identification Signs: Provide Project identification signs to comply with JPEG files supplied by the Architect.
 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

- a. Provide temporary, directional signs for construction personnel and visitors.
- 3. Maintain and touchup signs so they are legible at all times
- H. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- I. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- J. Temporary Elevator Use: Not permitted.
- K. Temporary Stairs: Provide temporary stairs where ladders are not adequate.
- L. Temporary Use of Permanent Stairs: Use of existing interior stairs for construction traffic may be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion. Coordinate with Owner.
- M. Scaffolding: Provide scaffolding systems and/or lifts as required for the performance of the Work. Scaffolding shall not damage or scar building façade in any way.
- N. Cranes: All crane picks, material delivery, etc. must be coordinated so as not to lift over any occupied area of the building. If necessary, this work shall be done on off hours to ensure the safety of the building occupants. Crane location must be carefully chosen to ensure the safety of building occupants. Crane picks cannot be conducted during academic hours within 30' of an occupied building.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of Erosion and Sediment Control Drawings and specification in Division 31.
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- F. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- G. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- I. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- J. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
 2. Provide weatherproof, secure temporary enclosures for all window openings where windows have been removed.
- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise. Provide types of partitions approved by Owner in Owner occupied areas.

1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
 2. In areas where containment of airborne particles is critical to Owner operations, construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
 - a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
 3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 - a. Temporary partitions shall comply with NFPA 241
 4. Insulate partitions to control noise transmission to occupied areas.
 5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 6. Protect air-handling equipment.
 7. Provide walk-off mats at each entrance through temporary partition.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
1. Prohibit smoking in construction areas.
 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with Owner and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 015719 - ENVIRONMENTAL PROTECTION DURING CONSTRUCTION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Scope
- B. Applicable Regulations
- C. Notification
- D. Implementation
- E. Protection of Land Resources
- F. Recording and Preserving Historical and Archaeological Finds
- G. Protection of Water Resources
- H. Burning
- I. Dust and Mud Control
- J. Maintenance of Pollution Control Facilities During Construction

1.2 SCOPE

- A. The work covered by this section consists of furnishing all labor, material and equipment and performing all work required for the prevention of environmental pollution during and as the result of construction operations under this contract except for those measures set forth in other Technical Provisions of these specifications.

For the purpose of this specification environmental pollution is defined by regulatory authorities as the presence of chemical, physical or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and recreational purposes.

The control of environmental pollution requires consideration of air, water and land, and involves noise, solid waste-management and management of radiant energy and radioactive materials, as well as other pollutants.

- B. Compliance with the provisions of this section by all Subcontractors shall be the responsibility of the Contractor.

1.3 APPLICABLE REGULATIONS

- A. In order to provide for abatement and control of any environmental pollution arising from the construction activities of the Contractor and his subcontractors in the performance of this contract, they shall comply with all applicable Federal, State and local laws, and regulations concerning environmental pollution control and abatement as well as the specific requirements stated elsewhere in the contract specifications.

1.4 NOTIFICATION

- A. The Construction Manager will notify the Contractor in writing of any non-compliance with the foregoing provisions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Construction Manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost on account of any such stop orders shall be made the subject of a claim for extension of time or for extra costs or damages by the Contractor unless it was later determined that the Contractor was in compliance.

1.5 PROTECTION OF LAND RESOURCES

- A. It is intended that the land resources within the project boundaries and outside the limits of permanent work performed under this contract be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project. Insofar as possible, the Contractor shall confine his construction activities to areas defined by the plans or specifications.
- B. The following additional requirements are intended to supplement and clarify the requirements contained in the General Conditions.

The location on the project site of the Contractor's storage and other construction buildings, required temporarily in the performance of the work, shall be upon assigned portions of the job site and shall require written approval of the Construction Manager.

The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the overall construction of buildings.

Plans showing storage and office facilities shall be submitted for approval of the Construction Manager.

- C. If the Contractor proposes or is required to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least 21 days prior to scheduled start of such temporary work.
 - 1. A layout of all temporary access roads, excavations and embankments to be constructed with the work area.
 - 2. Plans and cross sections of proposed embankments and their foundations, including a description of proposed materials.

1.6 RECORDING AND PRESERVING HISTORICAL AND ARCHAEOLOGICAL FINDS

- A. All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved. The Contractor shall leave the archaeological find undisturbed and shall immediately report the find to the Construction Manager so that the proper authorities may be notified.

1.7 PROTECTION OF WATER RESOURCES

- A. The Contractor shall not pollute streams, lakes, reservoirs or public waters with fuels, oils, bitumens, calcium chloride, acids or harmful materials. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County and Municipal laws concerning pollution of surrounding public waters. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in public waters through or adjacent to the project areas.
- B. Prior to any major construction the Contractor shall submit a plan for approval by the Construction Manager showing his scheme for controlling erosion and disposing of waste.
- C. Surface drainage from cuts and fills within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall, if turbidity producing materials are present, be held in suitable sedimentation ponds or shall be graded to control erosion within acceptable limits.

Temporary erosion and sediment control measures such as berms, dikes, drains, or sedimentation basins, if required to meet the above standards, shall be provided until permanent drainage and erosion control facilities are completed and operative.

Fills and waste areas shall be constructed by selecting placement to eliminate silts or clays on the surface that will erode and contaminate adjacent public waters.

- D. At all times of the year, special measures shall be taken to prevent chemicals, fuels, oils, grease, bituminous materials, waste washings, herbicides and insecticides, and cement and surface drainage from entering public waters.
- E. Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to public waters shall be subject to the approval of the Construction Manager. If any waste material is dumped in unauthorized areas the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Construction Manager, refilled with clean material and compacted all at the expense of the Contractor.

1.8 BURNING

- A. Burning will not be permitted.

1.9 DUST AND MUD CONTROL

- A. The Contractor shall at all times provide adequate dust control measures. He shall accomplish this, without interference to the public and vehicular transportation.
- B. To control dust, it is required that all vehicles transporting dust producing materials to and from the job shall be covered with tarpaulins securely tied down, be sprinkled when necessary or be satisfactorily treated by other approved methods.
- C. Trucks leaving excavations shall be water washed prior to entry on access roads

or public streets to remove mud and other deleterious substances from wheels and undercarriages.

- D. All public and private ways adjacent to the site shall be broomed and flushed whenever necessary in the opinion of the Construction Manager. Drainage systems shall be cleaned and flushed whenever mud or debris hinders the flow of storm water to or in the sewers.
- E. The Contractor shall immediately remove refuse, rubbish, debris and soil accumulations on roads, streets and on sidewalks, caused by wind, rain and snow erosions or by his own operations to prevent traffic hazards or interference with road drainage.

1.10 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

- A. During the life of this contract the Contractor shall maintain all facilities constructed for pollution control under this contract as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created. During the construction period the Contractor shall conduct frequent training courses for his maintenance personnel. The curriculum shall include methods of detection of pollution, familiarity with pollution standards, and installation and care of vegetation covers, plants and other facilities to prevent and correct environmental pollution.

****End of Section****

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 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. Section 012300 "Alternates" for products selected under an alternate.
 - 2. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 3. Section 014200 "References" for applicable industry standards for products specified.

1.2 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.

1.3 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.

1.4 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.
- B. Mechanical Materials and Equipment: When two or more items of same material or equipment are required (pumps, valves, air conditioning units, etc.), they shall be of the same manufacturer. Product manufacturer uniformity does not apply to raw materials, bulk materials, pipe, tube, fittings (except flanged and grooved types), sheet metal, wire, steel bar stock, welding rods, solder, fasteners, motors for dissimilar equipment units, and similar items used in the work, except as otherwise indicated. Provide products which are compatible within systems and other connected items.
- C. Asbestos in Materials: All products submitted for use and incorporated into this project shall be asbestos free.
- D. Mercury-Free Products: All products submitted for use and incorporated into this Project shall be mercury-free. In the absence of mercury-free products, provide products with the lowest amount of mercury possible.
- E. Lead-Free Products: All products submitted for use and incorporated into this Project shall be lead-free. .

1.5 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.

1.6 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. Submit a draft for approval before final 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 "Project Closeout."

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.
 7. A named product and model number establishes the characteristics and salient features of the specifications even when they are not fully described and will serve as the basis of comparison.
 8. Whenever a material, article, device, piece of equipment or type of construction is identified by reference to manufacturers' or vendors' names, trade names, catalog numbers, or similar specific information, it is so identified for the purpose of establishing a standard of quality, and such identification shall not be construed as limiting competition. Comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product
- B. Product Selection Procedures:
1. Named Product: Where Specifications name a single manufacturer and product, and "no substitutions" is indicated, provide the named product. Comparable products or substitutions for Contractor's convenience will not be considered.
 2. Named Manufacturer/Source: Where Specifications name a single manufacturer or source and "no substitutions" is indicated, 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: 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: 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.
- 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. Evidence that the proposed product provides sustainable design characteristics that specified product provides for achieving LEED prerequisites and credits.
 3. Evidence that the proposed product will not adversely affect Contractor's construction schedule.
 4. Evidence that the proposed product has received necessary approvals of authorities having jurisdiction.
 5. Evidence that the proposed product will have no adverse effect on other trades and will not affect or delay progress schedule; or if proposed product involves more than one contractor, proposed product 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.
 6. Evidence that the proposed product maintenance service and source of replacement parts, as applicable, is available similar to the specified product.

7. 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.
8. Evidence that proposed product provides specified warranty.
9. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
10. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 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. Correction of the Work.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for limits on use of Project site.
 - 2. Section 013300 "Submittal Procedures" for submitting surveys.
 - 3. Section 017329 "Cutting and Patching" for cutting and patching portions of the building.
 - 4. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.2 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor.
- A. Final As-Built Survey of Underground Utilities: Submit two paper copies and one electronic (.pdf) file, signed by land surveyor.

1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. 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 site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services:
- B. Existing Utilities: 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.
- C. 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.
- D. 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.
- E. 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 and/or Owner as required, 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 according to requirements in Section 013100 "Project Management and Coordination."

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.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. 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.
- C. Final Survey for Underground Utilities: Engage a land surveyor to prepare a final survey of all utilities installed during the project, including all elevations and inverts.

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.
 - 4. Maintain minimum headroom clearance of 96 inches (2440 mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces without ceilings.
- B. Mechanical Installations: Comply with the following requirements:
 - 1. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
 - 2. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
 - 3. Install all equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.
- C. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- D. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

- E. 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.
- F. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- G. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- H. 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.
- I. 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.
- J. 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.
- K. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

- A. General: Clean Project site, public pedestrian paths 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 (27 deg C).
 - 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.
- 3.7 STARTING AND ADJUSTING
- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
 - C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.8 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 017329 – CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes procedural requirements for cutting and patching.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for limits on use of Project site.
 - 2. Section 024119 "Selective Structure Removal and Demolition" for demolition of selected portions of the site for alterations.
 - 3. Section 078413 "Penetration Firestopping" for patching penetrations in fire-rated construction.
- C. Coordinate cutting and patching requirements with selective demolition. Removal of portions of existing construction required for the installation or performance of other work may be indicated as selective demolition on the demolition drawings. Cut and patch all construction when not shown on the demolition drawings, or when additional cutting and patching is required after the completion of selective demolition.

1.2 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.3 INFORMATIONAL SUBMITTALS

- A. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
 - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 - 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

1.4 QUALITY ASSURANCE

- A. Minimize cutting and patching of work by properly coordinating construction sequences with Construction Manager.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Mechanical systems piping and ducts.
 - f. Control systems.
 - g. Communication systems.
 - h. Fire-detection and -alarm systems.
 - i. Conveying systems.
 - j. Electrical wiring systems.
 - k. Operating systems of special construction.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. Noise- and vibration-control elements and systems.
 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

- C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- D. 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 of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
 - 1. Cutting and Patching of Existing Roofing System: Contractors performing cutting and patching of the existing roof membrane shall be certified installers by the existing roof membrane manufacturer for their products. When existing roofing system is still under warranty, coordinate all work on the existing roofing system with manufacturer. All cutting and patching work on roofing system shall be performed in a manner that does not void the warranty.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 1000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

END OF SECTION 017329

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. 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.

1.2 DEFINITIONS

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 15 days of date established for commencement of the Work.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, and waste reduction work plan. Distinguish between demolition and construction waste.
- B. Waste Identification: Indicate anticipated types of demolition and construction waste generated by the Work.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

1. Construction Waste:

- a. Packaging: Salvage or recycle 100 percent of the following uncontaminated packaging materials:

- 1) Paper.
- 2) Cardboard.
- 3) Boxes.
- 4) Plastic sheet and film.
- 5) Polystyrene packaging.
- 6) Wood crates.
- 7) Wood pallets.
- 8) Plastic pails.

- b. Construction Office Waste: Salvage or recycle 100 percent of the following construction office waste materials:
 - 1) Paper.
 - 2) Aluminum cans.
 - 3) Glass containers.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
 - 2. Review waste management procedures with all entities when they first begin work on-site, including locations established for salvage, recycling, and disposal.
- B. 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 and recycled.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 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. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.
 - 2. Section 017300 "Execution" for progress cleaning of Project site.
 - 3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 4. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 5. Section 017900 "Demonstration and Training" for requirements for instructing Owner's personnel.

1.2 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

- B. Attic stock in the required amount/percentage shall be turned over to the Owner immediately after the first delivery of the material is received on the site, not at the end of the project.

1.5 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.
 - 7. Submit fully executed Certification of Drawings and Specification Compliance form included at the end of this Section.
- 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. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
 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: Submit a written request for inspection to determine Substantial Completion 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 and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. 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. Architect will perform inspection in areas no smaller than a floor plate. Inspection of individual rooms or spaces will not be performed.
 2. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - a. Reinspection Limits: The Architect and Construction Manager are limited to performing the original inspection and two reinspections of the same area as part of their services. The cost of any reinspections required beyond this amount will be borne by the Contractor. Contractor shall reimburse Owner for reinspection fees paid to the Architect and/or Construction Manager through a credit change order in the amount stipulated by the Owner
 3. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. 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.
 2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

3. 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 and Construction Manager 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.

a. Reinspection Limits: The Architect and Construction Manager are limited to performing the original inspection and two reinspections of the same area as part of their services. The cost of any reinspections required beyond this amount will be borne by the Contractor. Contractor shall reimburse Owner for reinspection fees paid to the Architect and/or Construction Manager through a credit change order in the amount stipulated by the Owner

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

3. Include the following information at the top of each page:

- a. Project name.
- b. Date.
- c. Name of Architect.
- d. Name of Contractor.
- e. Page number.

4. Submit list of incomplete items in the following format:

a. MS Excel electronic file. Architect will return annotated file.

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. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. 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 (215-by-280-mm) 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.
 - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. 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.
 - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

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. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. 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.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - 1) Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.
 - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

- D. 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 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.
 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

Attachment: Certification of Drawing and Specification Compliance form

CERTIFICATION OF DRAWING AND SPECIFICATION COMPLIANCE

The Undersigned Prime Contractor does herein certify that:

1. All materials furnished for this project do fully comply with all specification requirements as stated within the Contract Documents;
2. That no asbestos containing materials of any nature are used in the work;
3. That execution of the Work covered by this certification has been performed in accordance with the Contract Document drawings.

CONTRACT NUMBER AND CONTRACT NAME: _____

NAME OF CONTRACTOR: _____

CERTIFICATION BY: _____ TITLE: _____

ADDRESS: _____

DATED: _____

CORPORATE ACKNOWLEDGEMENT

)SS.
)

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____ that he is the officer of the said corporation executing the foregoing instrument, that he knows the seal of said corporation, that the seal affixed to said instrument is such corporate seal, that it was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

Notary Public

INDIVIDUAL ACKNOWLEDGEMENT

State of

)SS.
)

County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____

_____ that he is the individual who executed the foregoing instrument.

Notary Public

PARTNERSHIP ACKNOWLEDGEMENT

State of

)SS.
)

County of

On the _____ day of _____, before me came _____ to
me known and who by me being duly sworn did depose and say that he resides at
_____ that he is the partner in the firm of
_____ doing business under the name of
_____ and that he executed the foregoing instrument on behalf of
said partnership.

Notary Public

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Product maintenance manuals.
 - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.2 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.

1.3 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 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 complete with Table of Contents and book marked by equipment. 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 60 days before commencing demonstration and training. Architect 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 30 days before commencing demonstration and training. Architect will return copy with comments.
 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect'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 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of

equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Architect.
7. Name and contact information for Commissioning Authority.
8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
 1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.

5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.4 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.

2.5 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.

2.6 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. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. 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. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. 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.
- E. 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.

- F. 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 Section 017839 "Project Record Documents."
- G. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous Record Submittals.
- B. Related Requirements:
 - 1. Section 017300 "Execution" for final property survey.
 - 2. Section 017700 "Closeout Procedures" for general closeout procedures.
 - 3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Submit PDF electronic files of scanned record prints and one set of prints.
- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.
- E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record ("As- Built") Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding archive photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Field Order.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
7. Format: Submit PDF electronic files of scanned record prints and one set of prints.
 - a. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - b. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 - c. Identification: As follows:
 - 1) Project name.
 - 2) Date.
 - 3) Designation "PROJECT RECORD DRAWINGS."
 - 4) Name of Architect
 - 5) Name of Contractor.
- B. Record Digital Data Files: In addition to submitting paper Record Drawings, transfer information to electronic CAD drawings in .DXF format and prepare set of digital record drawings. Architect will supply a set of base electronic drawings for Contractor's use. Submit electronic Record Drawings to Owner in same manner as paper Record Drawings.
- C. The following certification shall appear on all Record Drawings: "These record drawings prepared by _____ for the following work _____ have been reviewed by the undersigned and appear to be an accurate representation of the work incorporated within the project and are accepted as submitted in accordance with the technical documents. This record document review made by this office is for determination of compliance with the requirements of the contract documents.
Firm Name: _____ Date: _____ Reviewer Name: _____ I
- D. If the Construction Manager or Architect determines the Record Drawings are not complete or contain inaccurate information, they will return the documents to the Contractor for correction and resubmission.
- E. Final payment will not be made to Contractor until complete and accurate Record Drawings both on paper and electronic media have been received and accepted by Owner.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 5. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file or scanned PDF electronic file(s) of marked-up paper copy of Product Data.
1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file or scanned PDF electronic file(s) of marked-up miscellaneous record submittals.
1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's and Construction Manager's reference during normal working hours.

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.

1.2 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. Attendance Record: For each training module, submit list of participants and length of instruction time.
- C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.3 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 Contractor.
 - e. Date of video recording.

1.4 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- B. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- C. Preinstruction 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.

1.5 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 has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 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 has 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. Operations manuals.
 - c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. 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.

PART 3 - EXECUTION

3.1 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.

3.2 INSTRUCTION

- A. 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.

- B. 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 Architect, with at least seven days' advance notice.
- C. 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.
- D. Provide operating and maintenance instruction to Owner's personnel for systems and components as indicated in individual Specification Sections. Provide instruction periods, comprised of approximately 50 percent classroom instruction and 50 percent "hands-on" instruction.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids.
- B. Video: Provide minimum 640 x 480 video resolution converted to .mp4 format file type, on electronic media.
 - 1. Electronic Media: CD ROM or thumb drive, with computer made label.
 - 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 upon 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 DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:
 - a. Name of Contractor/Installer.
 - b. Business address.
 - c. Business phone number.
 - d. Point of contact.
 - e. E-mail 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.
 - 2. Produce segments to present a single significant piece of equipment per segment.
 - 3. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.

4. 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. Furnish additional portable lighting as required.
- E. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 017900

SECTION 230100 - GENERAL CONDITIONS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 GENERAL CONDITIONS

- A. Before submitting a proposal, Bidders shall examine all related to this work and shall become fully informed as to the extent and character of the work required and its relation to the other work in the building.
- B. Before commencing work, the Contractor will examine all conditions of the project upon which his work is in any way dependent for perfect workmanship according to the intent of this Specification. No "waiver of responsibility" for incomplete, inadequate or defective adjoining work will be considered unless notice has been filed by this Contractor and acceded to by the Owner's representative in writing before the Contractor begins any part of the work.
- C. The Contractor will pay for all licenses, permits and inspection fees required by civil authorities having jurisdiction. Comply with all laws, ordinances, regulations, and fire underwriter's requirements applicable to work herein specified without additional expense to the Owner.
- D. Small scale drilling through walls and floors or cutting of piping insulation which may contain asbestos shall be performed by a person with a "restricted asbestos handler allied trades certificate" and shall have a copy of it in his possession at all times while working of the project. This shall also apply to removal of piping, ductwork or equipment insulation.
- E. It is specifically intended that anything (whether material or labor), which is usually furnished as a part of such equipment, as is hereinafter called for (and which is necessary for the completion and proper operation) shall be furnished as part of this Contract without additional cost the Owner, whether or not shown in detail or described in the Specifications.
- F. When Drawings and Specifications conflict or there is a question as to the proper intent of this Contract, the Contractor shall assume the greater quantity, the higher quality and/or the more expensive method in his pricing. All questions shall be directed to the Architect/Engineer in writing only and only up to ten (10) days prior to bidding.
- G. The Drawings indicate the general runs of the piping, ductwork, etc. systems and the location of equipment and apparatus, however it shall be understood that the right is reserved by the Architect/Engineer to change the location of piping work, ductwork, equipment and apparatus to a reasonable extent as building conditions may dictate, prior to their installation without extra cost to the Owner.

- H. All components supplied by this Contractor shall be UL listed and/or ETL labeled and shall conform to ASHRAE Standard 15.
- I. Any changes from the Drawings and Specifications and any interpretation thereof shall have the prior approval of the Architect/Engineer. The Contractor shall submit in writing, at the time of signing the Contract, any items of necessary labor and materials, which, in his opinion, are lacking in requirements of the Drawings and Specifications to insure a complete job in all respects. No consideration will be granted to alleged misunderstanding of materials to be furnished, work to be done, or conditions to be complied with, it being understood that the tender of a proposal carries with it the agreement to all items and conditions referred to herein, or indicated on the accompanying Drawings.

END OF SECTION 230100

SECTION 230110 - SCOPE OF WORK

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 SCOPE OF WORK

- A. The work under this section includes all labor, materials, equipment, tools, transportation, and the performance of all work necessary and required for the furnishing and installation complete of all work as shown on the Contract Documents, including but not necessarily limited to the following:
1. Rooftop HVAC units and related appurtenances.
 2. Roof mounted condensing units.
 3. Air handling units and related appurtenances.
 4. All required piping, valves and related specialties.
 5. Sheetmetal ductwork and related accessories.
 6. Duct and pipe insulation.
 7. Rigging of equipment.
 8. Furnish all combination motor starter/disconnects for equipment (with the exception of starters and electric items already mounted on equipment or equipment not requiring same). Fan motor starter/disconnects shall have contacts for ATC connection and a terminal block connection for Fire Alarm fan shutdown. Starters per manufacturers recommendations. Underwriters inspection and certificate required. Coordinate with Electrical Contractor.
 9. Air & Water Balancing.
 10. Automatic temperature controls with complete wiring (regardless of voltage).
 11. Testing, adjusting and start-up of equipment.
 12. Painting and identification of all equipment and piping.
 13. Firestopping per NFPA requirements (UL approved systems).
 14. Operating and maintenance instructions.

- 15. As-Built Drawings - Refer to Division 1.
- 16. Cutting and Patching - Refer to Division 1.
- 17. Excavation and Backfill - Refer to Division 2.

1.2 REMOVALS

- A. Removals should be coordinated with other trades affected.
- B. Removal of any piece of equipment or terminal device shall include removal of connecting ductwork and piping back to existing mains that remain. Cap each branch air/water-tight. Controls and control components shall also be removed. Do not leave components (controllers, pneumatics, etc.) that have no function. Provide control wiring, ductwork, piping, etc. as necessary to maintain continuity of service for equipment or terminal devices to remain.
- C. Piping which penetrates the construction may be cut and capped provided capping is done beneath the finished surfaces so that construction over it can be achieved.
- D. All removals shall be removed from the site.

1.3 ALTERATION WORK

- A. All equipment, piping, control components, etc. to be removed, shall be disposed of or salvaged as directed by the Owner. They shall not be removed from the premises without the Owner's approval.
- B. All piping to be removed shall be properly plugged or capped so that upon completion of all new work, all abandoned piping shall be concealed in finished areas.
- C. No dead ends shall be left on any piping upon completion of job. The existing system shall be left in perfect working order upon completion of new work.
- D. Location and sizes of existing piping, ductwork, equipment, etc. are approximate. Exact sizes and locations of all existing work shall be verified on the job.

END OF SECTION 230110

SECTION 230210 – ROOFTOP AIR HANDLING UNITS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 WORK INCLUDED

- A. This specification is based on an Energy Recovery model as manufactured by Annexair Inc.
- B. All units shall be factory assembled, internally wired, and 100% run tested to check operation, fan/blower rotation and control sequence before leaving the factory. Wiring internal to the unit shall be numbered for simplified identification. Units shall be ETL listed and labeled, classified in accordance with ANSI-UL 1995 / CAN/CSA C22.2 No.236.
- C. Equipment start-up and project inspection by qualified factory trained representative.

1.2 QUALITY ASSURANCE

- A. All unit(s) shall be factory run tested before shipping.
- B. Electrical components shall be UL listed.
- C. Fans shall be tested in an AMCA equivalent laboratory.
- D. Housing insulation shall comply with NFPA 90A.
- E. Coils shall be tested in accordance to AHRI 410.
- F. Energy recovery exchangers shall be tested in accordance to AHRI 1060, "Rating Air-to-Air Energy Recovery Equipment" and Eurovent standards.
- G. Filters shall be tested in accordance to ASHRAE 52.2.

1.3 SUBMITTALS

- A. Submit product data under provisions of Section XXXXX. Include product description, model, dimensions, component sizes, rough-in requirements, service sizes, and finishes. Include rated capacities, operating weights, furnished specialties, and accessories.
- B. Submit coordination drawings. Include unit details, plans, elevations, sections, details of components.
- C. Show support locations, type of support, weight and required clearances.
- D. Submit wiring diagrams including power, signal, and control wiring.

1.4 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.5 WARRANTY

- A. Annexair Inc. (hereinafter referred to as "Annexair") warrants products manufactured by it to be free of defects in material and workmanship under normal use and service for a period of twelve (12) months from start-up or eighteen (18) months from the date of invoice, whichever occurs first. Annexair's obligation under this warranty is limited to repair or replace of any part(s) of Annexair unit's which after Annexair's examination shall disclose to its satisfaction to have been defective.
- B. This warranty does not cover labor, diagnosing (troubleshooting), premium for overtime, transportation, or any other costs associated with removal or replacement of defective part(s) covered under this warranty. The replacement of a second failure of the same part will not be covered under any circumstance for this standard and all extended warranties.
- C. Annexair considers equipment original start-up when the unit and/or fans are started for operation regardless of: -when the building may be ready for operation, -duct work not yet completed, -building management system (BMS) not yet completed, -unit balancing not yet completed.
- D. The installing contractor must be responsible for warranty service and maintenance after the equipment is placed into operation.

1.6 REFERENCES

- A. All components selected for this project shall conform to the following Standards:
 - 1. AFBMA 9: Load Ratings and Fatigue Life for Ball Bearings
 - 2. AMCA Standard 99: Standards Handbook
 - 3. AMCA /ANSI Standard 204: Balance Quality and Vibration Levels for Fans
 - 4. AMCA Standard 210: Laboratory Methods of Testing Fans for Ratings
 - 5. AMCA Standard 300: Reverberant Room Method for Sound Testing of Fans
 - 6. AMCA 320; Laboratory Method for Sound Testing of Fans Using Sound Intensity
 - 7. AMCA Standard 500: Test Methods for Louvers, Dampers and Shutters
 - 8. AHRI Standard 1060: Air-to-Air Energy Recovery Ventilation Equipment
 - 9. AHRI Standard 410: Forced-Circulation Air-Cooling and Air-Heating Coil

10. AHRI Standard 1350: Mechanical Performance Rating of Central Station Air-handling Unit Casings
11. ASHRAE Standard 52: Gravimetric and Dust Spot Procedures for Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter
12. ASHRAE 52.2: Procedures for Testing Air Cleaning Devices Used for Removing Particulate Matter
13. ASHRAE 84-91: Method of Testing Air-to-Air Heat Exchangers
14. ASHRAE/ANSI Standard 111: Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems
15. ASTM A-525: Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
16. NEMA MG-1: National Electrical Manufacturers Association Motor Standards
17. NFPA 90A: Standard for the Installation of Air Conditioning and Ventilating Systems
18. SMACNA: Sheet Metal and Air Conditioning Contractors National Association
19. UL Standard 1995: Heating and Cooling Equipment
20. UL Standard 900: Test Performance of Air Filter Units

1.7 COORDINATION

- A. Coordinate location and installation of air-handling units. Revise locations and elevations to suit field conditions and to ensure proper operation.
- B. Coordinate location and installation of air handling units with the electrical, mechanical, and plumbing contractors.

PART 2 – PRODUCTS

2.1 HOUSING

A. BIO-COMPOSITE

1. The unit housing shall be fabricated from BIOSOURCED Engineered Composite, which is 100% metal free and sandwiched with a 100% recycled High-Performance GREEN foam insulation. The sandwich panel shall be bonded together with an organic, BIOSOURCED fire-resistant resin, that has no environmental impact or health hazard to humans. The panels shall be used for the base floor, walls and roof.

2. All panels shall be tested in accordance with AHRI 1350 to have a deflection rating of no more than L/1400 (Casing Deflection Rating Class CD1); 0.5% leakage rate at 10" (Casing Air Leakage rating Class 2, for one piece construction); and a Thermal Bridging rating of no lower than 0.86 (Thermal Bridging rating Class CB1).
3. Unit construction shall be certified for wind and seismic conditions, per the requirements of 2018 International Building code and ASCE 7-16. The test results shall be certified to seismic site class D and wind speed conditions of 195 mph (Miami-Dade County, FL).
4. Unit housing shall have no exterior condensation at interior AHU temperatures down to 42.5F while unit exterior conditions are maintained at 95 F dry bulb / 85 F wet bulb.
5. Fire resistance of the panel shall be in compliance with UL 94; and a flame spread / smoke development in compliance with UL 723 ASTM E84 Class 1 rating.
6. The housing assembly shall be screwless monocoque construction. The interior shall allow for easy wash down cleaning, reducing the possibility of dirt accumulation and improve Indoor Air Quality .
7. Unit housing shall have NO thermal bridging material from interior to exterior, avoiding any condensation that can lead to premature corrosion; as seen with conventional metal units.
8. The walls and roof panels shall be all 2" double wall with 1/8" BIOSOURCED Engineered Composite, reinforced glass-fiber on both sides of panel, and insulated with a High- Performance GREEN foam insulation that is made from 100% recycled content, produced in an eco-friendly manner without using CFCs or HCFCs. The U-value of the sandwich panel shall be 0.0714 (R-14 minimum).
9. The base floor structure shall be constructed in the same process as the walls and roof. The base floor shall be 4" thick, depending on the unit size, with a U-value of 0.0357 (R-28). The floor shall be constructed from a single piece structure that allows for superior rigidity and minimal deflection. There shall be no metal structural support used in the base design of the unit.
10. Each floor compartment shall be additionally sealed, for Hygienic purposes, with a self levelling 1/8" fire retardant epoxy to guarantee no leakage between compartments. The outdoor air compartment shall have a 1.25" FPT ABS floor drain, flush mounted to unit base exterior. All bottom duct openings shall be covered with 1" fiberglass walkable molded gratings, with a 1" upturn collar around the perimeter of the opening. OPTIONS for Anti slip: None
11. All access doors shall be thermally broken and constructed from the same material and thickness as the housing panels. The access door frame shall have no thermal bridging and shall be made from UV-resistant Acrylonitrile Styrene Acrylate (ASA), that provides superior resistance to outdoor weathering. Access doors shall be flush mounted to the housing with rounded corners and full depth 45 degree chamfer frame.

The frame shall have a dual staged EPDM gasket, providing a superior air tightness when the door is compressed to the frame. Each access door shall contain one dual-function lockable compression latch and handle; operable from inside and outside. The access door and frame shall have a piano hinge design with a stainless steel pin rod, allowing the door to open 180 degrees.

12. All outdoor units shall have an additional domed single piece roof, with no seams, glass fiber reinforced liner with integrated rain gutters on all sides, assuring a clean exterior wall surface except units with airflow lower than 4200 CFM which are equipped with flat roof type.
13. Unit housing shall be completely protected against weatherization, Annexair color Pantone Cool Gray 1C. Protection shall pass ASTM B117 3000-hour salt fog resistance test and ASTM D4585 3000-hour moisture condensation resistance test.
14. Outdoor units that will be installed on a roof curb, shall come standard with underside, perimeter-based gasket (field installed).

B. WEATHER HOODS

1. The outdoor intake weather hood shall be completely constructed in aluminum for superior corrosion resistance. The hood shall ship loose for field installation by the installing contractor. Painted galvanized hoods shall not be acceptable due to its susceptibility to corrosion. The outdoor air hood shall be designed with a 4" extruded aluminum louver, bird screen and a plenum enclosure with drain holes. The louver blades shall be drainable type with a maximum 40 degree angle with integral rain baffle. The louver design shall not allow more than 0.01 oz/ft² water penetration when tested in accordance to AMCA 500. The pressure drop of the complete hood assembly shall not exceed 0.1"wc at a maximum 500 fpm face velocity.

C. EXHAUST AIR LOUVER

1. The exhaust air outlet louvers shall be 2" extruded aluminum, with non-restricting blade design and bird screen.

2.2 ENERGY RECOVERY WHEEL

A. ENTHALPY WHEEL (SILICA GEL (Sorption))

1. The enthalpy wheel shall recover both sensible and latent heat.
2. The wheel ratings shall be in accordance to AHRI 1060.
3. The matrix shall be a minimum of 8" thick to achieve optimal performance and be constructed from a corrugated aluminum alloy. The corrugation shall be uniform to obtain minimum pressure drops through the wheel.
4. All wheels will be one piece construction standard up to 85" diameter (size 12), and segmented construction above 96" diameter (size 16).

5. Wheels with varying flute sizes are not acceptable. Wheels with non-metallic matrices will not be considered for this application.
6. The media shall be specifically treated and coated with Silica gel desiccant to assist and enhance latent heat transfer.
7. The wheel bearing shall be permanently sealed, and press fitted into the wheel hub for wheel sizes up to 96" diameter, and greaseable bearings for larger than 96" diameter.
8. The seal shall be made from a dual band ultra-high molecular weight polyethylene and be self-lubricating, wear resistant, and airtight against prolonged use. Seals shall be full contact compression type, on both sides of the wheel to ensure minimal leakage. Specially designed stainless steel clips are used to position the seal across the face of the wheel. Any seal that is non-contact is not to be considered a seal and will not be acceptable. Labyrinth type seals do not operate properly under different air stream pressures therefore shall not be acceptable in any circumstances.
9. Drive system shall be operated by a fractional horsepower TEBC motor (maximum 1 HP), VFD micro drive, pulley and V-belt. Belts shall be made of multi-link high-tech urethane/polyester composite. An access panel shall be provided for maintenance on the drive system.
10. A double purge sector ($2 \times 5^\circ$) shall be factory installed to reduce cross contamination to under 0.04%.
11. Frost control prevention shall be provided by the unit manufacturer and accounted for if outdoor air temperatures are below 10°F at equal airflows and return relative humidity below 30%. Frost control shall be accomplished by a variable speed drive and controlling the leaving air condition of the exhaust air. Other methods of frost control will not be considered for this application.
12. Wheel speed shall not rotate faster than 20 RPM (min 0.7rpm). Any rotational speed above 20 RPM will be unacceptable since this will reduce the efficiency of the purge section.
13. Media cleaning shall be accomplished with any of the following methods: compressed air, low pressure steam, hot water or light detergent without degrading the latent recovery.
14. The wheel cassette shall be made of corrosion resistance Thermo Composite panels with aluminum frame.

2.3 FANS

A. EC-SPIDER FANS WITH PM MOTOR AND SPEED CONTROLLER (ANNEXAIR)

1. Fans shall be direct drive with non-obstructive air intake and externally mounted motor. Fans shall be compact, optimized and construction made of aluminum with 7-blade airfoil geometry protected by an epoxy powder coating.
2. To reduce vibration, the impeller shall be balanced to an admissible vibration severity of less than 3.8 mm/s (0.15in/s). Tests shall be made according to ANSI/AMCA Standard 204-05 Fan Application Category for balance and vibration: HVAC BV-3, Balance Quality Grade for rigid Rotors / Impeller: G6.3.
3. The fan and motor assembly shall be directly wall mounted without isolation.
4. Fans will require to be operated by a speed controller per fan bank .
5. Option for ONE SPEED CONTROLLER PER FAN: Each fan shall be provided w/ Backdraft Isolation damper at the event of a fan failure.
6. The permanent magnet motors shall have high efficiencies (up to 93%+controller) with low noise, low vibration output, compact design, longer life, increased torque at start, reduced heat losses and reduced friction between components.
7. The motor should be able to operate between -40F and +120F ambient temperature.
8. Dust and humidity protection should be IP54.
9. An insulated shaft-rotor kit will be provided to reduce shaft voltage electrical damage to motor bearings.
10. Speed controller will be used to set or regulate the fan speed and airflow for these units.
11. The speed controller shall be capable of controlling an IPM (Internal Permanent Magnet) motor to 400Hz. An auto-tuning system shall provide the ability to drive any IPM motors.
12. The efficiency of the speed controller at 100% speed and load shall not be less than 95%.
13. There shall be a regenerative avoidance function to minimize the effect of opposite rotation of another fan within the same duct and have Out-of-Range warning system to detect any potential mechanical problems.
14. The speed controller shall have momentary power-loss ride-thru capability.
15. The speed controller shall incorporate PID and Dual PID for process controls such as flow rate, air volume, or pressure.

16. The input power section shall utilize a full wave 6-pulse bridge design incorporating diode rectifiers. The diode rectifiers shall convert AC line power of fixed voltage and frequency to fixed DC voltage. This power section shall be insensitive to phase sequence of the AC line voltage.
17. The output power section shall change fixed DC voltage to adjustable frequency AC voltage. This section shall utilize insulated gate bipolar transistors (IGBT's).
18. The speed controller includes 3 sets of user adjustable skip frequencies and choice of 0-5Vdc, 0-10Vdc or 4-20mA speed reference for input and output.
19. The speed controller shall incorporate a dedicated USB port for programming.
20. The speed controller will have PWM control, RS-485 / Modbus RTU & carrier frequency up-to 14.5 KHz.
21. Control logic terminals shall be of the clamp / vibration resistant type.
22. The speed controller shall incorporate a radio filter capable of meeting product standard EN61800-3 for Second (2nd) Environment.
23. The speed controller shall have built-in PLC capable of 6k steps.
24. Speed controller shall be installed as shown on drawings with contactors, relays, and all specified accessories.

2.4 FILTERS (DAFCO FILTERATION GROUP)

A. ALUMINUM MESH FILTERS (2" depth)

1. Filters shall be factory installed where shown on the drawings.
2. The filters shall be Filtration Group Lifelong Filters series.
3. Media shall be made of Aluminum to be rust proof and corrosion resistant.
4. An upstream and downstream expanded aluminum mesh to be used to prevent media blowout.
5. Filters should be easily removable and washable.
6. Filter shall have a low initial pressure drop that shall not exceed 0.16" w.g. in 2" at 300 fpm air flow.
7. Filters shall be placed in a completely sealed, aluminum (BIO units only) holding frame.

B. FINAL-FILTERS (*SERIES 1300 4" MERV 13*)

1. Filters shall be factory installed where shown on the drawings.
2. The air filters shall be Filtration Group High Capacity Series 1300 MERV 13.
3. Each filter consists of 100% synthetic media that does not support microbial growth.
4. Frame shall be a heavy duty, high strength, moisture resistant paperboard with cross member design that increases filter rigidity and prevents breaching. Frame shall be recyclable.
5. Filters shall have a 100% post-consumer recycled expanded metal support grid bonded to the air-exiting side of the filter to maintain pleat uniformity and prevent fluttering. Metal support grid shall be recyclable.
6. MERV 13 model High Capacity Series 1300 filters, are classified to UL 900 and tested in accordance with the ASHRAE test 52.2.
7. Filter shall have a low initial pressure drop that shall not exceed 0.36" w.g. in 2" at 500 fpm air flow, and 0.23" in 4" at 500 fpm air flow. Filters shall have a recommended final resistance of 1.0" w.g.
8. Filters shall be rated to withstand a continuous operating temperature up to 150°F.
9. Filters shall be placed in a completely sealed, aluminum (BIO units only) holding frame with quick release latches for easy replacement.

2.5 DAMPERS

A. AIR FOIL CONTROL DAMPER (TAMCO SERIES 1000)

1. Dampers shall be installed where shown on the drawings.
2. Dampers shall be low leak type (Leakage Class 1A at 1 in. w.g. (0.25 kPa) static pressure differential).
3. Blades are maximum 6" deep extruded aluminum air-foil profiles. All blades are symmetrically pivoted. Galvanized dampers will not be acceptable.
4. Blade seals are extruded EPDM. Frame seals are extruded silicone. Seals are secured in an integral slot within the aluminum extrusions. Blade and frame seals are mechanically fastened to prevent shrinkage and movement over the life of the damper.
5. Dampers shall be opposed blade type and installed in the compartments (as shown on the drawings) with linkage rod for actuators, unless otherwise noted.

6. Actuators shall be 24V factory installed.
 - a. All actuators shall have spring return mechanism and auxiliary switches. Dampers will be installed in the failed close positions unless otherwise noted.

2.6 COILS

A. DX COILS

1. Coils shall be factory installed in the unit.
2. Coils shall be designed with respective circuits to match the design requirements. All coils shall have a distributor per circuit connection. Coils shall be circuited for counter-flow heat transfer to provide maximum mean effective temperature difference for maximum heat transfer rates.
3. Primary surface shall be round seamless 3/8" O.D. copper tube with wall thickness as specified on performance sheet. Secondary surface shall consist of a minimum 0.006" lanced aluminum plate fins for higher capacity and structural strength. Fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates. Headers shall have intruded tube holes to provide a large brazing surface for maximum strength and inherent flexibility.
4. Casing shall be constructed of continuous galvanized steel.
5. Coils are to be pressurized and then completely submerged in warm water containing special wetting and final cleaning agents for leak testing and tested with a minimum of 650 psi air pressure. Maximum finned height shall be 60" and shall not exceed 500 FPM face velocity.
6. Drain pan shall be provided on cooling coils. Cooling coils shall sit on stainless steel support rails, which shall stand a minimum of (2) two inches above the highest point of the floor drain pan. Coils finned height greater than 60" or coils that are stacked, shall include intermediate drain pans. Drain pans shall be 316 stainless steel with 1.25" MPT stainless steel drain connections on one side only. Pan shall be sloped in three planes.
7. No coating
8. Provide Hot Gas reheat.

B. Hot Water Coil:

1. Aluminum plate fins on copper tubing.
2. Heat Control: Operated by 0 to 10 V signal activated by unit's main controller.
3. Frost Protection Sensor: Activates alarm if frost occurs.

2.7 POWER AND SAFETY CONTROL

- A. The power and control center shall be integral to the unit housing and rated equivalent to NEMA 4X.
- B. Under no circumstances shall any wiring or parts be field installed. If units show up at the job site without wiring by the manufacturer, the contractor will have to send back units to the manufacturer at the contractors' expense to get them factory wired and re-tested.
- C. Panels that are externally mounted to the unit shall not be accepted, regardless of the NEMA rating they may have.
- D. Each panel should have a separate access door with an approved locking device.
- E. All electrical components contained in the panel shall be UL/CSA certified and labeled. The unit shall be complete with VFDs, fuses, relays, phase protection, terminals for main ON/OFF and step-down transformer. All components shall be factory wired for single point power connection by the manufacturer of the unit. A non-fused safety disconnect switch shall be factory installed for ON/OFF servicing. Please refer to electrical wiring diagrams for field power connections.
- F. An electrical pipe chase for power and control feeding shall be provided next to the control panel.
- G. The Short Circuit Current Rating (SCCR) is 5 KA (208/460 V) rms symmetrical, as noted on schedule.
- H. GFI (120 V/1), lights, and switches shall be factory installed and wired to a common junction box, powered by unit transformer.

IMPORTANT NOTICE: If unit ships in modules, units will be wired and tested at the factory, then the component wiring will be recoiled back to the main electrical / control panel.

IMPORTANT NOTICE: If unit ships in modules, air leakage test can be done only on one module if it has at least 75% or more of the whole casing in order to have a reasonable result. Complete unit air leakage test can be done in field after full assembly by a third party.

IMPORTANT NOTICE: If VFD's are provided by others and are to be factory mounted and wired by Annexair, Annexair will test the VFD in by-pass mode (if applicable); however will not be responsible for programming the drives.

IMPORTANT NOTICE: If DDC controls are to be provided by others and are to be factory mounted, Annexair will physically mount the DDC in the control panel and will not be held responsible for the programming and wiring of the DDC.

IMPORTANT NOTICE: For WSHP units, piping thru the casing wall or thru a pipe chase to connect to the coaxial coil will be the responsibility of the installing contractor.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine ducts, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for piping systems to verify actual locations of piping connections before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install Air Handling Unit per manufacturers' instructions.
- B. Install with required clearance for service and maintenance.

3.3 TESTING

- A. System verification testing is part of the commissioning process. Verification testing shall be performed by the Contractor and witnessed and documented by the Commissioning Authority.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field- assembled components and equipment installation, including piping and electrical connections. Report results in writing.
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove malfunctioning units, replace with new units, and retest.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.4 TRAINING

- A. Training of the Owner's operation and maintenance personnel is required in cooperation with the Commissioning Authority. Provide competent, factory-authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems. The instruction shall be scheduled in coordination with the Commissioning Authority after submission and approval of formal training plans.

- B. Contact Annexair to request pricing to include factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain humidifiers.
1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.
 2. Review data in maintenance manuals. Refer to Division 1 Section "Contract Closeout."
 3. Review data in maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."
 4. Schedule training with Owner, through Architect, with at least seven days advance notice.

END OF SECTION 230210

SECTION 230266 - VARIABLE REFRIGERANT FLOW OUTDOOR UNITS

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 SYSTEM DESCRIPTION

- A. Indoor units or outdoor air handling units are matched with heat pump or heat recovery VRF (variable refrigerant flow) outdoor unit.

1.2 DELIVERY, STORAGE AND HANDLING

- A. Unit shall be ETL listed and certified to UL 1995 4th edition standard.

PART 2 - PRODUCTS

2.1 HEAT RECOVERY AND HEAT PUMP SYSTEMS

A. Product Design

1. LG Multi V heating and cooling system shall be an air cooled system allowing user to configure in the field a heat pump or a heat recovery system consisting of one to three outdoor unit modules, conjoined to make a 2-5 ton single refrigerant circuit for the Multi V S system, and 6-42 single refrigerant circuit for the Multi V 5 system.
 - a. Heat pump systems shall require two pipes, simultaneous heating and cooling shall not be supported. The heat recovery system shall consist of three pipes, liquid, suction and hot gas pipes. Heat recovery systems operating at 0°F that cannot deliver single phase superheated refrigerant vapor at a minimum of 162°F while operating in the heating mode shall not be acceptable.
2. All three-phase VRF heat pump and heat recovery outdoor units shall be from the same product development generation. Mixing of outdoor units from different development generations is not acceptable.

B. Operating Conditions

1. Outdoor Unit shall be capable of continuous compressor operation between the following operating ambient air conditions, operation outside of these conditions are possible and may involve non-continuous operations.
2. Operating Ambient Air Conditions
 - a. Cooling: 5°F DB to 122°F DB (With optional low ambient kit from -9.9°F DB to 122°F DB)

- b. Heating: -22°F WB to 61°F WB
- c. Cooling Based (ODU reversing valve in cooling position) Synchronous: 14°F DB to 81°F DB (Heat Recovery Operation Only)
- d. Heating Based (ODU reversing valve in heating position) Synchronous: 14°F WB to 61°F WB (Heat Recovery Operation Only)

C. Electrical

- 1. All air source heat pump and heat recovery frame(s) shall be designed and electrically protected to maintain stable continuous compressor operation when provided with 460/60/3 or 208-230/60/3 power with the following specifications:
 - a. 208-230/60/3 power and can withstand a voltage fluctuation of $\pm 10\%$
 - i. Voltage tolerance between 187V to 253V
 - c. Voltage imbalance of up to two percent;
 - d. Power surge of up to 5kA RMS Symmetrical.

D. General Features

- 1. The air-conditioning system shall use R410A refrigerant.
- 2. Each system shall consist of one, two or three air source outdoor unit modules conjoined together in the field to result in the capacity specified elsewhere in these documents.
- 3. Dual and triple frame configurations shall be field piped together using manufacturer's designed and supplied Y-branch kits and field provided interconnecting pipe to form a common refrigerant circuit.
- 4. System shall have following frame configurations vs. capacity.
 - 2 to 20 ton units shall be a single frame only.
 - 22 to 34 ton units shall be dual frame only.
- 5. System shall employ self-diagnostics function to identify any malfunctions and provide type and location of malfunctions via fault alarms.
- 6. All outdoor units, regardless of the Heat Pump models, shall be the same generation and provide with most up to date firmware version at the time of delivery. Manufacturers commissioning agents shall assure the owner in the commissioning report that the latest software version.
- 7. The manufacturer shall provide the most recent generation equipment only. Old stock or obsolete models will not be accepted. Products purchased over the internet and not from the manufacturer's authorized local mechanical representative or authorized distributor will not be accepted.
- 8. Field Provided Refrigerant Piping:
 - a. The refrigerant circuit shall be constructed using field provided ACR copper, de-hydrated, refrigerant rated copper pipe, piped together with manufacturer supplied Heat recovery unit(s) and Y- branches, as may be required, connected to multiple (ducted, non-ducted or mixed combination) indoor units to effectively and efficiently control the heat pump operation or simultaneous heating and cooling operation of the heat recovery VRF system. Other pipe materials, if used, shall perform, at a

minimum, as well as that specified above, shall not have any adverse reactions, for example galvanic corrosion, to any other components or materials also in use in the system and shall be installed per manufacturer's instructions.

- b. The unit shall be shipped from the factory fully assembled including internal refrigerant piping, inverter driven compressor(s), controls, temperature sensor, humidity sensor, contacts, relay(s), fans, power and communications wiring as necessary to perform both Heat Pump and Heat recovery operations.
- c. Each outdoor unit refrigeration circuit shall include, but not limited to, the following components:
 - i. Refrigerant strainer(s)
 - ii. Check valve(s)
 - iii. Inverter driven, medium pressure vapor injection, high pressure shell compressors
 - iv. Liquid refrigerant cooled inverter PCB
 - v. Oil separator(s)
 - vi. Accumulator /controlled volume receiver(s)
 - vii. 4-way reversing valve(s)
 - viii. Vapor injection valve(s)
 - ix. Variable path heat exchanger control valve(s)
 - x. Oil balancing control
 - xi. Oil Level sensor(s)
 - xii. Electronic expansion valve(s)
 - xiii. Double spiral tube sub-cooler (s) and EEV
 - xiv. Vapor Injection Valve(s)
 - xv. High and low side Schrader valve service ports with caps
 - xvi. High/low Service valves
 - xvii. Threaded fusible plug
 - xviii. High pressure switch

9. Field Insulation:

- a. All refrigerant pipe, y-branches, elbows and valves shall be individually insulated with no air gaps. Insulation R-value (thickness) shall not be less than the minimum called for by the local building code, local energy code or as a minimum per manufacture installation requirements. In no case shall the insulation be allowed to be compressed at any point in the system.
 - i. All joints shall be glued and sealed per insulation manufactures instructions to make an air-tight assembly.

10. Microprocessor:

- a. Factory installed microprocessor controls in the outdoor unit(s), heat recovery unit(s), and indoor unit(s) shall perform functions to optimize the operation of the VRF system and communicate in a daisy chain configuration between outdoor unit and heat recovery unit(s) and indoor unit(s) via RS485 network. Controls shall also be available to control other building systems as required from the VRF control system. DIO/AIO capabilities shall be available as well as a central controller to perform operation changes, schedules and other duties as required by this specification. Addition of separate building control system shall not be required. Other control devices and sequences shall be as specified in other sections of this project specification.

11. Inverter PCB Cooling:

- a. Cooling of the inverter PCB shall be conducted by way of high pressure, sub-cooled liquid refrigerant via heat exchanger attached to the inverter PCB. The full capacity flow of refrigerant shall pass through the heat exchangers to maximize the cooling effect of the PCBs and to aid in the evaporation process and capacity of the outdoor coil during the heating mode. The recovered heat of the PCBs must be used to enhance the overall heating process, other uses or dissipation of heat to ambient shall not be permitted.

12. Compressor Control:

- a. Fuzzy control logic shall establish and maintain target evaporating temperature (T_e) to be constant on cooling mode and condensing temperature (T_c) constant on heating mode by Fuzzy control logic to ensure the stable system performance.

13. Initial Test Run (ITR) (Heating or Cooling) / Fault Detection Diagnosis (FDD) Code:

- a. This control mode shall monitor and display positive or negative results of system initial startup and commissioning. Heating or Cooling ITR mode will be automatically selected. It shall monitor and provide performance metrics for the following, but not be limited to, refrigerant quantity charge, auto-charge, stable operations, connection ratios, indoor unit status, error status, and number of indoor units connected. This control mode shall not replace the system error monitoring control system.

14. BMS Integration:

- a. The VRF system shall be able to integrate with Building Management Systems via BACnet™ IP gateway. This gateway converts between BACnet™ IP or Modbus TCP protocol, and RS-485 LGAP (LG Aircon protocol) allowing third party control and monitoring of the LG A/C system, or LonWorks™ gateways. See controls specification for points list.

15. Wi-Fi Communication:

- a. The outdoor unit shall be Wi-Fi enabled and capable. Wi-Fi shall allow service or maintenance personal access to the complete operating system, via LGMV mobile, without need of tools other than smart phone or tablet. Active live system review, collection of all system data for a field determined duration presented in a .csv file format or collection of all operating conditions, including all indoor units, valves, sensors, compressor speeds, refrigerant pressures, etc., by snapshot of conditions and placing that snapshot into a power point slide to be reviewed at another time. Systems that require computers, hard wire only connection or other devices to collect, review or record operating conditions shall not be allowed.

16. Indoor Unit Connectivity:

- a. The system shall be designed to accept connection up to 64 indoor units of various configuration and capacity, depending on the capacity of the system.

17. Power and Communication Interruption:

- a. The system shall be capable of performing continuous operation when an individual or several indoor units are being serviced; communication wire cut or power to indoor unit is disconnected. Systems that alarm and/or shut down because of a lack of power to any number of indoor units shall not be acceptable.

18. Connection Ratios:

- a. The maximum allowable system combination ratio for all VRF systems shall be 130% and the minimum combination ratio shall be 50%.

19. Comfort Cooling Mode:

- a. Comfort cooling shall be initiated via a field setting at the outdoor unit during commissioning or anytime thereafter. Comfort cooling shall allow user to select all or some of the zones on a system to adjust automatically their evaporator temperatures, independent of other zones, based on the impending total loads of that zone determined by using the zone controller temperature sensor.

20. The outdoor unit refrigerant circuit shall employ for safety a threaded fusible plug.

21. Refrigerant Flow Control

- a. An active refrigerant control and multi section accumulator-receiver that dynamically changes the volume of refrigerant circulating in the system based on operating mode and operating conditions to ensure maximum system performance and efficiency.

- b. Subcooler: The VRF outdoor unit shall include a factory provided and mounted sub-cooler assembly consisting of a shell and tube-type sub-cooling heat exchanger and EEV providing refrigerant sub-cooling modulation control by fuzzy logic of EEV and by mode of operation to provide capacity and efficiency as required. Braze plate heat exchangers shall not be allowed for this function.
- c. Smart Load Control: The air source unit shall be provided with Smart Load Control (SLC) enhanced energy saving algorithm that reduces compressor lift during off peak operation. Smart load control operation shall enhance energy savings and increase indoor comfort by monitoring the real time ambient temperature, real time weighted mean average building load, and the outdoor relative humidity (if enabled).
 - i. The SLC algorithm shall be monitoring in real time, the rate of change of the outdoor ambient air temperature, either the outdoor ambient air relative humidity or the indoor air relative humidity [field selectable], and the rate of change of the building load.
 - ii. The SLC algorithm shall foresee pending changes in the building load, outdoor temperature and humidity (or indoor humidity) and proactively reset head and/or suction pressure targets in anticipation of the reduction/increase in building load.
 - iii. The SLC algorithm shall provide no fewer than 3 field selection options to maximize the control of the VRF system operation during morning warm-up or cool-down following night-setback reset. The selection shall be set by the commissioning agent (or at any other time thereafter). Selectable algorithm choices include:
 - 1. Maximize energy savings
 - 2. Balance the rate of temperature change with energy consumed.
 - 3. Quickly cool/heat the building.

22. Refrigerant Volume Management

- a. Active Refrigerant Charge
 - i. The VRF system shall be able to operate at any and all published conditions year round in cooling or heating mode without the need of adding or removing refrigerant from the system.
 - ii. The air source unit shall be provided with an isolated vessel to store spare refrigerant and actively pass refrigerant to (or from) the accumulator in real time as necessary to maintain stable refrigeration cycle operation.
 - iii. The air source unit microprocessor shall be provided with an algorithm that monitors the VRF system head pressure, suction pressure, subcooling, superheat, compressor speed, high and low side temperatures and the load on the system to adjust the volume of refrigerant actively circulating.
- b. Manual Seasonal Refrigerant Charge Adjustments
(Applicable for VRF systems without Active Refrigerant Charge)

- i. Alternates: Systems that CANNOT passively and automatically modify the active refrigerant charge using the method(s) stated to maintain stable cycle operation shall clearly state so in bold capital letters in the proposal. VRF systems that cannot perform active refrigerant control may submit a proposal as an Alternate and must include as part of the equipment price the cost of to provide bi-annual refrigerant charging services for 15 years. Service shall be performed by the factory authorized agent only. Service shall include refrigerant, parts, labor, and fees necessary to analyze the current state of the system and perform the refrigerant charge adjustment. Service must occur one month before the winter season and one month before the summer season.
- ii. If the VRF system requires a charge adjustment more frequently to maintain stable operation, the VRF manufacturer shall provide additional services at no additional charge.
- iii. The 15 year period shall begin on the date the equipment is commissioned or the date the building occupancy permit was issued for the area(s) served by the system – whichever date is later.
- iv. This service shall be underwritten, warranted, and administered by the VRF equipment manufacturer – not the local distributor or applied representative.
- v. The selected service provider shall be mutually agreeable between the building owner (or owners agent) and must be licensed, insured, and trained to work on the VRF system. No third party service (subcontracted service) providers will be acceptable.
- vi. If the service provider is not an employee of the VRF manufacturer, the service provider shall be reimbursed for services rendered directly from the manufacturer. Labor rate for services shall be paid at the prevailing wage rate in place at the time of service.

23. VRF Systems with Onboard Alternate Operating Mode Selection Capability

- a. All VRF systems which provide field selectable Alternate Operating Modes, for example, High Heat or High Ambient Cooling, published data tables must be available to the public for all modes offered.
- b. Acceptable Alternate Operating Modes must ship with all models of the VRF product offering and must be factory embedded. Custom factory or field modifications to factory provided algorithms created to meet scheduled requirements are not acceptable.
- c. Provide a copy of instructions required to set the Alternate Operation Mode with the initial submittal.
- d. For systems that provide field selectable Alternate Operating Modes, ALL technical data provided in the submittal data sheets showing product rated condition performance data, must also provide separate data sheets that show product performance data at each of the field selectable

Alternate Operating Modes available. Capacity, power input, and acoustic performance data for each mode offered shall be reported separately. Mixing of ODU, IDU, or VRF system performance capability operating in one mode with for example the power consumption, sound power rating, or electrical requirements of the same system operating in another mode is not acceptable.

E. Field Supplied Refrigerant Piping Design Parameters

1. The outdoor unit shall be capable of operating at an elevation difference of up to 360 feet above or below the lowest or highest indoor unit respectively without the requirement of field installed subcooler or other forms of performance enhancing booster devices for the Multi V 5 Series, and 164 feet above or 131 feet below for Multi V S Series.
2. The outdoor unit shall be capable of operating with up to 3280 for the Multi V 5 Series and 984 for the Multi V S Series equivalent length feet of interconnecting liquid line refrigerant pipe in the network.
3. The outdoor unit shall be capable of operating with up to 656 actual feet for the Multi V 5 Series and 592 actual feet for the Multi V S Series or 738 equivalent length feet for the Multi V 5 Series and 574 equivalent length feet for the Multi V S Series of liquid line refrigerant pipe spanning between outdoor unit and farthest indoor unit.
4. The piping system shall be designed with pipe expansion and contraction possibilities in mind. Required expansion devices shall be field designed, supplied and installed based on proper evaluation of the proposed piping design. In addition to these requirements, the piping system installation must conform to the VRF equipment manufacturer's published guidelines.
5. The installation of pipe hangers, supports, insulation, and in general the methods chosen to attach the pipe system to the structure must allow for expansion and contraction of the piping system and shall not interfere with that movement.
6. The elevation difference between indoor units on heat pump systems shall be 131 feet for the Multi V 5 Series and 49 feet for the Multi V S Series.

F. Defrost Operations

1. The outdoor unit(s) shall be provided with a minimum of 4 independent field adjustable defrost cycle algorithms to maximize the effectiveness of the defrost cycle to the local weather conditions. Intelligent Defrost shall melt accumulated frost, snow and ice from the outdoor unit heat exchanger. The defrost cycle length and sequence shall be based on outdoor ambient temperatures, outdoor unit heat exchanger temperature, and various differential pressure variables. Intelligent Heating Mode, when outdoor unit humidistat is engaged, shall extend the normal heating sequences by adjusting the outdoor unit coil target temperature to be above the ambient dew point temperature delaying the need for defrost operations, so long as heating demand is being met.

2. Smart Heating: This feature shall be capable of eliminating several defrost actions per day based on outdoor air temperature and humidity conditions. Smart heating shall extend the heating operation cycle by delaying the frost formation on the outdoor coil by adjusting the surface temperature to keep it above the current outdoor ambient dew point. The algorithm shall delay while maintaining indoor space temperature.
3. Defrost Mode Selection: The outdoor unit shall be provided with a minimum of three field selectable defrost operation modes: Normal, Fast, or Forced.
 - a. Normal Defrost: Operation intended for use in areas of the country that experience adverse winter weather with periods of heavy winter precipitation and extremely low temperatures. This strategy shall maximize the systems heating performance and maintain operational efficiency. When the ambient temperature is either: a) above 32°F or b) below 32°F with the humidity level below 60% RH, Intelligent Defrost shall continue heating regardless of ice build-up on the coil until the quality of the heated air (i.e., discharge air temperature) decreases. At temperatures below 4°F, a defrost cycle shall occur every two hours to optimize system heating efficiency.
 - b. Fast Defrost: Operation intended for use in areas of the country with mild winter temperatures and light to moderate humidity levels. The strategy minimizes defrost cycle frequency allowing frozen precipitation to build longer in between cycles. Minimum time between defrost cycles shall be 20 minutes. Intelligent Defrost shall choose between split coil/frame and full system methods based on current weather conditions to minimize energy consumption and maximize heating cycle time.
 - c. Forced Defrost: Operation shall be available for the service provider to test defrost operations at any weather condition and to manually clear frozen water from the outdoor coil surfaces.
4. Defrost Method Selection: The outdoor unit shall be provided with two field selectable defrost operation methods: Split Coil/Frame and Full System. Split Coil/Frame option provides continuous heating of the occupied space during defrost operation.
 - a. Split Coil/Frame method shall be available when Normal Defrost mode is selected. Split Coil method shall be available on all Heat Pump and Heat recovery single-frame VRF systems. Split Frame defrost shall be available on all Heat Pump and Heat recovery multi-frame outdoor units.
 - b. Split Coil method shall remove ice from the bottom half of the outdoor unit coil first for a maximum time of six minutes, then the top half for a maximum of six minutes. Next the bottom coil shall be heated again for an additional three minutes to remove any frozen water that may have dripped onto the lower coil during the top coil defrost operation.
 - c. When Split Coil/Frame method is selected, a Full System defrost shall occur every 1-9 (field selectable) defrost cycles to assure 100% of the frozen precipitation has been removed to maintain efficient performance.

- d. Full System method shall be available as a field selectable option. All outdoor units located in areas of the country where large volumes of frozen precipitation are common, the commissioning agent shall be able to select the Full System only defrost method.

G. Oil Management

1. The system shall utilize a high pressure oil return system to ensure a consistent film of oil on all moving compressor parts at all points of operation. Oil is returned to compressor through a separate high pressure oil injection pipe directly into the oil sump. Oil returned to the compressor via the suction port of the compressor shall not be allowed.
2. Each compressor shall be provided with a high efficiency independent centrifugal cyclone type oil separator, designed to extract oil from the oil/refrigerant gas stream leaving the compressor.
3. The system shall have an oil level sensor in the compressor to provide direct oil level sensing data to the main controller. The sensor shall provide data to main outdoor unit PCB to start oil return mode and balance oil levels between multiple compressors.
4. The system shall only initiate an oil return cycle if the sensed oil level is below oil level target values as determined by the microprocessor. The system shall display an error if the oil sensor signals low oil level for a period of 130 minutes or longer.
5. A default oil return algorithm shall automatically initiate the oil return mode if the system detects a failure of the oil sump sensor. A fault code shall be reported by the system.
6. Timed oil return operations or systems that do not directly monitor compressor oil level shall not be permitted.

G. Fan and Motor Assembly

1. 6 ton frames shall be equipped with one direct drive variable speed propeller fan with Brushless Digitally Controlled (BLDC) motor with a vertical air discharge. Heat Pump ARUN024GSS4 unit shall be equipped with one direct drive, variable speed, and axial flow fan with a horizontal air discharge. The motors shall be Brushless Digitally Controlled (BLDC), variable speed, inverter driven motors.
2. 8 to 20 ton frames shall be equipped with two direct drive variable speed propeller fan(s) with BLDC motor(s) with a vertical air discharge. Heat Pump ARUN038GSS4~ARUN060GSS4 and Heat Recovery unit ARUB060GSS4 shall be equipped with two direct drive variable speed axial flow fan(s) with a horizontal air discharge. Each fan shall be provided with an independent dedicated Brushless Digitally Controlled (BLDC), variable speed, inverter driven motors.
3. The fan(s) blades shall be made of Acrylonitrile Butadiene Styrene (ABS) material and incorporate biomimetic technology to enhance fan performance and reduce fan generated noise.
4. The fan(s) motor shall be equipped with permanently lubricated bearings.

5. The fan motor shall be variable speed with an operating speed range of 0-1150 RPM cooling mode and 0-1150 RPM heating mode. The fan assembly(s) shall have a minimum operating speed range from 0 RPM to 850 RPM in cooling mode and heating mode.
6. The fan shall have a guard to help prevent contact with moving parts.
7. The cabinet shall have option to redirect the discharge air direction from vertical to
8. The fan controller shall have a DIP switch setting to raise external static pressure of the fan up to 0.32 inch of W.C. to accommodate ducted installations.
9. The fan control shall have a function setting to remove excess snow automatically.
10. The fan control shall have a function setting to remove access dust and light debris from the outdoor unit and coil.

H. Cabinet

1. Outdoor unit cabinet shall be made of 20 gauge galvanized steel with a weather and corrosion resistant enamel finish. Outdoor unit cabinet finish shall be tested in accordance with ASTM B-117 salt spray surface scratch test (SST) procedure for a minimum of 1000 hours.
2. Cabinet weights and foot prints shall vary between 430 lbs., 7.61 sq. ft. (1.27 sq. ft. per ton), for 6 ton cabinet to 666 lbs., 10.14 sq. ft. (.51 sq. ft. per ton), for 20 ton cabinet for single cabinet configurations. The front panels of the outdoor units shall be removable type for access to internal components.
3. A smaller service access panel, not larger than 7" x 7" and secured by a maximum of (2) screws, shall be provided to access the following
 - a. Service tool connection
 - b. DIP switches
 - c. Auto addressing
 - d. Error codes
 - e. Main microprocessor
 - f. Inverter PCB
4. The cabinet shall have piping knockouts to allow refrigerant piping to be connected at the front, right side, or through the bottom of the unit.
5. The cabinet shall have a factory installed coil guard and shall have a baked enamel finish.

I. Outdoor Unit Coil

1. Outdoor unit coil shall be designed, built and provided by the VRF outdoor unit manufacturer.
2. The outdoor unit coil for each cabinet shall have lanced aluminum fins with a maximum fin spacing of no more than 17 Fins per Inch (FPI). All the outdoor unit coils shall be a 2 or 3 rows consisting of staggered tubes for efficient air flow across the heat exchanger.

3. Outdoor unit coil shall be comprised of aluminum fins mechanically bonded to copper tubing with inner surfaces having a riffling treatment to expand the total surface of the tube interior
4. The aluminum fin heat transfer surfaces shall have factory applied corrosion resistant Black Fin coating. The copper tubes shall have inner riffling to expand the total surface of the tube interior.
 - a. ISO 21207 Salt Spray Test Method B – 1500 hours
 - b. ASTM B-117 Acid Salt Test – 900 hours
 - c. The Black Fin coating shall be certified by Underwriters Laboratories and per ISO 21207. The above conditions shall establish the minimum allowable performance which all alternates must comply.
5. Variable Path Heat Exchanger: System shall have a variable flow and path outdoor heat exchanger function to vary the refrigerant flow and volume and path. Control of the variable path circuits shall be based on system operating mode and operating conditions as targeted to manage the efficiency and minimize or maximize the circulating volume of the operating fluids of the system. This feature allows MV 5 to maintain system head pressure that delivers “gas-furnace leaving air temperature” from the indoor unit at moderate and low ambient outdoor air temperatures. The outdoor unit coil, all indoor units and pipe network shall be field tested to a minimum pressure of 550 psig.

J. Compressor(s)

1. Compressor shall be designed and assembled by the VRF manufacturer specifically for use in the air source VRF product line. Third party manufactured, branded, or designed to the VRF system’s OEM specifications by a third party manufacturer shall not be acceptable.
2. Compressor shall be a hermetic, high-side shell (HSS), commercial grade, compliant scroll direct-drive design.
 - a. Compressor Design: The compressor design shall be of the high pressure shell scroll type where the internal pressure below the suction valves of the compressor shall be at the same high pressure and high temperature. The motor shall be cooled by high pressure gas at temperatures above saturation conditions and minimize the mixing of refrigerant liquid with oil in the sump. The system shall employ a high pressure oil return method returning recovered oil from the oil separator directly into the oil sump of the compressor; oil shall not be allowed to return via the suction line. Bearing surfaces are continually coated with oil. The compressor shall employ an Aero-bearing constructed with high lubricity materials increasing operation time in case of low sump oil level. Compressor shall have a nominal operating range from 12Hz to 150 Hz.
3. The fixed and oscillating compressor scroll components shall be made of high grade (GC25) or denser steel material. All scrolls shall be heat treated and tempered.

4. The oscillating scroll shall be finely machined and polished. PVE refrigerant oil shall be used as the sole liquid used to maintain a seal between the high and low sides of the compression chamber. Compressors that require the use of any type of mechanical or wearable sealant material between the moving surfaces of the compression chamber is NOT ACCEPTABLE.
5. Vapor Injection: System shall have a medium pressure gas vapor injection function employed in the heating and cooling modes to increase system capacity when the outdoor ambient temperatures are low and lower compressor lift when temperatures are high. The compressor vapor injection flow amount shall be controlled by the vapor injection sub-cooling algorithm reset by discharge gas temperatures of the compressor.
6. Bearing surfaces shall be coated with Teflon® equal. Bearings shall be lubricated using a constant flow of PVE refrigerant oil to the bearing surfaces the film of oil separating the crankshaft journals and bearing surfaces shall be consistent at all times the crankshaft is in motion and shall be maintained irrelevant of crankshaft rotational speed.
7. An internal, integrated, mechanically driven gear pump shall draw oil from the compressor sump reservoir, pressurize the oil and inject the oil directly to the crankshaft journals maintaining a consistent film of oil between all moving parts. Auxiliary, indirect, or electronically driven pumps are not acceptable.
8. The viscosity property of the PVE oil in the compressor sump shall be maintained irrelevant of compressor operation and the surrounding ambient temperature.
 - a. The compressor shall be equipped with an external thermally protected electric crankcase heater that is automatically activated only when the ambient temperature is below freezing, and the compressor is not running to maintain the temperature of the oil in the sump above the refrigerant boiling point.
 - b. During stable operation, irrelevant of ambient air temperature outside the water source unit, the temperature of refrigerant vapor in contact with the surface of the oil in the compressor sump shall be maintained above 140°F to prevent foaming and to eliminate refrigerant from mixing with the oil degrading the viscosity of the oil in the sump.
 - c. Low side shell (LSS) type compressors that use suction vapor to cool the compressor motor shall not be acceptable.
9. The compressor motor shall be designed to operate at high temperatures.
 - a. The motor winding insulation shall be designed to operate continuously at a minimum temperature of 180°F without deterioration.
 - b. The motor cooling system shall be designed to maintain acceptable operational temperature at all times and in all conditions using high pressure, hot refrigerant vapor as motor coolant.
 - c. Low side shell and compressors that use low pressure, low temperature refrigerant gas to cool the motor are not acceptable.
10. Inverter Compressor Controller(s)
 - a. Each compressor shall be equipped with a dedicated inverter compressor drive. The control of multiple compressors using a single drive is not acceptable.

- b. The inverter drive shall vary the speed of the compressor crankshaft between zero (0) Hz and 140 Hz.
 - c. The inverter driver controller shall be matched with the physical properties of the compressor. The drive shall be manufactured by the VRF air source unit manufacturer. The inverter drive and matching compressor shall have been thoroughly tested as a matched pair. The inverter drive shall be programmed to avoid operating the compressor at any speed that results in harmonic vibration, nuisance noise, or mechanical damage to either the driver or the compressor with power provided that is within the tolerance specification.
 - d. The compressor inverter drive assembly and software must be designed, manufactured, and supplied by the VRF product manufacturer. Third party branded inverter driver hardware and/or driver software or inverter driver hardware and/or software provided by a third party manufacturer to meet OEM specifications of the VRF water source manufacturer will not be acceptable.
 - e. All inverter drive hardware or software manufactured in, is a product of, or sourced from China, or using a broker or third party provider as an intermediary that obtains the product from CHINA shall not be acceptable.
11. Compressor(s)
- a. Each 6, 8, 10 ton frames shall be equipped with a single hermetically sealed, inverter driven, High Side Shell (HSS) scroll compressor.
 - b. 12, 14, 16, 18 and 20 ton frames shall be equipped with dual hermetically sealed, inverter driven, High Side Shell (HSS) scroll compressors.
 - c. Each inverter driven, HSS scroll compressor shall be capable of operating from 12 Hz up to 150 Hz in any and all modes (cooling, heating or simultaneous modes).
 - d. The compressor shall be designed for a separate port for oil to be directly returned to the compressor oil sump.
 - e. The compressor bearing(s) shall have Teflon™ coating and shall be an aero type design using High lubricity materials.
 - f. The compressor(s) shall be protected with:
 - i. High Pressure switch
 - ii. Over-current /under current protection
 - iii. Oil sump sensor
 - iv. Phase failure
 - v. Phase reversal
 - vi. Compressor shall be capable of receiving injection of medium pressure gas at a point in the compression cycle where such injection shall allow a greater mass flow of refrigerant at lower outdoor ambient and achieving a higher heating capability. The VRF outdoor unit shall have published performance data for heating mode operation down to -13°F on both heat pump and heat recovery systems.
 - g. Standard, non-inverter driven compressors shall not be permitted nor shall a compressor without vapor injection or direct sump oil return capabilities.

12. Heat Pump models:

- a. The compressor shall be a high efficiency high-side shell rotary hermetic design. Bearing shall be manufactured using high lubricity material. Compressor shall be factory charged with Polyvinyl Ether (PVE) oil. Single or dual speed compressors charged with oil (POE) shall not be acceptable. Compressor inverter drive shall Polyolester allow modulation from 20Hz to 90Hz with control in 1.0 Hz increments depending on the nominal capacity. (ARUN060GSS4) The compressor shall be a high-side shell hermetic scroll design. Oil sump area and chamber housing the motor shall be operated at the same temperature and pressure of the gas leaving the compressor chamber to ensure that the low temperature low pressure refrigerant returning to the compressor does not mix with the oil in the sump. Bearing shall be manufactured using high lubricity material. Compressor shall be factory charged with Polyvinyl Ether (PVE) oil. Single or dual speed compressors charged with Polyolester oil (POE) oil shall not be acceptable. Compressor motor shall be designed to operate at a frequency range of 0Hz to 160Hz. Compressor inverter drive shall allow modulation from 12Hz to 110Hz.

13. Heat Recovery models:

- a. The compressor design shall be of the high pressure shell scroll type where the internal pressure below the suction valves of the compressor shall be at the same high pressure and high temperature. The motor shall be cooled by high pressure gas at temperatures above saturation conditions and minimize the mixing of refrigerant liquid with oil in the sump. The system shall employ a high pressure oil return method returning recovered oil from the oil separator directly into the oil sump of the compressor; oil shall not be allowed to return via the suction line. Bearing surfaces are continually coated with oil. The compressor shall employ an Aero-bearing constructed with high lubricity materials increasing operation time in case of low sump oil level. Compressor shall have a nominal operating range from 12Hz to 110 Hz.

L. Operational Sound Levels

1. Each single frame outdoor unit shall be rated with an operational sound pressure level not to exceed as listed on below chart when tested in an anechoic chamber under ISO 3745 standard at the highest field selectable heating operating modes available. Such documentation shall be presented in all submittals, manufactures who elect to rate their equipment at other than tested in an anechoic chamber under ISO 3745 standard at the highest field selectable heating operating modes available and the highest field selectable conditions shall not be allowed.
2. A field setting shall be available to program the outdoor unit to reduce sound levels at night, when desired, to a selectable level while still able to meet building load requirement. This mode is available in both cooling and heating modes.

M. Sensors

1. Each outdoor unit module shall have:
 - a. Suction temperature sensor
 - b. Discharge temperature sensor
 - c. Oil level sensor
 - d. High Pressure sensor
 - e. Low Pressure sensor
 - f. Outdoor temperature sensor
 - g. Outdoor humidity sensor
 - h. Outdoor unit heat exchanger temperature sensors

N. Wind Load Installations for Outdoor Units

1. LG FL Wind load Installation Drawings meet the requirements of the 2017 Florida Building Code, 6th Edition and ASCE Standard 7-2010.

O. Seismic Installations

1. Provide OSHPD Special Seismic Certification Preapproval (OSP) documents for certified product list of VRF equipment to be installed in high seismic risk areas. Provide LG supplemental installation documents in conformance with CBC 2013, 2016 and 2019 California Building Code and IBC 2012, 2015 and 2018 International Building Code.

P. Warranty

1. Limited Warranty Period
 - a. STANDARD ONE-YEAR PARTS WARRANTY FOR A QUALIFIED SYSTEM - The Part(s) of a qualified System, including the compressor, are warranted for a period (the "Standard Parts Warranty Period") ending on the earlier to occur of one (1) year after the date of original installation, or eighteen (18) months from the date of manufacture.
 - b. ADDITIONAL SIX (6) YEAR COMPRESSOR PART WARRANTY - The Compressor is warranted for an additional six (6) year period after the end of the applicable Standard Part Warranty Period (the "Compressor Warranty Period").
2. Extended Warranty
 - a. The Standard Warranty Period and the Compressor Warranty Period are extended to a total of ten (10) years (the "Extended Warranty Period") for qualified Systems that have been (a) commissioned by a party that has completed the current Training Requirements, (b) such commissioning is pursuant to LG's current published instructions, and (c) the System commissioning results and supporting documents are entered correctly into LG's online commissioning system. Commissioning of a System requires one (1) hour of LG Monitoring View (LGMV) data.

Commissioning results must be entered into LG's online commissioning system within sixty (60) days of System startup.

2.2 EEV KIT

A. General

1. Unit shall be manufactured by LG.
2. Unit shall be factory assembled and wired unit shall be designed to be installed indoors only, when installed outdoors provide NEMA weatherproof enclosure.
3. Unit shall be capable to be installed with heat pump or heat recovery VRF system.
4. Unit requires one communication kit to provide power and control signals.
5. Connects liquid line piping from outdoor unit to any AHU coil.

B. Electrical

1. Six conductor, 18 GA shielded and stranded field supplied wiring for 12 volt (low voltage) power and control signal from communication kit.

2.3 AHU COMMUNICATION KIT PAHCMR00 (RETURN AIR CONTROL)

A. General

1. Unit shall be manufactured by LG.
2. Unit shall be factory assembled and wired.
3. Unit shall be designed to be installed for indoor or outdoor.
4. Unit shall be capable to be installed with heat pump or heat recovery VRF system.
5. Allows communication between third party air handling unit (AHU) and LG Multi V air-source or water-source outdoor units with combination ratio between 50% to 100%.
6. Requires one EEV kit to control the flow of refrigerant from Multi V outdoor unit to AHU coil.

B. Electrical:

1. The unit electrical power shall be 208-230/1/60 (V/Ph/Hz).

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION 230266

SECTION 230400 - SHEETMETAL WORK AND RELATED ACCESSORIES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements shall govern work in this section. Submit shop drawings for checking and approval.

PART 2 - PRODUCTS

2.1 SHEETMETAL DUCTWORK

- A. Contractor shall furnish and install all sheetmetal ducts as shown on the Drawings. While the Drawings shall be adhered to as closely as possible, the Engineer reserves the right to vary the run and size to meet the field conditions. Any duct size not shown shall be sized in proportion to the air carried at the same resistance in similar ductwork, or of size as directed.
- B. All ductwork shall be constructed of galvanized steel gauges in accordance with the latest edition of the ASHRAE/SMACNA Guide. Bracing angles for ductwork shall be hot dipped galvanized for steel ductwork and appropriate gauge for aluminum ductwork. All ducts 18" and over in width shall be cross broken to prevent flutter.
- C. Round ductwork shall be galvanized steel, spiral lock seam construction of gauges in accordance with the latest edition of ASHRAE/SMACNA guide. Fittings shall be constructed in standing seam manner. All seams, joints and collars shall be sealed in accordance with SMACNA guidelines for medium pressure ductwork to minimize noise and streaking. Ductwork and fittings shall be connected with sheetmetal couplings and sealed as to allow no leakage.
- D. Ducts shall be braced as follows:
 - 1. All ducts not exceeding 24" on one side shall be assembled with airtight slip joints.
 - 2. 25" to 40" larger dimension 1" x 1" x 1/8" angles.
 - 3. 41" to 60" larger dimension 1-1/2" x 1-1/2" x 1/8" angles.
 - 4. All bracing angles shall be a minimum of 4' apart along the length of the duct.
 - 5. Furnish and install all angles and frames for all registers, diffusers, grilles, and louvers.
 - 6. Support horizontal ducts with hangers spaced not more than 8' apart. Place hangers at all changes in direction. Use strap hangers for cuts up to 30" wide.
- E. Comply with all State and Local regulations regarding fire stopping and fireproofing. Provide fusible link fire dampers as required by State, local and Underwriter authorities and where indicated on the Drawings. Each fire damper shall be installed in such a manner as to permit ready access for inspection and maintenance purposes.

- F. Provide splitter and butterfly dampers, deflecting vanes for control of air volume and direction and for balancing systems, where indicated, specified, directed and as required for the proper operation of the systems. Dampers shall be of the same material as the duct, at least one gauge heavier than the duct, reinforced where indicating quadrant and locking device for adjusting damper and locking in position.
- G. Where ducts fewer than 100 square inches penetrate a rated wall, steel ductwork system of a minimum 0.0127 inch thickness shall be used.
- H. All elbows shall have a minimum center line radius of 150% of duct width. If the radius is smaller, turning vanes shall be used: Turning vanes shall be double thickness, fitted into slide strips and screwed or riveted to duct below.
- I. Contractor shall furnish and install all access doors in ducts as required. Access doors shall be of the pan type 1" thick and shall be provided with two galvanized hinges and suitable latched. Access doors insulated with same thickness material as duct and shall be double casing construction.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION 230400

SECTION 230410 - PIPING, FITTINGS, VALVES AND NOTES (HOT WATER)

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements shall govern work in this section. Submit shop drawings for checking and approval.

1.1 PIPING NOTES

- A. The Contractor shall erect all pipe, fittings, valves, hangers, anchors, expansion joints and all accessories specified, indicated on the Drawings or required to assure proper operation of all piping systems installed under this Contract. All piping shall be maintained at a proper level to assure satisfactory operation, venting and drainage. Piping and valves in any locality where possible shall be grouped neatly and shall be run so as to avoid reducing headroom or passage clearance.
- B. All piping shall be new and of the material and weight specified under various services. Steel and wrought iron pipe 2" and larger shall be seamless or lap welded. All piping shall have the maker's name and brand rolled on each length of pipe.
- C. All piping, fittings, valves and strainers shall be cleaned of grease, dirt and scale before installation. All temporary pipe openings shall be kept closed during the performance of the work. The ends of all piping shall be reamed smooth and all burrs removed before installation.
- D. All piping shall be cut accurately to measurements taken on the job. Offset connections shall be installed alignment of vertical to horizontal piping and where required to make a true connection and to provide for expansion. Bent or sprung pipe shall not be installed where shown on Drawings and where necessary to provide for expansion of piping. Cold spring hot lines one-half estimated distance of maximum expansion. Suitable pipe anchors shall be installed where shown or required.
- E. Piping connections shall have unions where necessary for replacement and repair of equipment. Gate valves and controls valves shall be installed where shown and where necessary for proper operation and service.
- F. Vertical piping shall be plumb and horizontal piping shall be parallel to walls and partitions. Piping shall be supported as required to prevent the transmission of noise and vibration.
- G. Work shall include all pipe, fittings, offsets and requirements for the installation of piping of other work including ducts and conduit. Reducing fittings shall be used where pipe changes size. All piping shall be installed with ample clearance to center accurately in sleeves through floors, and walls and partitions.
- H. Piping shall be downgraded to drain connections at low points and upgraded to vent connections at high points unless otherwise noted. Drain connections shall be valved and piped to a floor drain. Vent connections on mains shall be equipped with air vent valves fitted with a copper tube drip line extended to a drain outlet. Vent connections on branches and equipment shall be fitted with key type manual vent cocks.

- I. Drain piping shall be installed from all equipment as required. The Contractor shall extend drain piping and turn down over floor drains.

PART 2 - PRODUCTS

2.1 PIPING (ABOVEGROUND)

- A. All piping installed under this Section of the Specifications shall be in accordance with the following schedule.
 1. All piping, except where indicated differently, (i.e. underground piping) shall be standard weight black steel pipe Schedule 40, Grade A53, black steel. Pipe 2" and smaller, cast iron screwed fittings. Pipe 2-1/2" and larger, steel welding fittings. Pipe and fittings as manufactured by National, Wheeling, Bethlehem or equal, manufactured in accordance with ASTM current edition. All pipes must be reamed before installation.
 2. Where the Contractor elects to use copper piping, it shall be rigid Type "L" copper, Chase, Anaconda or approved equal. Fittings shall be wrot copper, Nibco, Anaconda, Mueller or approved equal. Where copper piping is used, make all additional provisions for expansion. All condensate piping shall be Type "M" copper, rigid, full size of unit drain tapping, or larger as shown on Drawings.
 3. All drainage pipe lines, 2" larger except where galvanized screw pipe is shown on the Drawings or specified hereafter, shall be extra heavy cast iron soil pipe and fittings.
- B. Piping installation shall be arranged for draining through accessible valves at low points.
- C. Threaded short and close nipples shall be Schedule 80, extra heavy weight of the same material as pipe in system in which they are installed.
- D. All bare copper pipe, tubing and fittings shall be cleaned with steel wool and all excess solder shall be removed.

2.2 UNDERGROUND PRE-INSULATED PIPING SYSTEM

- A. General: All underground piping shall be the Poly-Therm type, as manufactured by Perma-Pipe or approved equal. All straight sections, fittings, anchors and other accessories shall be factory fabricated to job dimensions and designed to minimize the number of field welds. Each system layout shall be computer analyzed by the piping system manufacturer to determine stress on the carrier pipe, and anticipated thermal movement of the service pipe. The system design shall be in strict conformance with ANSI B31.3, latest edition. Factory trained field supervision shall be provided for critical periods of installation; unloading, field joint instruction and testing.
- B. Service Piping: Internal piping shall be standard weight carbon steel. All joints shall be butt-welded for 2-1/2 inch and greater, and socket or butt-welded for 2 inch and below. Where possible, straight sections shall be supplied in 40 foot random lengths with piping exposed at each end of field joint fabrication.

- C. Accessories: End seals, gland seals and anchors shall be designed and factory fabricated to prevent the ingress of moisture into the system.
- D. Insulation: Service pipe insulation shall be spray applied nominal 2 pound per cubic foot density, polyurethane foam for straight sections and preformed polyurethane foam for all fittings. To ensure no voids are present, all insulation shall be inspected by visually checking prior to application of the jacket. The insulation shall be applied to the minimum thickness specified below. The insulation thickness shall not be less than indicated in these Specifications.

<u>Pipe Size (in.)</u>	<u>Insulation Thickness (in.)</u>
1-3	1
4-6	1.5
8-14	2

- E. Protective Jacket: All straight sections of the insulated piping systems shall be filament wound, polyester resin/fiberglass reinforcement composite directly applied on the insulating foam. Thermoplastic casing material, e.g., PVC or PE, shall not be allowed. The minimum thickness for FRP jacket shall be .055 inches. All fittings of the insulated piping system shall be prefabricated to minimize field joints and jacketed in a chopped spray up, polyester resin/fiberglass reinforcement composite, directly applied onto the insulating foam to a thickness related to the filament wound jacket thickness.
- F. Field Joints: After the internal pipe has been hydrostatically hammer tested to 150 psig of 1-1/2 times the operating pressure, which ever is greater. Insulation shall then be poured in place into the field weld area. All field applied insulation shall be placed only in straight sections. Field insulation of fittings shall not be acceptable. The mold for the polyurethane shall be made of clear adhesive backed polyester film. The installer shall seal the field joint area with a heat shrinkable adhesive backed wrap or with wrappings of glass reinforcement full saturated with a catalyzed resin identical in properties to the factory applied resin. Backfilling shall no begin unit the heat shrink wrap has cooled or until the FRP lay-up has cured. All insulation and coating materials for making the field joint shall be furnished by the piping manufacturer.
- G. Backfilling: A 4 inch layer of sand of fine gravel shall be placed and tamped in the trench to provide a uniform bedding for the pipe. The entire trench width shall be evenly backfilled with a similar material as the bedding in 6 inch compacted layers to a minimum of 6 inches above the top of the insulated piping system. The remaining trench shall be evenly and continuously backfilled in uniform layers with suitable excavated soil. Coordinate these requirements with the excavating and backfilling Contractor.

2.3 VALVES

- A. All valves, unless specified or noted otherwise, shall be designed for a working pressure of not less than 200 p.s.i. water or 125 p.s.i. steam with name and pressure rating of valve cast in body. All valves shall be of the same manufacturer, unless specified otherwise. Valves for cut-off shall be gate valves, unless otherwise specified.

- B. All valves of same manufacturer: similar to Jenkins Bros., Walworth, Kennedy or approved equal.
- C. Four inch and larger, flanged; smaller sizes, screwed.
- D. All Gate and Globe valves shall be installed with handle in an upright position.
- E. The Contractor shall furnish and install all valves shown on Drawings and all valves that are necessary for proper operation and maintenance of systems and equipment. All piping connections to each piece of equipment and all branch connections to mains shall have cut-off valves.
- F. The following schedule of valves for steam condensate, hot water, etc. is based on Jenkins Brothers, Inc. catalog numbers (except as noted); equivalent Lukenheimer, Walworth, O-I-C, Crane Fairbanks Company valves will be acceptable.
- G. Ball Valves
 - 1. 1/4" to 2-1/2" rated for 600 p.s.i wog, with brass body, chrome plated brass ball, virgin PTFE seats, and full port with threaded or solder connections.
 - 2. 2-1/2" and larger rated for 200 p.s.i with carbon steel body, stainless steel full port ball, RTFE seats, lever operated to 4" gear operated 6" and above, with flanged end connections.
- H. Gate Valves
 - 1. Up to 2" : Bronze gate solid wedge, inside screw traveling stem union bonnet, - Fig. 47U
 - 2. 2-1/2" and 3" : Iron body, bronze-mounted gate, solid wedge, OS&Y rising stem, -Fig. 650-A
 - 3. 4" and larger: Iron body, bronze-mounted gate, solid wedge, OS&Y rising stem, -Fig. 651-A
- I. Globe Valves
 - 1. Up to 2" : Bronze body, regrinding seat ring and plug, union bonnet, -Fig. 546P
 - 2. 2-1/2" and 3" : Iron body, bronze-mounted globe and angle, regrinding disc and seat ring, OS&Y -Fig. 613
 - 3. All gate valves 6" and larger: Fitted 3/4" by-pass globe valve.
- J. Plug Valves
 - 1. Up to 2" : Lubricated, semi-steel short pattern wrench operated, -Fig. 142
 - 2. 2-1/2" and larger: Lubricated, semi-steel short pattern wrench operated, -Fig. 143

3. Similar to Rockwell Mgd. Co., Jenkins, Kennedy or approved equal.
- K. Butterfly Valves used for chilled water, condenser water and hot water shall be the following:
1. 2-1/2" to 12" rated for 175 p.s.i bubble tight close off, 14" and larger for 150 p.s.i close-off.
 2. Full lug cast iron body, aluminum bronze disc, stainless steel stem EPDM peroxide cured seat.
 3. 2-14" to 6" valves to be equipped with 10 position notch plate and lever lock handle. 8" and larger with handwheel gear operator.
 4. On installation, valves to be in full open position when flange bolts are tightened and stem in a horizontal position except when equipped with a chainwheel gear operator.
 5. Provide chain wheel gear operator on all valves installed 7 feet or higher.
 6. Valves to be designed with replaceable seat and parts kits.
 7. Valve to be Bray series 31, Dezurik 637 or Demco.
- L. Check Valves
1. 150 p.s.i. WSP class.
 2. Up to 2" : Bronze, regrinding bronze disc, screw-in cap, -Fig. 762A
 3. 2-1/2" and 3" : Iron body, bronze mounted regrinding bronze seat ring and disc, - Fig. 623
 4. 4" and larger: Iron body, bronze mounted regrinding bronze seat ring and disc, - Fig. 624
- M. Drain Valves: All low points shall have drain valves, with hose ends. Where 1/2" and 3/4" sizes are indicated, "Standard" hose end drain valves shall be used. Provide brass hose end drain caps at each drain valve. Where larger than 3/4" drains are shown, gate valve shall be used. Provide brass nipples and reducer from drain valve size to 3/4" terminating with 3/4" hose end drain valve and cap.
- 2.4 FITTINGS
- A. Nipples
1. All nipples shall have clean cut threads and shall be made from new pipe, standard weight for all lengths, except that close and shoulder nipples shall be extra heavy.

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2. Fittings - 2-1/2 and Smaller: All fittings shall be standard weight steam pattern gray cast iron, Grinnell, Stockholm or equal approved.
3. Fitting - 3" and Larger: The Contractor has the option to use screwed, flanged or welded fittings so long as all ASME requirements are met.

B. Joints and Unions

1. Threaded joints shall be full and clean cut. The ends of pipe shall be reamed to the full inside diameter, all burrs shall be removed and no more than three threads shall be exposed beyond fittings when made up. Joints shall be made up tight with graphite base pipe joint compound. Exposed threads of ferrous pipe shall be painted with acid-resisting paint after caulking, lampwick or other material will be allowed for correction of defective joints.
2. Flange joints shall be made up perfectly square and tight. Screwed flanges and loose flanges shall be cast iron and welding flanges shall be steel. Flanges shall be faced true and bolted up tight with 1/16" Carlock ring type gasket.
3. Bolts shall be high quality steel with hexagon nuts and heads. The Contractor shall apply grease to threads of bolt.
4. Welded joints in piping shall be by the electric or oxyacetylene process using welding rods if the characteristics similar to pipe material and as recommended by the pipe manufacturer and shall be done in accordance with the ASME Code for pressure piping. Welding shall be done by qualified welders under the requirements of the ASME Boiler and Pressure Vessel Code.
5. The pipe lengths shall be aligned with welding rings and the abutting pipe ends shall be concentric. Prior to welding, the groove and adjacent surfaces shall be thoroughly cleaned of all grease, scale, or rust. During welding, all slag, or flux remaining on the bead shall be removed before laying down the next bead. The welding metal shall be thoroughly fused with the base metal at all sections of the weld. Short lengths of pipe may be beveled on the job with oxyacetylene torch, provided all scale and oxides are removed.
6. Joints shall be butt-welded, single V-type. All fittings shall be steel welding fittings. Elbows and fittings formed with coupling or welded cut pipe sections shall not be acceptable.
7. Bonney Weldolets or welding saddles may be used for branch connections, which are less than one-half the size of the main to which they connect.
8. Ground Joint Unions, Flange Connections, Reaming & Filling Ground joint unions shall be 200 lb. s.w.p. for brass. Flanges shall be 150 lb. s.w.p. for brass, 125 lb. s.w.p. for cast iron.
9. Ground joint unions of flanges shall be used only on exposed accessible piping. Where concealed, right and left nipples and couplings must be used. Where flanged connections are used, full size gaskets must be inserted.

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C. Threads: Shall be standard, clean cut and tapered. All piping shall be reamed free from burrs. All piping shall be kept free of scale and dirt. Caulking of threads will not be permitted. All piping shall be threaded and made up in accordance with the current edition of the ASA Standard Specifications for pipe threads.

D. Unions

1. Unions for use on ferrous pipe 2" and smaller shall be malleable iron with brass to iron ground joint spherical seat and threaded connections. Unions 2 1/2" and over shall be flanged type with gasket.
2. Unions for copper tubing shall be cast bronze conforming to ASA B16. The Contractor shall furnish adapters where required for copper pipe.
3. Where copper pipe connects to ferrous pipe or metals, the Contractor shall furnish EPCO isolating type dielectric unions. Plastic type isolating bushings are not acceptable.
4. Unions shall be installed wherever necessary for repair or replacement of equipment, valves, strainers, etc. Final connections to equipment shall be made in a manner that will permit removal without cutting of pipelines.

E. Solder

1. All sweat joints shall be made up with 95/5 solder.
2. Solder shall be National Lead or approved equal. Flux shall be non-toxic and non-corrosive.
3. All copper tubing ends shall be reamed, filed and cleared of burrs and rough edges. All pipes shall be reamed after cutting and threading.

F. Expansion

1. The entire piping installation shall be installed with adequate provision for expansion. No rigid connections will be permitted.
2. Branches shall be of sufficient length and have 3 elbow swings to allow for pipe expansion.
3. Provide expansion joints, guides and anchors equal to "Metra-Flex MetraLoops" where indicated on Drawings or where necessary for proper expansion compensation. Submit shop drawing.
4. Any breaks in the piping within the guarantee period due to improper provision for expansion must be replaced at the expense of this Contractor, and the conditions corrected to prevent future recurrence.
5. Any damages to surrounding areas and equipment due to this failure shall also be repaired and paid for at the expense of the Contractor.
6. Joints to have 150 psi rating, ANSI-B16.5 with liner and cover.

2.5 PIPING SLEEVES

- A. Furnish sleeves built into place for all piping passing through walls, floors or building construction. Sleeves, not less than 1/2" larger in diameter than piping and its covering, if any, and extending full depth of construction pierced. Pack sleeves through walls/floors in accordance with Underwriters' Requirements.
- B. Sleeves piercing exterior walls, integral waterproofed walls shall be standard weight steel piping. Furnish welded center flange buried in construction for sleeves through exterior walls below grade. At exterior walls, make pipes watertight in sleeves with oakum packing and caulked lead joints on both sides of wall. All other sleeves: Galvanized sheet steel with lockseam joints, #22 USSG for 3" or under. Sleeves for piping 4" and larger, #18 USSG.
- C. Pipes passing through interior membrane waterproofed floors, cast iron flashing sleeve, with integral flashing flange and clamping ring, similar to Josam Series #1880. Adjust sleeves to floor construction with steel or wrought iron pipe nipples top and bottom, extending 3" above finished floor. Burn & J.R. Smith are equal.
- D. Pipes passing through membrane waterproofed walls, cast iron flashing sleeve with internal flashing flange and clamping ring similar to Josam Series #1870. Make pipes watertight in sleeves with oakum packing and caulked lead joints. Burn & J.R. Smith are equal.
- E. For flashing sleeves specified in Pars. C and D, lead flashing extended at least 10" around flashing sleeves, securely held in place by clamping device.

2.6 PIPING ENCLOSURES

- A. Where concealed piping in ceilings and wall of finished spaces is not possible vertical or horizontal metal piping enclosures equal to "Sterling" model PCH (horizontal) or PCHV (vertical). Provide all required hangers, supports, corners, brackets, etc. color per Architect.

PART 3 - EXECUTION

3.1 GENERAL NOTES - PIPING NOTES, DRAINING, VENTING AND MISCELLANEOUS WATER SPECIALTIES

- A. Piping shall be installed as indicated on Drawings. Elevations and dimensions are indicated as a guide only and are subject to change with actual job conditions.
- B. Except for drainage piping, which shall pitch down with flow, mains shall pitch upward or be installed dead level as indicated. Horizontal runs shall be parallel to walls.
- C. In general, all branch connections shall be top of bottom 45 degree or 90 degree, pitching up or down from mains.
- D. Where indicated, flexible connectors shall be installed. All final connections to equipment, pumps, units, etc. shall have companion flanged, flange unions or ground joint unions. (125 lbs.)

- E. All piping shall be adequately supported with approved type hangers so as to prevent absolutely any sagging of lines, or any undue strain on pipes or fittings. All pipe lines shall be capped during construction to prevent entry of dirt or other foreign material. All piping lines after erection shall be blown or flushed out to render the piping system as clean as possible before system water is added for operation.
- F. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.
- G. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- H. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.2 DRAINING

- A. All low points shall have drain valves with hose ends. Where 1/2" and 3/4" sizes are indicated, "Standard" hose end drain valves shall be used. Provide brass hose end drain caps at each drain valve. Where larger than 3/4" drains are shown, gate valve shall be used. Provide brass nipple and reducer from drain valve size to 3/4" terminating with 3/4" hose end drain valve and cap.

3.3 VENTING (For Hot Water)

- A. All high points in piping shall be vented automatically with float vents. At all high points of piping, whether specifically indicated or not, provide Maid-o-Mist or B&G No. 7 or 27 Air Eliminators with shut off cock, auxiliary key vent and copper tubing overflow carried to floor along wall as indicated or directed.

3.4 WATER SPECIALTIES

- A. Air Vents: Install at all high points automatic air vents to eliminate air binding. All automatic air vents shall be approved heavy duty type equipped with petcocks and tubing for manual venting. All vents installed in coils, etc. shall be of manual key operated type. All vents concealed from view shall be accessible through access doors. Vents shall be by Hoffman, Anderson or Bell & Gossett, 125 p.s.i.g. rated.
- B. Pressure Gauge: Furnish and install pressure gauges on suction and discharge sides of each pump and as required to check operation of equipment; pressure gauges shall have 4-1/2" diameter dials, Ashton, Ashcroft or approved equal.

- C. Install thermometers at all locations in piping system as noted on Drawings and as required to check system performance. Thermometers shall be installed at the supply and return of coils and 3-way diverting valves as manufactured by Trerice, Weksler or Moeller, with 4-1/2 inch face, cast aluminum case, chrome plated steel ring, white background with black embossed markings, glass window, stainless steel pointer, brass movement, 316 stainless steel bulb. Provide separable, universal angle sockets for all thermometers.

END OF SECTION 230410

SECTION 230420 - SUPPORTS, SLEEVES AND PLATES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. This Contractor shall furnish and install all plates, hangers and supports for his equipment including piping, headers, fans expansion tank, ductwork, etc.
- B. All ductwork, piping and equipment shall be hung or supported from structural members only.

PART 2 - PRODUCTS

2.1 PIPING, DUCTWORK AND EQUIPMENT

- A. Piping shall be supported as follows unless otherwise indicated on the Drawings:
 - 1. Spacing of pipe supports shall not exceed 8 feet for pipes up to 1-1/2" and 10 feet on all other piping.
 - 2. All piping shall be supported to allow free movement where expanding or contracting. Pipe shall be anchored as required or directed.
 - 3. All lateral runs of piping shall be securely supported on hangers, rolls, brackets, etc. and in manner to allow for proper expansion and elimination of vibration.
 - 4. 2" and smaller pipe, where run on walls, shall be supported on wrought iron "J" hook brackets with anchor bolts.
 - 5. All horizontal pipes, where run overhead or on walls, shall be supported as follows unless otherwise indicated:
 - a. On adjustable steel clevis type hangers suspended on hanger rods, pipe sizes up to and including 4".
- B. All supports shall be fastened to structural members or additional steel supports furnished by this Contractor.
- C. Sleeves shall not be used in any portion of building where use of same would impair strength of construction features of the building. Inserts for supporting lateral pipes and equipment shall be placed and secured to form work, and all sleeves inserts locations shall be thoroughly checked with Architect so as not to conflict with other trades.
- D. Anchor horizontal piping where indicated and wherever necessary to localize expansion or prevent undue strain on branches. Anchors: Heavy forged construction entirely separate from supports.

- E. Anchor vertical piping wherever indicated and wherever necessary to prevent undue strain on offsets and branches. Anchors, unless otherwise noted: Heavy steel clamps securely bolted and welded to pipes. Extension ends shall bear on building construction.
- F. Ducts shall be hung with 1" x 1/8" metal straps. When width of duct is less than 48", hangers shall be fastened to side of ducts. Auxiliary steel supports that may be required for all mechanical equipment shall be furnished and installed by this Contractor. All operating equipment including fans, piping, etc. shall be supported so as to produce minimum amount of noise transmission.
- G. Refer to "General Conditions" as well.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION 230420

SECTION 230430 - INSULATION AND COVERINGS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. Furnish insulation for all piping, equipment and sheetmetal work as noted.
- B. Insulate no piping, ducts or equipment until tested and approved for tightness. All piping and ducts shall be dry when covered. Where existing insulation has been damaged, altered or removed during the course of the work, it shall be replaced with new insulation in a neat manner to match the adjacent insulation.
- C. All insulation must be done by an approved Sub-Contractor or by mechanics skilled in this line of work.
- D. Fire hazard classification shall be 2550 per ASTM E-84, NFPA 255 and UL 723. Insulation shall be rated non-combustible type classified flame spread - 25, smoke developed - 50.

PART 2 - PRODUCTS

2.1 DUCTWORK (INDOOR)

- A. All supply, outside air intake and exhaust (on discharge side of fan) and return (in unconditioned spaces) ductwork shall be covered with fiberglass with aluminum foil vapor barrier. All joints shall be lapped so maximum coverage is achieved.
- B. All insulated ductwork shall be insulated with thick fiberglass board insulation with canvas finish in areas where ductwork is exposed.
- C. Insulation thickness shall be in accordance with the latest edition of the New York State Energy Conservation Construction Code C403.11.
- D. Thermal acoustic lining of ductwork where indicated shall be 1" thickness fiberglass unless otherwise noted. The lining shall have a mat facing and shall meet the Life Safety Standards as established by NFPA 90A and 9B and conform to the requirements of ASTM C 1071.
- E. Kitchen exhaust duct shall be covered with fire barrier duct wrap, minimum 3 inches thick, and per NFPA requirements and all other agencies having jurisdiction.

2.2 DUCTWORK (OUTDOOR)

- A. All exposed ductwork shall be internally lined and sealed, externally insulated with 2" thick closed-cell rigid board insulation and covered with fully adhered EPDM and acrylic coating.
- B. Make proper provision with ductwork support(s) so that insulation is not damaged. All exterior ductwork must be designed with adequate slope (watershed) to prevent ponding water.

2.2 PIPING (OUTDOOR)

- A. Refrigerant piping shall be insulated with 1/2" Armacell or approved equal closed cell insulation.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION 230430

SECTION 230440 - DAMPERS AND MISCELLANEOUS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

PART 2 - PRODUCTS

2.1 DAMPERS AND MISCELLANEOUS

- A. Furnish and install where shown on Drawings ARROW PIN-LOCK Dampers No. OBDPL-507 (Opposed) as manufactured by the Arrow Louver & Damper Corp. of Maspeth, NY 11378, or approved equal. Frames and blades to 1/8" extruded aluminum.
- B. Blades to be single unit PIN-LOCK design 6" wide, with the PIN-LOCK an integral section within the blade center axis. Frames to be a combination of 4" extruded aluminum channel and angle, with reinforcing bosses and groove inserts for vinyl seals.
- C. Pivot rods to be 1/2" diameter extruded aluminum, PIN-LOCK design interlocking into blade section. Bearings to be "Double-Sealed" type with Celcon inner bearing on rod riding in Merlon Polycarbonate outer bearing inserted in frame so that outer bearing cannot rotate.
- D. Blade linkage hardware is to be installed in angle or channel frame section out of air stream. All hardware to be of non-corrosive reinforced material or to be cadmium plated.
- E. Rod bearing to be designed for minimum air leakage by means of overlapping design and by extruded vinyl seals to fit into integral ribbed groove inserts in both frames and blades. All dampers in excess of 10 sq. ft. free area to have reinforced corners by means of gusset plates.
- F. Dampers shall be sized by the Control Manufacturer to properly control the flow of air and ensure minimum air stratification in mixing applications. Sizing shall be submitted for approval with information similar to that submitted on valve when sizing valve.

2.2 FIRE DAMPERS

- A. Dampers shall be multi blade construction UL labeled and be installed in accordance with UL 555, with breakaway connections. The units shall have stainless steel actuator springs with locking devices for horizontally mounted type.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION 230440

SECTION 230460 - AUTOMATIC TEMPERATURE CONTROLS

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 AUTOMATIC TEMPERATURE CONTROLS

- A. This Contractor shall furnish an electronic system of temperature controls as manufactured by Andover. The District has standardized on this manufacturer. All submitted controls shall be directly compatible with existing hardware and software without patch panels or translators or any kind. The ATC Sub-Contractor shall be subject to the District's approval.
- B. RS-232 Drivers or Hardware Translators: All DDC components shall communicate on existing Level 1 or Level 2 networks in native mode. The control Contractor must be factory trained and have been in the business of installing DDC systems for ten (10) years.
- C. The new installed system shall communicate to the existing graphic Workstation in the Buildings and Grounds office at the High School. All new graphics shall match established standards of the existing District system.
- D. All temperature control wiring regardless of voltage shall be done by this Contractor. This shall include power wiring of control panels/components from available spare circuits in electrical panels. The automatic temperature control manufacturer shall provide wiring diagrams, field supervision and one (1) year guarantee on the installed DDC system and three (3) year factory warrantee on all control equipment manufactured by the DDC manufacturer.
- E. Thermostats, temperature sensors, heating control devices, etc. are indicated on the Drawings in general.
- F. Thermostats/Temperature sensors in areas subject to vandalism shall have in addition separately mounted extra heavy guards. Submit sample.
- G. Contractor shall include all new heating control devices, thermostats, etc. indicated on Drawings or that is part of a new system.
- H. Contractor shall furnish all necessary electrical controls, motor starters, switches, etc. for proper operation of equipment furnished by him under this Contract, and as herein noted.
- I. Point and component lists are to be used as a guide. If the sequence of operation requires additional points/control devices, this Contractor shall be responsible for providing same.
- J. All control system components installed shall be manufactured by the DDC system manufacturer.
- K. Communications cabling shall be run in hallways above hung ceiling with plenum cable and wiremold where exposed.

- L. Classroom space sensors in existing building shall be installed with wiremold where required.
- M. Removals shall include switches, relays, electric components not required for the new intent. Do not leave behind items with no function. Provide appropriate blanking plates/patching where removals occur in finished spaces.

1.2 SOFTWARE CODE

- A. Owner shall be furnished with a complete, hard-bound copy of all installed software code. Final payment shall be contingent upon this requirement being met.

PART 2 - PRODUCTS

2.1 DAMPERS

- A. Furnish and install automatic dampers. Frames shall be of 16 gauge stainless steel channel, 3-1/2" wide with welded corner brackets. Damper section shall not exceed 48" in width, 60" in height. Large dampers shall be made in equal sections and have horizontal cross-overs and vertical inter-connections. Blades to be a minimum of 16 gauge stainless steel and shall be a maximum of 48" in length and 6" in width.
- B. Top and bottom edges of blades to have groove for attaching blade seals. Side seal, top, bottom and blade seals shall be of stainless steel. All bearing pins shall be retractable so that blades can be removed for servicing. Bushings shall be Bronze self-lubricating oilite. All dampers shall be of knock-down design so that dampers can be job assembled if required by field conditions. Leakage shall not exceed 10 c.f.m. per square foot at 4" static pressure.
- C. Damper linkage shall be rigged with a connecting rod, which extends through the ductwork for connection to its external damper actuator. If internal actuators are provided, they shall be connected to the damper through jack shafting.
- D. Dampers shall be sized by the Control Manufacturer to properly control the flow of air and ensure minimum air stratification in mixing applications. Sizing shall be submitted for approval with information similar to that submitted on valve when sizing valve.

2.2 DAMPER OPERATORS

- A. All damper operators shall be fully proportioning unless otherwise specified. They shall have ample power to overcome friction of damper linkage and air pressure acting on the louvers. The dampers operator mounting arrangement shall be outside the airstream wherever possible. They shall be arranged to fail safe in either a normally open or normally closed position in the event of power failure. The open or closed position shall be as specified or as required to suit job conditions.

- B. Where damper operators operate in sequence with valve operators or in unison or sequence with other damper operators, provide on each damper one damper motor with a pilot positioner to provide adjustable operating ranges and starting points and positive close off at the required control signal pressure. Positioners must be directly connected to the actuator shaft. Ratio relays are not acceptable.

2.3 VALVES

- A. All valves shall be fully proportioning, unless otherwise specified, quiet in operation, and shall be arranged to fail safe, in either a normally open or normally closed position, in the event of power failure. The open or closed position shall be as specified or as required to suit job conditions. All valves shall be capable of operating at varying rates of speed to correspond to the exact dictates of the controller and variable load requirements.
- B. Where valves operate in sequence with other valves or damper operators, provide on each valve a pilot positioner to provide adjustable operating ranges and starting points and positive close off at the required control signal pressure. Positioners must be directly connected to the valve stem. Ratio relays are not acceptable.
- C. Valves shall be sized by the Temperature Control Manufacturer and guaranteed to meet the heating or requirements as specified and indicated on the Drawings. Unless otherwise specified, all shall conform to the requirements herein specified for the piping system in which they are installed.

2.4 CENTRAL CONTROL PANEL

- A. Provide a central control touch screen panel (location to be determined by Owner). This central panel will allow for time clock scheduling, setpoints, monitoring of points and alarm. All freezestats will be reset manually at the central panel. All alarms will be displayed and reset manually at central panel.
- B. All exhaust fans shall be controlled by the central control panel.

2.5 LOCAL STAND-ALONE CONTROLLERS

- A. Provide local stand-alone controllers as required. These controllers will, through DDC programs control local units. They shall be networked together to central touch screen panel.

2.6 ENCLOSURES

- A. All control components shall be mounted in NEMA-1, lockable, hinged enclosures.

PART 3 - EXECUTION

3.1 GENERAL

- A. All DDC Controllers shall be networked to Central Communications controller.
- B. Existing Front End Workstation in B & G office at the **High School** shall be configured for **Elementary School** access. Text/Graphic screens for each system shall match existing.
- C. Communications cabling shall be run in hallways above hung ceiling with plenum cable and wiremold where exposed.
- D. Classroom space sensors in existing building shall be installed with wiremold where required.
- E. All salvageable control components shall be turned over to Owner or removed from site at his discretion.

3.2 SEQUENCE OF OPERATION

A. Rooftop Air Handling Units

Point List

- a. Supply Fan VFD (Speed and Status).
- b. Exhaust Fan VFD (Speed and Status).
- c. Energy Recovery Wheel VFD (Speed and Status).
- d. Space Temperature.
- e. Space Temperature Setpoint(s).
- f. OA, EA, RA and Mixed Air Temperatures.
- g. Heating Coil Valve(s) Modulation.
- h. OA, EA, RA Damper Modulation.
- i. Freeze-stat.
- j. Discharge Temperature.
- k. DX Cooling Start/Stop/Status.
- l. Outdoor CO2 Level.
- m. Space CO2 Level.
- n. Heat Recovery Wheel Status.

2. Sequence of Operation

- a. Unoccupied: In this mode:
Supply and Exhaust fans off, OA and EA dampers closed. Upon a call for heat, the perimeter convectors operate to satisfy the temperature setpoint. If required, the supply fan cycles on and heating Coil valve modulates to maintain 55°F space temperature (adjustable), when outdoor air temperature drops below 40°F, coil valve shall modulate to minimum 10% flow through coil to prevent freezing. (All modes: occupied. Warm up & economizer, etc.)

- b. Morning Warm-up: During the heating season, a warm-up mode will be invoked if the return air temperature is below 60°F (adj.) upon unit start-up. In this mode:
- The OA and EA dampers will open and thru a hard wired interlock the supply and exhaust fans will start. Fans will slowly ramp up to preset speed. The warm-up program will reset the Heating Coil supply air temperature setpoint to 80°F (adj.). The Heating Coil valve will modulate to maintain the supply air temperature setpoint. The supply air setpoint will be reset linearly and inversely from 80°F (adj.) to 70°F (adj.) as the return air temperature increases from 60°F to 70°F (adj.).
 - Once the return air has reached 70°F (adj.) the RTU will be controlled as described in the occupied mode.
 - Note: the energy recovery wheel will be on when the unit is on and rotate as needed to maintain exhaust air temperature. Energy wheel freeze protection is integral to the unit.
- c. Cool Down: During the cooling season, a cool-down mode will be invoked if the return air temperature is above 80°F (adj.) upon unit start-up. In this mode:
- The cool-down program will reset the supply air temperature setpoint to 55°F (adj.)
 - The OA and EA dampers will open, OA and EA bypass dampers will be closed, RA damper open,
 - The direct expansion cooling system shall operate to maintain the supply air temperature setpoint. The supply air setpoint will be reset linearly and inversely from 55°F (adj.) to 70°F (adj.) as the return air temperature decreases from 80°F to 70°F (adj.).
 - Once the return air has reached 70°F (adj.) the ERU will be controlled as described in the occupied mode.
 - Note: the energy recovery wheel will be on when the unit is on and rotate as needed to maintain exhaust air temperature. Energy wheel freeze protection is integral to the unit.
 - Perimeter Radiation –will be closed.
 - Humidity control: A space mounted humidistat shall engage the dehumidification system to maintain 60% RH, even when cooling is satisfied.
- d. Occupied: In this mode:
The OA and EA dampers will open, OA and EA bypass dampers will be closed, RA damper closed;
- Supply fan will start and ramp up slowly to its' preset speed via VFD. The return fan will follow and track the supply fan as needed.
 - Direct expansion cooling system shall operate as needed to maintain occupied cooling setpoint (adjustable).
 - Hot water valve will modulate as needed to maintain occupied heating setpoint (adjustable).
 - An adjustable dead band offset will prevent short cycling.

- Note: the energy recovery wheel will be on when the unit is on and rotate as needed to maintain exhaust air temperature (by others). Energy wheel freeze protection is integral to the unit.
- e. Economizer Mode: In this mode:
- If the outside air temperature is greater than the return air temperature, the system will operate as described in the occupied mode.
 - If the outside air temperature is less than the return air temperature and the outside air temperature is greater than 50°F (adjustable), the OA and EA bypass dampers will open and the return air damper will close. This will be the first stage of Cooling.
 - Should additional cooling be required the mechanical cooling shall operate as needed.
 - Note: the energy recovery wheel will be off during economizer mode. Energy wheel freeze protection is integral to the unit.
- f. Alarms: In this mode:
- i. The freezestat mounted after the hot water coil will protect the water coils from freezing. Should the freezestat go into alarm the supply and return fans will shut off. The OA and EF, dampers will be closed. The OA and EA bypass dampers will be closed. The RA damper shall be open. The hot water coil valve will be open. An alarm will be generated at the operators work station. Note: the freezestat will be able to be reset from the operator's work station.
 - ii. Should the command not equal the status within 90 seconds from start-up an alarm will be generated at the operator's work station.
 - iii. Should any temperature fall outside of its preset limits (high/low) an alarm will be generated at the operator's work station.
- g. Demand Control Ventilation:
- i. Ventilation method shall be by demand controls. There shall be no provision to remove CO2 by any other method other than dilution. Prior to space occupancy, a preoccupancy purge cycle shall be initiated for a minimum 30 minutes. Fans shall start and run and the outdoor air intake rate shall ramp up to 100 percent of unit capacity. Upon conclusion of space occupancy, a post occupancy flush cycle shall occur. The fans shall run and the outdoor air intake rate shall ramp up to 100 percent of the unit capacity until indoor CO2 concentrations in the space are reduced to outdoor air levels. Upon such occurrence, the fans shall shutdown. During occupancy, the outdoor air damper shall start to modulate open beyond the minimum setpoint, starting at an interior CO2 concentration of not greater than 100 PPM over that of the outdoor air concentration. The outdoor air damper shall be open for full occupancy when CO2 concentrations reach the upper limit of 200 PPM over that of the outdoor air. The economizer system shall override the CO2 control system when conditions permit free cooling of the space.

h. Heat Recovery:

- i. The heat recovery wheel shall operate whenever the unit is operating in the Occupied mode, according to its own packaged controls.

3.3 CONTROL DIAGRAMS

- A. Complete new control diagrams showing type of apparatus, cycles of operation and details of all equipment must be submitted for checking and be approved before installation is started.
- B. Submit three (3) preliminary copies of the control diagrams, sequence descriptions, and equipment shop drawings for checking and submit six (6) copies, complete for final approval.
- C. At the completion of installation, control manufacturer shall furnish non-fading original; plastic laminated copies of all control diagrams as they apply to the particular instruments thereon. One complete set of non-fading plastic laminated diagrams shall be mounted on wall as directed.

3.4 CERTIFICATION

- A. After completion of installation and after equipment has been placed on operation, the temperature control manufacturer shall submit in writing, a complete and detailed report and certification that the entire installation is operating exactly as specified and shall be guaranteed for one year. Report shall state temperature and throttling range readings and settings of all control instruments. Submit to the Engineer preliminary for checking and approval.

3.5 INSTALLATION

- A. All work under the automatic temperature control Sub-Contract shall be done by competent skilled mechanics regularly in the employ of the temperature control manufacturer.
- B. Bidder must be a control manufacturer currently involved in the production of commercial pneumatic/electric temperature controls. Franchises and associations are not considered control manufacturers.

3.6 TRAINING

- A. The Contractor shall supply personnel to train key customer personnel in the operation and maintenance of the installed system. The training program shall be designed to provide a comprehensive understanding and basic level of competence with the system. It shall be sufficiently detailed to allow customer personnel to operate the system independent of any outside assistance. On-line context sensitive HELP screens shall be incorporated into the system to further facilitate training and operation.

- B. The training plan shall include detailed session outlines and related reference materials. The customer personnel shall be able to utilize these materials in the subsequent training of their co-workers.
1. Training time shall not be less than a total of 40 hours, and shall consist of:
 - a. 16 hours during normal day shift periods for system operators. Specific schedules shall be established at the convenience of the customer.
 - b. 24 hours of system training shall be provided to customer supervisory personnel so that they are familiar with system operation.
 - c. The specified training schedule shall be coordinated with the customer and will follow the training outline submitted by the Contractor as part of the submittal process.
 - d. Provide an as built Video training tape, showing & explaining all animated graphics in detail, all controllers and equipment the FMS operates. (Four (4) Copies shall be supplied)
 - e. If further training is needed, the Contractor shall provide another 40 hours at no extra cost.
 2. All training sessions shall be scheduled by the Construction Manager. The Contractor shall provide sign-in sheets and distribute minutes of each session prior to the subsequent session. This documentation shall be included in the Operation and Maintenance manuals.

END OF SECTION 230460

SECTION 230470 - TESTING, START-UP AND ADJUSTMENTS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 TESTING, START-UP AND ADJUSTMENTS

- A. Furnish all materials, supplies, labor and power required for testing. Make preliminary tests and prove work satisfactory. Notify Architect and all authorities having jurisdiction in ample time to be present for final testing of all piping. Test before insulating or concealing any piping. Repair defects disclosed by tests, or if required by Architect, replace defective work with new work without additional cost to Owner. Make tests in stages if so ordered by Architect to facilitate work of others. Use of wicking in tightening leaking joints not permitted.
- B. HVAC Contractor is responsible for work of other trades disturbed or damaged by tests and/or repair and replacement of his work and shall cause work so disturbed or damaged to be restored to its original condition at his own expense.
- C. Unless otherwise specified, all piping systems shall be hydrostatically tested to 150 p.s.i.g. Tests shall be of four (4) hour duration during which time piping shall show no leaks and during time no sealing of leaks will be permitted.
- D. HVAC Contractor shall balance out system and submit test reports showing operating data to include the following:
 - 1. C.F.M. of all air handling equipment.
 - 2. C.F.M. at each air outlet.
 - 3. G.P.M. for equipment.
 - 4. R.P.M. for each fan and fan motor.
 - 5. Motor power consumption.
 - 6. Air temperature readings before and after coils.
 - 7. Water temperature readings in and out of coils and through equipment.
 - 8. Pressure gauge readings before and out of all pertinent equipment.
- E. If the performance of the systems does not conform to the design parameters the Contractor shall return to the site until the systems perform as designed.
- F. HVAC Contractor shall furnish services of qualified personnel, thoroughly familiar with job, to operate and make all adjustments so that system and control equipment shall operate as intended. This shall include adjustment/replacement of sheaves/impellers to achieve design performance. Adjustments shall be made including balancing of water and air systems in cooperation with qualified representatives of mechanical equipment manufacturers and temperature control manufacturer. This shall include any required adjustment/replacement of sheaves, belts, impellers, etc. to achieve design performance. Architect/Engineer is to be notified when this balancing is to be performed.

- G. When all work is in an acceptable operating condition, furnish operating and maintenance manuals as specified in General Requirements.
- H. All HVAC equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces.
- I. Contractor shall include in his Bid, adjustment of air quantity below scheduled C.F.M. for air systems deemed "noisy" by Owner subsequent to initial balancing.
- J. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.
- K. Final inspection and approval shall be made only after proper completion of all of above requirements.

END OF SECTION 230470

SECTION 230480 - GENERAL LABELING, VALVE CHARTS AND PIPING IDENTIFICATION

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 GENERAL LABELING AND VALVE CHARTS

- A. This Contractor shall have appropriate descriptive labels, identification tags and nameplates of equipment, valves, etc. furnished and installed under this Contract and shall be properly placed and permanently secured to (or adjacent to) the item being installed. All such labels, identifications, tags, nameplates, etc. shall be selected by the Architect/Engineer.
- B. In general, labels shall be the lamacoid type of sufficient size to permit easy identification, black coated, white edged, with letters 3/16" high. Major equipment, apparatus, control panels, etc. shall have 8" x 4" lamacoid plates with lettering of appropriate size.
- C. Provide tags for all valves, automatic and manual dampers. Tags shall be Type #2020 anodized aluminum of #1420 lamacoid engraved. Tags may not necessarily be standard. Fasten tags to valve or damper with brass chain.
- D. All nameplates, labels, identifications and tags shall be as manufactured by the Seton Name Plate Co., of New Haven, CT or approved equal. Submit complete schedules, listings and descriptive data together with samples for checking and approval before purchasing. Labeling shall include the "number" of the equipment, valve, dampers, switch, etc. and service of the valve.
- E. Mount on laminated plastic boards with transparent surface all valves, wiring diagrams, control diagrams, instruction charts, permits, etc. Valve chart shall be non-fading with original copies laminated.

1.2 IDENTIFICATION OF PIPING

- A. This Contractor shall provide on all piping, semi-rigid, wrap around plastic identification markers equal to Seton Snap-Around and/or Seton Strap-On pipe markers.
- B. Each marker background is to be appropriately color coded with a clearly printed legend to identify the contents of the pipe. Directions of flow arrows are to be included on each marker.
- C. Identification of all piping shall be adjacent to each valve, at each pipe passage through wall, floor and ceiling construction and at each branch and riser take-off.
- D. Identification shall be on all horizontal pipe runs, marked every 15 ft. as well as at each inlet outlet of equipment.

END OF SECTION 230480

SECTION 230485 - HVAC SYSTEMS COMMISSIONING

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 RELATED DOCUMENTS

- A. In the case of a conflict between this and any other section in the project specifications, the more stringent or detailed requirements shall apply.

1.2 DEFINITIONS

- A. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- B. CxA: Commissioning Authority.

1.3 DESCRIPTION

- A. The systems that shall be commissioned in this project include but are not limited to the following:
 - 1. Central Building Automation System including packaged unitary controllers.
 - 2. Equipment of the heating, ventilating and air conditioning systems.

1.4 OVERVIEW OF CONTRACTOR'S RESPONSIBILITIES

- A. Perform commissioning inspections and tests at the direction of the CxA.
- B. Attend construction phase controls coordination meeting.
- C. Attend testing, adjusting, and balancing (TAB) review and coordination meetings.
- D. Participate in HVAC systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.
- E. Provide information requested by the CxA for final commissioning documentation.
- F. Provide measuring instruments and logging devices to record test data and provide data acquisition equipment to record data for the complete range of testing for the required test period.
- G. Provide detailed startup procedures.
- H. Provide copies of all submittals, including all changes thereto, with details as required in the appropriate subsection of 3.1 Responsibilities.

- I. Facilitate the coordination of the commissioning process and incorporate commissioning activities into overall project schedule (OPS).
- J. Ensure all subcontractors and vendors execute their commissioning responsibilities according to the contract documents and the OPS.
- K. Provide required demonstration and training of owner's personnel.
- L. Review and accept construction checklists provided by commissioning authority (CxA).
- M. Prepare O&M manuals, according to the contract documents, including clarifying and updating the original sequences of operation to as-built/as-tested conditions.
- N. Cooperate with the CxA for resolution of issues recorded in the "Issues Log"
- O. Prepare and provide all documentation as necessary for the compilation of the Systems Manual.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

- A. The HVAC Contractor shall provide all standard testing equipment required to perform startup, initial checkout, and testing requirements of Division 23.
- B. The Controls Contractor shall provide all standard testing equipment required to test the Building Automation and Automatic Temperature Control System (BAS), including calibration of valve and damper actuators and all sensors. Trend logs for functional testing shall be generated through the BAS interface as requested by the CxA.
- C. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the following tolerances. Temperature sensors and digital thermometers shall have a certified calibration, performed within the past year, to an accuracy of 0.5°F and a resolution of ± 0.1 °F. Pressure sensors shall have an accuracy of $\pm 2.0\%$ of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

PART 3 - EXECUTION

3.1 RESPONSIBILITIES

- A. HVAC, Controls and TAB Contractors. The commissioning responsibilities applicable to each of the HVAC, Controls and TAB Contractors of Division 23 are follows:
 - 1. Attend the initial commissioning meeting conducted at the start of construction, the commissioning meeting held 30 days prior to startup of the primary equipment, and all commissioning team meetings.

2. Provide a copy of approved shop drawings and startup reports for all commissioned equipment to the CxA. Supplement the shop drawing data with the manufacturer's installation and start-up procedures. This material should be identical to the literature which will be included in the Operation and Maintenance Manuals.
 3. The Operation and Maintenance Manuals shall be submitted to the CM prior to the start of training (three (3) weeks before startup and training and at least sixty (60) days before substantial completion).
 4. Perform and document results of Pre-functional Inspections at the direction of the CxA. Ensure that the inspection checklists are completed before startup or as specified by the CxA.
 5. During the startup and initial checkout process, execute all portions of the manufacturer's start-up checklists for all commissioned HVAC equipment.
 6. Perform and clearly document all completed startup and system operational checkout procedures and provide a copy to the CxA.
 7. Perform and document results of equipment functional testing at the direction of the CxA. Ensure that the testing is completed in the timeline specified by the CxA.
 8. Address current A/E punch list items and Commissioning corrective action items on the "Issues Log" before functional testing. Air and water TAB shall be completed, with discrepancies and problems remedied, before functional testing of the respective air-or water-related systems.
 9. Provide skilled technicians to execute starting of equipment and to perform tests in accordance with all Division 23 sections. Where specified, startup shall be performed by a factory authorized service representative. Ensure that they are available and present during the agreed-upon schedules for the sufficient duration to complete the necessary tests, adjustments and problem-solving.
 10. Correct deficiencies (differences between specified and observed performance as interpreted by the CxA and A/E) and retest the equipment.
 11. Provide training of Owner's operating staff as specified in Division 23 Sections. Use expert qualified personnel.
 12. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.
 13. Correct deficiencies and make necessary adjustments to O&M manuals for applicable issues identified in any seasonal testing.
- B. HVAC Contractor. The responsibilities of the HVAC Contractor, during construction and acceptance phases in addition to those listed in (A) are:

1. Provide startup for all HVAC equipment.
 2. Prepare a preliminary schedule for Division 23 pipe and duct system testing, flushing and cleaning, equipment start-up and TAB start and completion for use by the PM and CxA. Update the schedule as appropriate.
 3. Notify the PM and CxA when pipe and duct system testing, flushing, cleaning, startup of each piece of equipment, and TAB will occur. Be proactive in seeing that commissioning processes are executed and that the CxA has the scheduling information needed to efficiently facilitate the commission process.
 4. Calibrations: The HVAC Contractor is responsible to calibrate all factory-installed sensors and actuators. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated by the HVAC Contractor.
 5. Supervise all commissioning activities executed by subcontractors, including the Controls Contractor.
 6. List and clearly identify on the as-built duct and piping drawings the locations of all flow meters, fire and smoke dampers, duct detectors, temperature sensors, relative humidity sensors, CO2 sensors, static and differential pressure sensors (air, water and building pressure).
- C. Controls Contractor - The commissioning responsibilities of the Controls Contractor, during construction and acceptance phases in addition to those listed in (A) are:
1. Sequences of Operation Submittals. The Controls Contractor's submittals of control drawings shall include complete detailed sequences of operation for each piece of equipment, regardless of the completeness and clarity of the sequences in the specifications. The submitted sequences shall generally include the following, but can vary according to project needs:
 - a. An overview narrative of the system (one or two paragraphs) generally describing its purpose, components and function.
 - b. Logic diagrams detailing the flow of information for each control algorithm. These diagrams should include all inputs, outputs, and computations.
 - c. All interactions and interlocks with other systems.
 - d. Detailed delineation of control between any packaged controls and the building automation system, listing which points the only monitored at the BAS, and which points can be controlled by and adjusted at the BAS.
 - e. Written sequences of control for packaged controlled equipment. (Equipment manufacturers' stock sequences may be included but will generally require additional narrative).
 - f. Start-up sequences.
 - g. Warm-up mode sequences.
 - h. Normal operating mode sequences.
 - i. Unoccupied mode sequences.
 - j. Shutdown sequences.
 - k. Capacity control sequences and equipment staging.

- l. Temperature and pressure control: setbacks, setups, resets, etc.
 - m. Detailed sequences for all control strategies, e.g., economizer control, optimum start/stop, staging, optimization, demand limiting, etc.
 - n. Effects of power or equipment failure with all standby component functions.
 - o. Sequences for all alarms and emergency shutdowns.
 - p. Seasonal operational differences and recommendations.
 - q. Initial and recommended values for all adjustable settings, setpoints and parameters that are typically set or adjusted by operating staff; and any other control settings or fixed values, delays, etc. that will be useful during testing and operating the equipment.
 - r. Daily/weekly/monthly schedules, as appropriate, if known.
 - s. To facilitate referencing in testing procedures, all sequences shall be written in small statements, each with a number for reference. Where possible, the numbering sequence shall correspond with Section 23 0460 Automatic Temperature Controls.
- 2. Control Drawings Submittal:
 - a. The control drawings shall have a key to all abbreviations.
 - b. The control drawings shall contain graphic schematic depictions of the system and each component.
 - c. The schematics shall include the system and component layout of any equipment that the control system monitors, enables, or controls, even if the equipment is primarily controlled by packaged or integral controls.
 - d. Provide a full points list with at least the following included for each point:
 - 1. Controlled system.
 - 2. Point abbreviation
 - 3. Point description
 - 4. Display unit.
 - 5. Control point or setpoint (Yes/No)
 - 6. Input point (Yes/No)
 - 7. Output point (Yes/No)
 - e. The controls contractor shall keep the A/E, CxA, HVAC and TAB Contractor informed, in a timely manner, of all changes to this list during programming and setup.
- 3. Submit a written checkout plan indicating in a step-by-step manner, the procedures that will be followed to test, checkout and adjust the control system prior to functional testing. At minimum, the checkout plan shall include for each type of equipment controlled by the building automation system:
 - a. System name.
 - b. List of devices.

- c. Step-by-step procedures for testing each controller after installation, including:
 - 1. Process of verifying proper hardware and wiring installation.
 - 2. Process of downloading programs to local controllers and verifying that they are addressed correctly.
 - 3. Process for performing and documenting point-to-point checkout for each digital and analog input and output.
 - 4. Process of performing operational checks of each controlled component.
 - 5. Plan and process for calibrating valve and damper actuators and all sensors.
 - 6. A description of the expected field adjustments for transmitter, controllers and control actuators should control responses fall outside of expected values.
 - d. A copy of the log and field checkout sheets that will document the process. This log must include a place for initial and final read values during calibration of each point and clearly indicate when a sensor, controller or command has "passed" and is operating within the contract parameters.
 - e. A description of the instrumentation required for testing.
 - f. Indicate the portion of the controls checkout plan that should be completed prior to TAB using the controls system for TAB work. Coordinate with the CxA and TAB Contractor for this determination.
- 4. Point-to-Point Checkout: Include in the checkout plan a point-to-point checkout. Each control point tied to a central control system shall be verified to be commanding, reporting and controlling according to its intended purpose. For each output, commands shall be initiated and verified to be functioning by visually observing and documenting the status of the controlled device in the field (e.g., valve or damper actuator response, pump or fan status). For each input, the system or conditions shall be altered to initiate the input response being tested and the response in the control system observed and recorded (e.g. high duct static pressure alarm).
 - 5. Calibrations: The Controls Contractor is responsible to calibrate all field installed sensors and actuators using test and documentation methods approved by the CxA. The HVAC Contractor is responsible to calibrate all factory installed sensors and actuators.
 - a. Sensors installed in the unit at the factory, with a calibration certification provided, need not be field calibrated by the HVAC Contractor.
 - b. Valve leak-by tests shall be conducted by the Contractor when shown on a construction checklist.

- c. All procedures used shall be fully documented by the Controls Contractor on suitable forms, clearly referencing the procedures followed and written documentation of initial, intermediate and final results.
 - 6. Beyond the control points necessary to execute all documented control sequences, provide monitoring, control and virtual points as indicated in the Specifications.
 - 7. Provide an official notice to proceed to the CxA and project team upon completion of the Building Automation System (BAS) and Automatic Temperature Control System (ATC) installation, including checkout and calibration of each controlled device, to confirm that all system programming is complete as to all respects of the Contract Documents. This shall be submitted by the Controls Contractor prior to the start of functional testing by the CxA.
- D. TAB Contractor: The scope of work for the TAB Contractor is provided in Section 230460.

3.2 SUBMITTALS

- A. The Contractor shall send one copy of product data, shop drawings and similar submittals to the CxA at the same time they are submitted to the A/E. The CxA will review the submittals and provide any comments to the A/E for inclusion in their comments. The Architect will transmit to the CxA, for the CxA's use in preparing functional test procedures; one reviewed and approved copy of product data, shop drawings and similar submittals received from the HVAC, Controls and TAB Contractors, pertinent to equipment and systems to be commissioned.

3.3 STARTUP

- A. The HVAC, Controls and TAB Contractors shall follow the start-up and initial checkout procedures listed in the Responsibilities list in this section. Equipment start-up is required to complete systems, and sub-systems so they are fully functional, in compliance with the Contract Documents. The commissioning procedures and functional testing do not relieve or lessen this responsibility, or partially shift that responsibility to any extent onto the Commissioning Agent or Owner.
- B. Testing is intended to begin upon completion of a system. Refer to Section 019100 for additional information related to scheduling.

3.4 TESTS

- A. The HVAC and Controls Contractors shall provide the necessary support to the CxA to complete functional testing. The Controls Contractor shall fully test and verify all aspects of the BAS Contract Work on a point / system / integrated operational basis for all points, features and functions specified. The following requirements apply to all mechanical and control systems and features that are to be commissioned when referenced below. Tests shall:
 - 1. Verify functionality and compliance with the basis of design for each individual sequence module in the sequence of operations. Verify proper operation of all

control strategies, energy efficiency and self-diagnostics features by stepping through each sequence and documenting equipment and system performance. Tests shall include startup, normal operation, shutdown, scheduled 'on' and 'off', unoccupied and manual modes, safeties, alarms, over-rides, lockouts and power failure.

2. Verify operation of systems and components that may be impacted during low, normal and high load conditions and during combinations of environmental and interacting equipment conditions that could reasonably exist and potentially result in adverse system reaction.
 3. Verify all alarm and high and low limit functions and messages generated on all points with alarm settings.
 4. Verify integrated performance of all components and control system components, including all interlocks and interactions with other equipment and systems.
 5. Verify shutdown and restart capabilities for both scheduled and unscheduled events (e.g., power failure recovery and normal scheduled start/stop).
 6. Verify proper sequencing of heat transfer elements as required to prevent simultaneous heating and cooling, unless specifically required for dehumidification operation.
 7. Verify system response and stability of control loops under different load conditions and determine if additional loop tuning is required for dehumidification operation.
 8. When applicable, demonstrate a full cycle from 'off' to 'on' and 'no load' to 'full load' and then to 'no load' and 'off'.
 9. Verify time of day schedules and setpoints.
 10. Verify all energy saving control strategies.
 11. Verify that all control system graphics are complete, that graphics are representative of the systems, and that all points and control elements are shown in the same location on the graphics as they are located in the field.
 12. Verify operation control of all adjustable system control points, including proper access level as agreed to during the controls system demonstration.
- B. In addition to specific details, and/or standards referenced for acceptance testing indicated in other Division 23 sections, the following common acceptance criteria shall apply to all mechanical equipment, assemblies, and features:
1. For the conditions, sequences and modes tested, the equipment, integral components and related equipment shall respond to varying loads and changing conditions and parameters appropriately as expected, according to the sequence of operation, as specified, according to acceptable operating practice and the manufacturer's performance specifications.

2. Systems shall accomplish their intended function and performance (e.g. provide supply air and water at designated temperature and flow rate, etc., and maintain space conditions in terms of air temperature, relative humidity, and CO2 concentration) at specified levels at varying conditions.
3. Control loops shall be stable under all operating conditions. Control loops shall exhibit a quarter decay ratio type response to a step change or other upset and return to stable operation in a time frame that is reasonable and realistic for the system that they are associated with.
4. Resetting a manual safety shall result in a stable, safe, and predictable return to normal operation by the system.
5. Safety circuits and permissive control circuits shall function in all possible combinations of selector switch positions (hand, auto, inverter, bypass etc.).
6. Additional acceptance criteria may be defined by the CxA when detailed tested procedures are developed.
7. At the CxA's discretion, if large numbers of deficiencies or repeated deficiencies are encountered, the CxA shall suspend functional testing until the Contractor corrects the deficiencies and troubleshoots all remaining systems at issue on their own. The Contractor shall be responsible for any resulting schedule delays that increase the overall time period to complete functional testing.
8. Retesting: The CxA will direct the retesting of the equipment once at no charge to the Owner for their time. The CxA's time and expenses incurred for a second retest, if required due to no fault of the CxA, will be reviewed by the Owner to determine the appropriate means of compensation to the CxA for extension of services. The functional testing shall include operating the system and components through each of the written sequences of operation, and other significant modes and sequences, including startup, shutdown, unoccupied mode, manual mode, staging, miscellaneous alarms, power failure, security alarm when impacted and interlocks with other systems or equipment. Sensors and actuators shall be calibrated during construction checkout by the installing contractors and spot-checked by the CxA during functional testing.

3.5 WRITTEN WORK PRODUCTS

- A. Written work products of Contractors shall consist of the filled out start-up, initial checkout, and test documentation in accordance with all Division 23 sections.

END OF SECTION 230485

SECTION 230490 - GUARANTEE

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 GUARANTEE

- A. The Contractor shall remove, replace and/or repair at his own expense and at the convenience of the Owner, any defects in workmanship, materials, ratings, capacities and/or characteristics occurring in the work within one (1) year or within such longer period as may be provided in the Drawings and/or Section of the Specifications, which guarantee period shall commence with the final acceptance of the entire Contract in accordance with the guarantee provisions stated in the General Conditions, and the Contractor shall pay for all damage to the system resulting from defects in the work and all expenses necessary to remove, replace, and/or repair any other work which may be damaged in removing, replacing and/or repairing the work.

END OF SECTION 230490

SECTION 260100 - GENERAL CONDITIONS

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 DESCRIPTION OF WORK

- A. It is the intention of the Specification and Drawings to call for finish work, tested and ready for operation.
- B. Any apparatus, appliance material or work not shown on the Drawings but mentioned in the Specifications, or vice versa, or any incidental accessories or ancillary devices necessary to make ready for operation even if not particularly specified, shall be furnished, delivered and installed under their respective Division without additional expense to the Owner.
- C. Minor details not usually shown or specified, but necessary for proper installation and operation, shall be included in the work as though they were hereinafter specified or shown.
- D. Work under each section shall include giving written notice to the Architect of any materials or apparatus believed inadequate or unsuitable, in violation of laws, ordinances, rules and regulations of authorities having jurisdiction; and any necessary items of work omitted. In the absence of such written notice, it is mutually agreed that work under each section has included the cost of all necessary items for the approved satisfactory functioning of the entire system without extra compensation.
- E. Small scale drilling through walls and floors which may contain asbestos shall be performed by a person with a "restricted asbestos handler allied trades certificate" and shall have a copy of it in his possession at all times while working of the project.

1.2 DRAWINGS

- A. Drawings are diagrammatic and indicate the general arrangement of the system and work included in the Contract. (Do not scale the drawings). Consult the Architectural Drawings and details for exact location of fixtures and equipment; where same are not definitely located, obtain this information from the general construction supervisor.
- B. Work under each section shall closely follow Drawings in layout of work; check Drawings of other Divisions to verify spaces in which work will be installed. Maintain maximum headroom; do not begin work until unsatisfactory conditions are corrected.
- C. Make reasonable modifications in the layout as needed to prevent conflict with work of other Sections of the Specifications or for proper execution of the work.

- D. It shall be understood that the right is reserved by the Architect/Engineer to change the location of equipment and apparatus to a reasonable extent as building conditions may dictate, prior to their installation without extra cost to the Owner.

1.3 SURVEYS AND MEASUREMENTS

- A. Base all measurements, both horizontal and vertical, from established benchmarks. 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.
- B. Before proceeding with the work resolve discrepancies between actual measurements and those indicated, which prevent following good practice or intent of the Drawings or Specifications.

1.4 CODES AND STANDARDS – Coordinate with Division 1

- A. The Codes and Standards listed below apply to all Electrical work codes or standards that are mentioned in these Specifications; the latest edition or revision shall be followed:
 - 1. NEMA - Standards
 - 2. ANSI CI - National Electrical Code (NFPA 70)
 - 3. ANSI C50.13 - Rotating Electrical Machinery
 - 4. NEMA MG2 - Construction and guide for selection, installation and use of electric motors.
 - 5. NEMA MG1 - Motors and Generators
- B. The following State and Local Codes shall apply: New York State Uniform Fire Prevention and Building Code, and Local Building Codes.
- C. The following abbreviations are used within this Division of the Specifications:
 - 1. IES - Illuminating Engineering Society.
 - 2. NEC - National Electrical Code
 - 3. ANSI - American National Standards Institute
 - 4. ASTM - American Society for testing and materials
 - 5. EPA - Environmental Protection Agency
 - 6. IEEE - Institute of Electrical and Electronic Engineers
 - 7. NEMA - National Electrical Manufacturers Association
 - 8. NFPA - National Fire Protection Association.
 - 9. OSHA - Occupational Safety and Health Administration
 - 10. UL - Underwriter's Laboratories

1.5 PERMITS AND FEES

- A. Give all necessary notices, obtain all permits and pay all Government and State sales taxes and fees where applicable, and other costs, including utility connections or extensions in connection with work of this Division. File all necessary plans, prepare all documents and obtain all necessary approvals of all Governmental and State departments having jurisdiction; obtain all necessary certificates of inspections for his work and deliver a copy to the Architect before request for acceptance and final payment for the work. Pay fees for utility construction/connections.
- B. Include in the work, without extra cost to the Owner, any labor, materials, services, and apparatus, Drawings in order to comply with all applicable laws, ordinances, rules and regulations, whether or not shown on the Drawings and/or specified.
- C. All materials furnished and all work installed shall comply with the rules and recommendations of the National Fire Protection Association, with the requirements of the local utility companies, with the recommendations of fire insurance rating organization having jurisdiction and with the requirements of all governmental departments having jurisdiction.
- D. All materials and equipment for the electrical portion of the mechanical systems shall bear the approval label of or shall be listed by the Underwriter's Laboratories, Inc.

1.6 TEMPORARY LIGHT AND POWER – See Division 1

- A. The Contractor shall furnish, install, maintain and, upon direction to do so, remove system of temporary lighting and power for the use of all construction trades.
- B. The Electrical Contractor shall provide adequate electrical service for the needs of all Contracting Trades.
- C. Wiring shall be provided for temporary use during building construction, including grounding and fused main cut-off switches. Temporary electric lines with branch switches shall be provided for lighting and for taps for electric tools, pumps and other temporary equipment; all connected to a main line looped through floor spaces and up stair wells or shafts. All power outlets shall be grounded to an equipment ground wire in an approved manner. Electric lines shall be extended to power tools, which cannot be located within reach of extension cords.
- D. Light bulbs shall be provided in sufficient quantity to light the building for safety purposes. Extension cords shall be provided as may be essential to the proper execution of the work. Temporary lighting shall be provided for all stairs and other locations where needed for safety or the proper execution of the work.
- E. The Electrical Contractor shall maintain temporary lighting and power systems in good working condition, including the relocation and reinstallation when required to avoid interference with the progress of construction.

- F. Provide ground-fault personnel ampere protection for all single phase, 15 and 20 ampere receptacles. All receptacles and portable cord connectors shall have NEMA standard locking type configurations.
- G. The Electrical Contractor shall turn lights on and off at the beginning and end of each working day of any trade unless otherwise directed. He shall arrange for all temporary light and power for all trades which do not have holidays (days off) similar to the electrical trade. The Electrical Contractor shall patch and repair all openings left damaged by the installation and removal of the temporary light and power.

1.7 MANUFACTURER'S IDENTIFICATION

- A. Manufacturer's nameplate, name or trademark and address shall be attached permanently to all equipment and materials furnished under this Division. The nameplate of a contractor or distributor may not be used.

1.8 SHOP DRAWINGS – See Division 1

- A. Submit for approval detailed shop drawings of all equipment and materials in accordance with working procedures.
- B. Furnish all necessary templates and patterns for installation work and for the purpose of making adjoining work conform; furnish setting plans and shop details to other trades as necessary.
- C. Submit shop drawings for the following:
 - 1. Light fixtures.
 - 2. Receptacles, switches, occupancy sensors.
 - 3. Overcurrent protective devices.
 - 4. Panelboards.
 - 5. Fire alarm system.

1.9 MATERIALS AND WORKMANSHIP

- A. All materials and apparatus necessary for the work, except as specifically indicated otherwise, shall be new, of first class quality and shall be furnished, delivered, erected, connected and finished in every detail and shall be so selected and arranged as to fit properly into the building spaces. Where no specific kind or quality of material is given, a first class standard article as accepted by the Architect shall be furnished.
- B. Furnish the services of an experienced Superintendent who shall be constantly in charge of the installation of the work, together with all skilled workmen, helpers, and labor to unload, transfer, erect, connect up, adjust, start, operate and test each system.
- C. less otherwise specifically indicated on the Drawings or Specifications, all equipment and materials shall be installed in accordance with the recommendations of the manufacturer. This includes the performance of such tests as the manufacturer recommends.

1.10 PROTECTION

- A. Work under each Section shall include protecting the work and materials of all other Sections from damage from work or workmen, and shall include making good all damage thus caused. Be responsible for work and equipment until finally inspected, tested, and accepted; protect work against theft, injury or damage; and carefully store material and equipment received on site, which is not immediately installed. Close open ends of work with temporary covers or plugs during construction to prevent entry of obstructing or other foreign material.
- B. Work under each section includes receiving, unloading, uncrating, storing, protecting, setting in place and connecting up completely of any equipment supplied under each section. Work under each section shall also include exercising special care in handling and protecting equipment and fixtures, and shall include the cost of replacing any of the above equipment and fixtures which are missing or damaged by reason of mishandling or failure to protect on the part of the Contractor.

1.11 BASES AND SUPPORTS

- A. Unless specifically noted otherwise, provide all necessary supports, pads, bases, and piers required for all equipment under this Division. Provide all temporary bases and supports as required.
- B. All equipment, unless shown otherwise, shall be securely attached to the building structure. Attachments shall be of a strong and durable nature; any attachments that are, insufficient, shall be replaced as directed by the Architect.

1.12 SLEEVES, INSERTS AND ANCHOR BOLTS

- A. All conduits passing through floors, walls or partitions shall be provided with sleeves having an internal diameter one inch larger than the outside diameter of the conduit, or insulation enclosing the conduit.
- B. Furnish all sleeves, inserts, and anchor bolts necessary to be installed under other sections of the Specifications to accommodate work of this section.
- C. Sleeves through outside walls shall be cast iron sleeves with intermediate integral flange. Sleeves shall be set with ends flush with each face of wall. The remaining space shall be packed with oakum to within 2 inches of each face of the wall. The remaining shall be packed and made watertight with a waterproof compound.
- D. Sleeves through concrete floors or interior masonry walls shall be schedule 40 black steel pipe, set flush with finished walls or ceiling surfaces but extending 2 inches above finished floors.
- E. Sleeves through interior partitions shall be 22 gauge galvanized sheet steel, set flush with finished surfaces or partitions.

- F. Inserts shall be individual or strip type of pressed steel construction with accommodation for removable nuts and threaded rods up to 3/4" inch diameter, permitting lateral adjustment. Individual inserts shall have an opening at the top to allow reinforcing rods up to 1/2" diameter to be passed through the insert body. Strip inserts shall have attached rods having hooked ends to allow fastening to reinforcing rods. Inserts shall be as manufactured by Carpenter and Patterson, Inc. or Grinnell Co., Inc.
 - G. Penetrations through fire-rated walls, ceilings and floors in which cables, conduits pass, shall be sealed by a UL approved fire stop fitting classified for an hourly rating equal to the fire rating of the floor, wall or ceiling shall be Gedney Fire Seal Type CFSF of CAPS.
- 1.13 PAINTING – See Division 1; all work required shall be performed by this Contractor.
- A. All finish painting in finished areas shall be performed by others.
 - B. All materials shipped to the job site under the Division, such as panels and plates, shall have a prime coat and standard manufacturer's finish unless otherwise specified.
 - C. Inaccessible conduits, hangers, supports and anchors and ducts shall be coated prior to installing.
 - D. All components of the fire alarm system raceway shall be painted red. This includes but is not limited to conduit, junction boxes, pull boxes.
- 1.14 CUTTING AND PATCHING – See Division 1
- A. All cutting and patching required for the work of this Division shall be done by this Division.
 - B. Work under this Division shall include furnishing, locating and setting inserts and/or sleeves. Do all drilling and cutting necessary for the installation.
 - C. All holes cut through concrete slabs and structural steel shall be punched or drilled from the underside. No structural member shall be cut without the written acceptance of the Architect and all such cutting shall be done in a manner directed by him.
 - D. Refer to Division 1 for additional requirements.
- 1.15 SCAFFOLDING, RIGGING AND HOISTING – Coordinate with Division 1
- A. Furnish all scaffolding, rigging, hoisting, and services necessary for erection and delivery into the premises of any equipment and apparatus furnished under this Division. Remove same from premises when no longer needed.
- 1.16 EXCAVATING AND BACKFILLING
- A. All excavation and backfilling for the work of this Division shall be performed by Division 2.

1.17 WATERPROOFING

- A. Where any work penetrates waterproofing, including waterproof concrete and floors in wet areas. Submit proposed method of installation for review by the Architect before beginning work. Furnish all necessary sleeves, caulking and flashing necessary to make opening absolutely watertight.

1.18 ACCESSIBILITY AND ACCESS PANELS

- A. Be responsible for the sufficiency of the size of shafts and chases, the adequate thickness of partitions, and the adequate clearance in double partitions and hung ceilings for the proper installation of the work of this Division.
- B. Locate all equipment, which must be serviced, operated or maintained in fully accessible positions. Minor deviations from Drawings may be allowed for better accessibility with approval of the Architect.

1.19 SHUTDOWNS – See Division 1

- A. When installation of a new system necessitates the temporary shutdown of an existing utility operating system the connection of the new system shall be performed at such time as designated by and in consultation with the Utility Company. Work required after normal business hours shall be done so at no additional cost to the Owner.

1.20 CLEANING - Coordinate with Division 1

- A. Thoroughly clean all equipment of all foreign substances inside and out before being placed in operation.
- B. If any foreign matter should stop any part of a system after being placed in operation, the system shall be disconnected, cleaned and reconnected whenever necessary to locate and remove obstructions. Any work damaged in the course of removing obstructions shall be repaired or replaced when the system is reconnected at no additional cost to the Owner.
- C. Upon completion of work remove from the premises all rubbish, debris, and excess materials. Any oil or grease stains on floor areas caused by work of this Division shall be removed and floor areas left clean.

1.21 RECORD DRAWINGS – Work shall be governed by requirements set forth in Division 1

- A. Maintain at the job site a record set of Electrical Drawings on which any changes in location of equipment, panels, devices, and major conduits shall be recorded. Indicate dimensions of all items installed underground or in concrete.

1.22 OPERATING INSTRUCTIONS – Coordinate with requirements set forth in Division 1

- A. Upon completion of all work and all tests, the Contractor shall furnish the necessary skilled labor and helpers for operating his system and equipment for a period specified under each applicable Section of this Division. During this period, he shall instruct the Owner or his representative fully in the operation, adjustment and maintenance of all equipment furnished. Give at least 7 days notice to the Owner in advance of this period.
- B. The manufacturer shall attest in writing that his equipment has been properly installed prior to start. The following is some of the equipment necessary for this inspection: fire alarm system. These letters will be bound into the operating and maintenance books.

1.23 ADJUSTING AND TESTING

- A. After all equipment and accessories to be furnished are in place, they shall be put in final adjustment and subjected to such operating tests as will assure the Architect that they are in proper adjustment and in satisfactory permanent operating condition.
- B. This particular work shall include the services of a factory engineer to inspect the installation and assist in the initial startup and adjustment to the equipment. The period of these services shall be for such time as necessary to secure proper installation and adjustments. After the equipment is placed in permanent operation, there shall be furnished the service of said engineer for the purpose of supervising the initial operation of the equipment and to instruct the personnel responsible for operation and maintenance of the equipment.
- C. At the completion of the job when all panels, devices, etc. are at full working load the Contractor shall provide infrared scan thermographic inspection test of all connection points, terminals, etc. of wires #8 AWG and larger to detect "hot-spots" in the electrical current flow. Correct all hot-spots.

1.24 UNDERWRITER'S LABEL

- A. All electrical equipment and materials shall be new and shall comply with the standards of and shall bear the label of the Underwriter's Laboratories.

1.25 ELECTRICAL SAFETY INSPECTION

- A. Electrical Contractor shall arrange for an Electrical Safety Inspection to be performed by the Local Inspection Agency (i.e.: New York Electrical Inspection Services, Atlantic Inland, Middle Department Inspection Agency). A Certificate of Compliance "Underwriter's Certificate" shall be issued to the Owner. All costs and coordination required shall be included in this Contractors Base Bid.

1.26 REMOVALS – Coordinate with Division 1 and Division 2

- A. The scope of removals shown on the Drawings are diagrammatic only and indicate the intent of the work to be performed and not the complete scope of demolition and/or removal work. It shall be the responsibility of this Contractor to remove any electrical devices even if not specifically indicated to be removed on these Drawings in order to accommodate new work.
- B. All power conductors, control wiring and conduit associated with mechanical equipment such as fans, pumps, etc. designated for removal on the HVAC Drawings shall be removed clear back to the source of power and disconnected. All motor starters, disconnect switches, control devices, etc. shall be removed. Refer to HVAC Drawings for extent of HVAC removals.
- C. Any device removed shall include (but shall not be limited to) the removal of all associated wiring, conduit, boxes, and auxiliary devices back to the previous device on the circuit, or back to the panelboard or origin of the circuit or any other items that are not incorporated in new layout, until such removal is complete. If the removal of any device interrupts service of any other device that is to remain, the Contractor shall provide all materials and labor to ensure continuity of service to those devices to remain.
- D. Junction boxes, pullboxes, wireways, conduits, or any other devices required to reconnect circuitry shall be installed concealed within the ceilings, partitions and/or walls, floors, no surface or exposed circuiting shall be permitted, unless specifically indicated.
- E. The Electrical Contractor shall patch all openings in walls, ceilings or roof that are left open as a result of removals. Refer to cutting and patching section.
- F. Any electrical device removed including but not limited to disconnect switches, panelboards, etc. shall be cleaned, protected and turned over to the Owner or disposed of as directed by Owner.

END OF SECTION 260100

SECTION 260125 - SCOPE OF WORK

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 SCOPE OF WORK

- A. The work under this section includes all labor, materials, equipment, tools, transportation and the performance of all work necessary and required for furnishing and installing all Electrical work shown on the Contract Documents, as specified herein and as otherwise required by job conditions or reasonably implied, including, but not necessarily limited to the following:
1. Add new fire alarm devices (i.e., automatic fan shutdown, for new HVAC equipment) as shown on drawing.
 2. The contractor shall dispose of all debris, including but not limited to fixtures, equipment, lamps, ballast, wiring devices and the like in accordance with, as defined by governing law and regulations of the jurisdiction where the work is being performed.
 3. Modifications to existing electrical distribution system as indicated on the Drawings.
 4. Circuit breaker panelboards, feeder, conduit, cables and branch circuit wiring with all connections complete.
 5. Conduit, conduit fittings, junction and pull boxes and all appurtenances necessary for the raceway systems including necessary supports and fasteners.
 6. Electrical conductors, connectors, fittings and connection lugs.
 7. Branch circuit devices, outlet boxes, pull boxes, motor disconnect switches, etc.
 8. Power wiring to HVAC equipment including disconnect switches as shown and/or required by NEC.
 9. Core drilled holes for conduit passing through walls, ceilings and floors.
 10. All necessary cutting, patching and core drilling incidental to the electrical work.
 11. Licenses, permits, inspection and approvals.
 12. Grounding as required as per NEC.
 13. Sleeves for conduit and watertight caulking between conduit and sleeve.

14. Testing.

15. Cutting, patching and drilling.

- B. Coordination Drawings (if applicable): Attention is directed to Division 1 for coordination drawing requirements for this project. These drawings are critical to the proper execution of the work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

1.2 WORK NOT INCLUDED

- A. The following related items will be done by others:

1. Furnishing motors and controllers.
2. Concrete work.
3. Excavation and backfill.

END OF SECTION 260125

SECTION 260150 - APPROVED MANUFACTURERS

PART 1 - GENERAL

Applicable provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 APPROVED MANUFACTURERS

A. The following list of manufacturers constitutes an approved list:

1.	Panelboards	Siemens, Square D, GE
2.	Disconnect Switches	Siemens, Square D, GE
3.	Conduit (steel)	Wheatland, Allied, Republic Conduit
4.	Conduit Fittings (steel)	Appleton, Crouse-Hind, O-Z, T&B, M&W
5.	Wire and Cable	General, South Wire, Rome, Cerro
6.	Splicing Connectors	3M, O-Z, Thomas & Betts
7.	Outlet Boxes	Appleton, National, Steel City, Raco
8.	Wiring Devices	Arrow-Hart, Hubbell, P & S
9.	Fuses	Bussman, Ferraz-Shawmut, Littlefuse
10.	Lamp	GE, Sylvannia, Philips
11.	Motion Sensors	Watt Stopper, Sensorswitch
12.	Fluorescent Ballasts	GE, Universal, Advance
13.	Fire Alarm System	Match Existing Manufacturer

B. All materials and appliances shall have listing of Underwriters Laboratories, Inc. and be so labeled, or shall conform to their requirements, in which case certified statements to that effect shall be furnished by the manufacturer with a copy of an examination report by a recognized independent testing laboratory acceptable to the Architect and his Engineer. Use new materials and appliances throughout.

C. Where several types or makes of materials are specified, the Contractor has the option of using any of these, but after a type or make has been selected and has received the approval of the Architect, it shall be used throughout.

- D. The Contractor shall provide all structural supports for the proper attachment of equipment supplied by him and also for all equipment supplied to him under other sections of the Specifications for mounting and connections.
- E. Secure all equipment to the building structure independently. Do not secure to work of other trades such as ceiling lath, piping racks, etc., unless specified or noted otherwise.
- F. Wall mounted equipment shall be directly secured to wall by means of steel bolts. Maintain at least 1/4" air space between equipment and supporting wall. Pre-fabricated steel channels providing a high degree of mounting flexibility, such as those manufactured by Kindorf and Unistrut, shall be used for mounting arrays of equipment.
- G. All fastening, supports, hangers, anchors, etc., shall be of a type made for the specific purpose. On masonry walls, metallic expansion shield and machine screws shall be used. Screws with wooden plugs or anchors will not be acceptable on any part of the work.

END OF SECTION 260150

SECTION 260200 - CONDUIT

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to install rigid metal conduit, electrical metallic tubing and liquid tight flexible metal conduit, including all fittings to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Cutting and patching.
- B. Trenching: Excavation and backfill for conduit and utility on site.
- C. Sheet metal flashing and trim.

1.3 REFERENCE FOR METAL RACEWAY

- A. UL 5 - Surface Metal Raceways and Fittings.
- B. UL 870 - Wireways, Auxiliary Gutters, and Associated Fittings.

PART 2 - PRODUCTS

2.1 RIGID STEEL CONDUIT

- A. Industry standard heavy wall conduit.
- B. Minimum 3/4" trade size.
- C. Threaded.
- D. Hot dipped galvanized finish by means of plating after cutting of threads.

2.2 INTERMEDIATE METAL CONDUIT

- A. Industry standard steel conduit.
- B. Minimum 3/4" trade size.
- C. Threaded.
- D. Hot dipped galvanized finish by means of plating after cutting of threads.

2.3 ELECTRICAL METALLIC TUBING

- A. Industry standard thin wall conduit of galvanized steel only.
- B. Minimum 3/4" trade size.
- C. Maximum 4" trade size.

2.4 FLEXIBLE METAL CONDUIT

- A. Galvanized steel tape formed into an industry standard interlocking coil.
- B. Minimum 3/4" trade size except for connection of lighting fixtures.
- C. Grounding type.
- D. Separate ground conductor.
- E. Use for short connections to motor terminal box, other vibrating equipment using a minimum length of 18" with 50% slack and a maximum of 6'.
- F. From outlet box to recessed lighting fixtures with a maximum length of 6'.

2.5 WIREWAYS

- A. Lay-in type, UL listed as wireway or auxiliary gutter.
- B. Wireway shall be of code gauge steel construction (UL standard for Wireway Auxiliary Gutters and Associated Fittings) with removable cover. Tamperproof screws shall be provided for sealing covers to prevent access by unauthorized personnel. Wireway shall be provided with knockouts.
- C. Connector and covers shall be attached so that removal of connectors is not necessary to utilize the lay-in feature.
- D. Finish: All sheet metal parts shall be provided with a rust inhibiting phosphating coating and baked enamel finish. All hardware shall be plated to prevent corrosion. All screws extending into the wireway shall be protected by spring nuts or otherwise guarded to prevent wire insulation damage.

2.6 CONDUIT SUPPORTS

- A. Conduit clamps, straps and supports: Steel or malleable iron.

2.7 CONDUIT FITTINGS

- A. Use compression fittings for all EMT in exposed areas. Utilize set screw fittings only above hung ceilings and concealed areas.

2.8 SURFACE METAL RACEWAY

- A. Metal raceway shall be of a two-piece design with a base and snap-on cover.
- B. Raceway and all components shall be listed by Underwriters Laboratories
- C. Single Channel: Steel, zinc plated, off-white finish suitable for repainting. Two piece design with metal base and snap-on cover. Wire Mold V700, Hubbell Inc. 750 Series, or Panduit PMR5/PMR7
- D. Dual Channel: Steel, galvanized, off-white finish but suitable for repainting. Two-piece design with metal base and snap-on cover, minimum 0.04" thick base and cover. Base shall be divided by a removable barrier section. Provide duplex receptacles mounted in top cell and communication outlets in the bottom cell. Coordinate communications jack requirements with owner's IT personnel. Wiremold V4000, Wiremold DS4000 Series, Hubbell Inc. 4000 Series or Panduit PMR40.

PART 3 - EXECUTION

3.1 CONDUIT SIZING, ARRANGEMENT AND SUPPORT

- A. Minimum size - 3/4". Provide grounding bushings on all conduits 1-1/4" and larger.
- B. Arrange conduit to maintain headroom and present a neat appearance.
- C. Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.
- D. Draw up couplings and fittings full and tight. Protect threads cut in field from corrosion. Paint newly threaded joints of steel conduit with T & B "Kopershield" compound before installation. Running threads prohibited; use three-piece unions or split couplings instead. Use only compression fittings for all EMT in areas where it will be exposed in finished and unfinished areas. Provide set screw fittings only when installed above hung ceilings.
- E. Maintain minimum 6-inch clearance between conduit and piping. Maintain 12-inch clearance between conduit and heat sources such as flues; steam pipes and heating appliances.
- F. Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers.
- G. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps. Provide space for 25 percent additional conduit.
- H. Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction before conductors are pulled.

- I. Exposed conduit on ceiling shall be parallel or perpendicular to wall and vice versa to ceiling when installed on wall. Secure conduit clamps and supports to masonry materials by toggle bolt, expansion bolt or steel insert. Spacing of conduit supports shall not exceed 7 feet.

3.2 CONDUIT INSTALLATION

- A. Cut conduit square using a saw or pipe cutter, Deburr cut ends.
- B. Bring conduit to the shoulder of fittings and couplings and fasten securely.
- C. Use conduit hubs or sealing locknuts for fastening conduit to cast boxes and for fastening conduit to sheet metal boxes in damp or wet locations.
- D. Install no more than the equivalent of three 90-degree bends between boxes.
- E. Use conduit bodies to make sharp changes in direction, as around beams.
- F. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2-inch size.
- G. Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.
- H. Use suitable conduit caps to protect installed conduit against entrance of dirt and moisture.
- I. Provide No. 12 AWG insulated conductor or suitable pull string in empty conduit, except sleeves and nipples.
- J. Install expansion-deflection joints where conduit crosses building expansion or seismic joints.
- K. Where conduit penetrates fire-rated walls and floors, provide pipe sleeves two sizes larger than conduit; Pack void around conduit with fire-stop fittings with UL listed fire rating equal to wall or floor ratings; Seal opening around conduit with UL listed foamed silicone elastomer compound.
- L. Installation of conduit in slab shall comply with ACI 318.
- M. Route conduit through roof openings for piping and duct work where possible; otherwise, route through roof with pitch pocket.
- N. Maximum size conduit in slabs above grade: 1 inch. Do not route conduits to cross each other in slabs above grade. Conduits crossing each other may not be larger than 3/4 inch.

- O. All conduit used for fire alarm system shall be painted red.
- P. For Surface Metal Raceway
 - 1. When installing surface metal raceway contractor shall provide boxes from the same manufacturer of the surface metal raceway.
 - 2. Install separate grounding conductor. Grounding conductors for surface metal raceways.
 - 3. Surface metallic raceways in close proximity of other trades, shall be arranged to allow for proper clearance for servicing and headroom. Surface metallic raceway shall be installed parallel to walls, floors and ceilings in a neat workmanlike manner.

3.3 CONDUIT INSTALLATION OF SCHEDULE

- A. Underground installations: PVC minimum Schedule 40, unless otherwise noted on Drawings.
- B. Installations in or under concrete slab: PVC minimum Schedule 40, unless otherwise noted on Drawings.
- C. Exposed outdoor locations: Rigid galvanized steel conduit.
- D. Wet interior locations: Rigid galvanized steel conduit.
- E. Concealed dry interior locations and above accessible ceiling for receptacle and lighting branch wiring: Electrical metallic tubing up to first junction box and flexible metallic tubing (MC cable only) thereafter.
- F. Concealed dry interior locations other than receptacle and lighting branch wiring: Electrical metallic tubing.
- G. Concealed dry interior locations and above accessible ceiling for fire alarm runs: Fire alarm armored cable type MC with red stripe as manufactured by AFC series 1800.
- H. Concealed and exposed dry interior location for feeder runs: Electric metallic tubing.
- I. Exposed dry interior in unfinished locations other than Boiler Rooms: Electric metallic tubing.
- J. Final connections to motors: Flexible metallic tubing (MC cable). Minimum of 10" to maximum of 6' for connections to motors.
- K. Existing exposed dry interior locations (finished spaces), for branch wiring and fire alarm wiring, one-piece steel raceway (similar to Wiremold V-500, V-700).

- L. Final connections to motors: Flexible metallic tubing (MC cable). Minimum of 18" to maximum of 6' for connections to motors.
- M. All conduit installed in boiler room up to 10'-0" AFF and lower shall be rigid galvanized steel conduit. All conduit above 10'-0" shall be electric metallic tubing.
- N. Final connections to equipment and/or motors in boiler room, outdoors and potentially wet indoor areas: liquid tight, flexible; minimum of 18" to maximum 6'-0" connections.

END OF SECTION 260200

SECTION 260300 - WIRE AND CABLE

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to wire and cable in raceway specified in other sections to complete all work shown on the Drawings or specified herein.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

- A. Thermoplastic-insulated building wire: Type THHN.
- B. Rubber insulated building wire: NEMA WC 3.
- C. Feeders and branch circuits larger than number 6 AWG: Copper, stranded conductor, 600 volt insulation, type THHN.
- D. Feeder and branch circuits 6 AWG and smaller: Copper conductor, 600 volt insulation, THWN/THHN, 6 and 8 AWG, stranded conductor; Smaller than 8 AWG, solid conductor.
- E. Service feeders and branch circuits in conduit in contact with earth shall be type XHHW.
- F. Control circuits: Copper, stranded conductor 600 volt insulation, THHN.

2.2 ARMORED CABLE

- A. BX or pre-manufactured cables are not acceptable except for Type MC for branch wiring after the first junction box (for receptacle and lighting branch circuits) and final connections to motors in interior dry accessible locations, minimum length shall be 18" with a maximum length of 6' for motors. Except for outdoor and boiler room equipment and/or motors. Provide flexible liquid tight conduit.
- B. Type MC fire alarm cable with red stripe for concealed fire alarm wiring as manufactured by AFC series 1800.
- C. Armored cable, Type MC size 14 through 6 AWG: Copper conductor, 600 volt thermoplastic insulation, rated 90 degrees C., with separate green ground conductor.

2.3 REMOTE CONTROL AND SIGNAL CABLE

A. Control cable for class 2 or class 3 remote control and signal circuits:

1. Copper conductor, 300 volt insulation, rated 60 degree C, individual conductors twisted together shielded and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts and plenums. Verify wiring type with manufacturer.

2.4 COLOR CODING

A. All wiring shall be color-coded. Neutral wire shall be white throughout and each phase wire shall be identified any place in the system by its color code. All conductors in panel boxes and junction boxes shall be properly tagged with red non-flammable tags properly attached.

B. Wire shall be color coded as follows:

120/208 volt system		480/277 volt system		Fire Alarm
A Phase	Black	A Phase	Brown	Red
B Phase	Red	B Phase	Orange	
C Phase	Blue	C Phase	Yellow	

C. Equipment ground wires or ground jumpers shall be Green.

D. In addition to the basic color-coding described the following additional identification and tagging shall apply.

1. The switch legs for the local wall switches and in switch panel shall have distinctive stripes. In instances where color-coding is not practicable, such as short runs of heavy feeder cables, taping the ends of the cable with coded colors as indicated above or tagging will be permitted.
2. Cables shall be tagged in all pull boxes, wireways and wiring gutters of panels.
3. Where two (2) or more circuits run to or through a control device, outlet box or junction box, each circuit shall be tagged as a guide in making connections.
4. Tags shall identify wire or cable by number and/or piece of equipment served as shown on the Drawings.

PART 3 - EXECUTION

3.1 GENERAL WIRING METHODS

A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.

- B. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet and for 20 ampere.
- C. Use 10 AWG conductor for 20 ampere, 277 volt branch circuit home runs longer than 200 feet for 20 ampere.
- D. Place an equal number of conductors for each phase of a circuit in same raceway or cable. No more than one of each phase shall be supported by a single neutral.
- E. Splice only in junction or outlet boxes.
- F. Neatly tag, identify, train and lace wiring inside boxes, equipment and panelboards.
- G. Make conductor lengths for parallel circuits equal.

3.2 WIRING INSTALLATION IN RACEWAYS

- A. Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricate for pulling 4 AWG and larger wires.
- B. Completely and thoroughly swab raceway system before installing conductors.
- C. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.

3.3 CABLE INSTALLATION

- A. Support cables above accessible ceilings; do not rest on ceiling tiles. Use spring metal clips or metal cable ties to support cables from structure (not ceiling suspension system). Include bridle rings or drive rings.
- B. Use suitable cable fitting and connectors.

3.4 WIRING CONNECTIONS AND TERMINATIONS

- A. Splice only in accessible junction boxes.
- B. Use solderless pressure connections with insulating covers for copper wire splices and tape, 8 AWG and smaller. For 10 AWG and smaller, use insulated spring wire connectors with plastic caps.
- C. Provide extended gutters and tap blocks or pull boxes with tap rail systems similar to Burndy MT Series or Burndy Electroraill system for wire splices 6 AWG and larger.
- D. Tape uninsulated conductors with electrical tape to 150 percent of the insulation value of conductor.
- E. Thoroughly clean wires before installing lugs and connectors.

- F. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.
- G. Terminate spare conductors with electrical tape.

3.5 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of the Specifications.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Torque test conductor connections and terminations to manufacturer's recommended values.
- D. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

3.6 WIRE AND CABLE INSTALLATION SCHEDULE

- A. All wiring and cable shall be installed in conduit unless otherwise noted. Refer to conduit section 26 02 00 for conduit types at various locations.

END OF SECTION 260300

SECTION 260320 - OVERCURRENT PROTECTIVE DEVICES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. Work of this section includes all labor, materials, equipment and services necessary to complete the electrical work as shown on the Drawings and specified herein, including, but not limited to, the following:
- B. Fuses
 - 1. Current limiting cartridge fuses.
 - 2. Time delay cartridge fuses.
- C. Circuit Breakers
 - 1. Standard molded case circuit breakers "bolted in" type.
 - 2. Solid state circuit breakers.
 - 3. Current limiting circuit breakers.
 - 4. Enclosed circuit breakers.

1.2 SUBMITTALS

- A. Shop drawings showing dimensions, location of equipment and method of installation.
- B. Product Data: Manufacturer's printed data, catalog cuts.

1.3 DISCONNECT SWITCHES

- A. Fusible switch assemblies: Quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover when switch is in ON position. Handle lockable in OFF position. Fuse clips shall be designed to accommodate Class R, J fuses.
- B. Non-fusible switch assemblies: Quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover when switch is in ON position. Handle lockable in OFF position.
- C. Enclosures: NEMA Type 1, 3R or 4 as required.

1.4 FUSES

- A. Voltage ratings of fuses shall be suitable for the supply characteristics to which they are applied.

- B. Fuse type and size shall be suitable for installation in related disconnect switch or circuit breaker.
- C. Current limiting fuses shall be as follows:
 - 1. Regardless of actual available fault current, they shall, at full recovery voltage, be capable of safely interrupting fault currents of 200,000 amperes RMS symmetrical or 280,000 amperes RMS asymmetrical, deliverable at the line side of the fuse.
 - 2. They shall have average melting time-current characteristics to meet the Underwriters' Laboratories requirements for "Class RK-1" 0-600 amp fuses.
- D. Regardless of actual available fault current, they shall be capable of limiting peak let through current to the following values based on 200,000 amperes RMS symmetrical or 280,000 amperes asymmetrical being available:

Rating In Amperes	Peak Let Through Current In Amps
15-30	6,000
35-50	8,000
70-100	12,000
125-200	20,000
225-601	38,000

- E. Fuses shall be rejection type. Fuse clip shall be rejection type.
- F. Fuse Type and Application Table:

Category of Application	Acceptable Fuse Types (Bussman Designations @ 600V)
Motor feeder	LPS below 600A
Power panel feeders	LPS below 600A
Safety switches	LPS

1.5 CIRCUIT BREAKERS

- A. "Bolted-In" type, manually operated, quick-make, quick-break, mechanically trip-free operating mechanisms for simultaneous operation, of all poles, with contacts, arc interrupters and trip elements for each pole. "Plug-in" breakers are not permitted. New circuit breakers to be installed in existing panelboards shall be U.L. certified for installation in those panelboards and be labeled with make and model.
- B. Tripping units shall be "thermal-magnetic" type having bimetallic elements for time delay overload protection, and magnetic elements for short circuit protection.
- C. Manually operable by mean of toggle type operating handles having tripped positions midway between the "on-off" position. Handle to be clearly labeled as to breaker rating.
- D. Minimum frame size for all circuit breakers, 1, 2, or 3 pole shall be 100 amperes.

- E. Their interrupting rating shall not be less than 25,000 amperes RMS symmetrical at 208 volt for distribution panels and 10,000 amperes for power panels.

1.6 APPLICATIONS

A. Category of Application for Fuses:

1. Feeders on switchboards.
2. Branch fused switch unit in distribution panel.
3. Fused safety switch.
4. Combination motor starters.

B. Category of Application for Circuit Breakers:

1. Panelboards.
2. Switchboards.
3. Individual enclosures.
4. Combination motor starters.

1.7 SPARE FUSES

- A. Upon Engineer's acceptance of the electrical distribution system, provide spare fuses as follows: 10% of each type and rating installed 600 amperes and smaller (minimum of 3). Provide spare fuse cabinet with directory to store all spare fuses. Locate as directed by Engineer and/or Owner.

1.8 APPROVED MANUFACTURERS

- A. Fuses: Bussman, Ferraz-Shawmut.
- B. Circuit Breakers: Siemens, General Electric, Square D.

1.9 INSTALLATION

- A. All material installation shall be in accordance with manufacturer recommendations and the provisions of all applicable codes.
- B. All fuses and circuit breakers shall be selectively coordinated.
- C. Install disconnect switches where indicated on Drawings.
- D. Install fuses in fusible disconnect switches.

- E. Disconnects shall have NEMA 3R enclosure.

1.10 RECORD DRAWINGS

- A. Shop drawings showing dimensions, location of equipment and method of installation.
- B. Product Data: Manufacturer's printed data, catalog cuts, performance curves.

END OF SECTION 260320

SECTION 260350 - BOXES

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to install wall and ceiling outlet boxes, floor boxes, pull and junction boxes to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Access doors.
- B. Wiring devices: Service fittings and fire-rated poke-through fittings for floor boxes.
- C. Cabinets and enclosures.

PART 2 - PRODUCTS

2.1 OUTLET BOXES

- A. Sheet metal outlet boxes: ANSI/NEMA OS 1; Galvanized steel, with 1/2 inch male fixture studs where required.
- B. Cast boxes: Cast ferrous alloy, deep type, gasketed cover, threaded hubs.
- C. Typical receptacle box shall be 4" square metal boxes, 30.8 cubic inch capacity with brackets as required. Provide 4" square raised device covers.

2.2 PULL AND JUNCTION BOXES

- A. Sheet metal boxes: ANSI/NEMA OS 1; Galvanized steel.
- B. Sheet metal boxes larger than 12 inches in any dimension: hinged enclosure in accordance with Section 260450.
- C. Cast metal boxes for outdoor and wet location installations: NEMA 250; Type 4 and type 6, flat-flanged, surface-mounted junction box, UL listed as raintight. Galvanized cast iron box and cover with ground flange, neoprene gasket, and stainless steel cover screws.
- D. Cast metal boxes for underground installation: NEMA 250; Type 4, inside flanged, recessed cover box for flush mounting, UL listed as raintight. Galvanized cast iron box and plain cover with neoprene gasket and stainless cover screws.

PART 3 - EXECUTION

3.1 COORDINATION OF BOX LOCATIONS

- A. Provide electrical boxes as required in excess of that shown on Drawings and as required for splices, taps, wire pulling, equipment connections and code compliance.
- B. Electrical box locations shown on Contract Drawings are approximate unless dimensioned. Verify location of floor boxes and outlets in offices and work areas prior to rough-in.
- C. Locate and install boxes to allow access. Where installations are accessible, coordinate locations and sizes of required access doors with Division 1.
- D. Locate and install to maintain headroom and to present neat appearance.

3.2 OUTLET BOX INSTALLATION

- A. Do not install boxes back-to-back in walls. Provide minimum 6 inch separation, except provide minimum 24 inch separation in acoustic-rated walls.
- B. Locate boxes in masonry walls to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat openings for boxes.
- C. Provide knockout closures for unused openings.
- D. Support boxes independently of conduit except for cast iron boxes that are connected of rigid metal conduits, both supported within 12 inches of box.
- E. Use multiple-gang boxes where more than one device is mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.
- F. Install boxes in wall without damaging wall insulation.
- G. Coordinate mounting heights and locations of outlets mounted above counters, benches and backspaces.
- H. Position outlets to locate luminaries as shown on reflected ceiling plans.
- I. In inaccessible ceiling areas, position outlets and junction boxes within 6 inches of recessed luminaire, to be accessible through luminaire ceiling opening.
- J. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.
- K. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

- L. Provide cast outlet boxes in exterior locations exposed to the weather and wet locations.

3.3 PULL AND JUNCTION BOX INSTALLATION

- A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.
- B. Support pull and junction boxes independent of conduit.

3.4 FLOOR BOX INSTALLATION

- A. Set boxes level and flush with finish flooring material.
- B. Use cast iron floor boxes for installation in slab on grade.

END OF SECTION 260350

SECTION 260400 - WIRING DEVICES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all materials, labor, tools and services necessary to install receptacles, service fittings device plates and box covers to complete all work shown on the Drawings or specified herein.

1.2 REFERENCES

- A. FS W-C-596 - Electrical power connector, plug, receptacles and cable outlet.
- B. FS W-S-896 - Switch, toggle.
- C. NEMA WD 1 - General purpose wiring devices.
- D. NEMA WD 5 - Specific-purpose wiring devices.

1.3 SUBMITTALS

- A. Submit product data under Provisions of Contract and Division 1.
- B. Provide product data showing configurations, finishes, dimensions and manufacturer's instructions.

PART 2 - PRODUCTS

2.1 RECEPTACLES

- A. Convenience and straight-blade receptacles: 125 V, 2 pole, 3 wire, 20 ampere specification grade, ground fault interrupting or isolated ground type.
- B. Internal ground clip of receptacles shall be in one piece with the receptacle mounts.
- C. Receptacles with riveted ground clips will not be accepted.
- D. Isolated ground type receptacle shall be orange in color.

2.2 WALL SWITCHES

- A. Wall switches for lighting circuits and motor loads under 1/2 hp: AC general use snap switch with toggle handle, rated 20 amperes and 120-277 volts AC.

- B. Handle: Ivory plastic.
- C. Pilot light type: Lighted handle. Pilot strap in adjacent gang.
- D. Locator type: Lighted handle.

2.3 COVER PLATES

- A. Decorative cover plate: Stainless steel 302/304 smooth Hubbell "S" series.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install receptacles on roof along parapet wall.
- B. Install specific use receptacles at heights shown on contract drawings.
- C. Drill opening for poke - through fitting installation in accordance with manufacturer's instructions.
- D. Install plates on switch, receptacle, and blank outlets in finished areas, using jumbo size plates for outlets installed in masonry walls.
- E. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings and on surface mounted outlets.
- F. Install devices and wall plates flush and level.

END OF SECTION 260400

SECTION 260500 -SUPPORTING DEVICES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to install rigid metal conduit, electrical metallic tubing and flexible metal conduit, including all fittings to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Conduit and equipment supports.
- B. Fastening hardware.

1.3 REFERENCES

- A. Conduit supports.

1.4 QUALITY ASSURANCE

- A. Support system shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Support channel: Galvanized or painted steel.
- B. Hardware: Corrosion resistant.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fasteners in Pre-Cast Concrete: Fastener system of type for suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other necessary devices for attaching hangers of type required and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing in accordance to ASTM E1190 conducted by a qualified independent agency. Anchors shall not be installed where reinforcing strands are located in plank. Review pre-cast plank shop drawings to determine location.

- B. Refer to pre-cast concrete plank shop drawings for location of strand reinforcing and cores. Do not anchor where reinforcing is located. Use fasteners in concrete, toggle bolts or thru-core anchors with plates supported on top of plank in cores.
- C. Fasten hanger rods, conduit clamps, outlet, junction boxes to building structure using preset inserts, beam clamps and spring steel clips.
- D. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; Expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchors on concrete surfaces; sheet metal screws in sheet metal studs and wood screws in wood construction.
- E. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.
- F. Do not use powder-actuated anchors.
- G. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.
- H. In wet locations install free-standing electrical equipment on concrete pads.
- I. Install surface mounted cabinets and panelboards with minimum of four anchors. Provide steel channel supports to stand cabinet one inch off wall.
- J. Bridge studs top and bottom with channels to support flush mounted cabinets and panelboards in stud walls.

END OF SECTION 260500

SECTION 260550 - GENERAL LABELING AND IDENTIFICATION

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to install nameplates, tape labels, wire markers, conduit color coding to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Painting.

1.3 SUBMITTALS

- A. Submit shop drawings under provisions of Division 1.
- B. Include schedule for nameplates and tape labels.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Nameplates: Engraved three-layer laminated plastic, white letters on a black background.
- B. Tape labels: Embossed adhesive tape with 3/16 inch black letters on a white background.
- C. Wire and cable markers: Cloth markers, split sleeve or tubing type.

PART 3 - EXECUTION

3.1 INSTALLATION

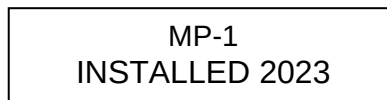
- A. De-grease and clean surfaces to receive nameplates and tape labels.
- B. Install nameplates and tape labels parallel to equipment lines.
- C. Secure nameplates to equipment fronts using screws, rivets, or adhesive. Secure nameplate to inside face of recessed panelboard doors in finished locations.
- D. Embossed tape will not be permitted for any application. Use embossed tape only for identification of individual wall switches and receptacles and control device stations.

3.2 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes and at load connection. Identify each branch circuit or feeder number for power and lighting circuits and each control wire number as indicated on equipment manufacturer's shop drawings for control wiring.

3.3 NAMEPLATE ENGRAVING SCHEDULE

- A. Provide nameplates to identify all electrical distribution, control equipment and loads served including year of installation. Letter height: 1/2 inch for individual switches, loads served, distributions and control equipment identification. For example:



- B. Panelboards: 3/4 inch, identify equipment designation. 1/2 inch, identify voltage rating and source of power.
- C. Individual circuit breakers, switches and motor starters in panelboards, switchboards and motor control centers: 1/4 inch, identify circuit and load served, including location.
- D. Individual circuit breakers, enclosed switches and motor starters: 1/2 inch, identify load served.

3.4 FIRE ALARM

- A. All fire alarm raceway components shall be painted red and identified.

END OF SECTION 260550

SECTION 260600 - DISCONNECT SWITCHES

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all materials, labor, tools and services necessary to install disconnect switches, fuses and enclosures to complete all work shown on the Drawings or specified herein.

1.2 SUBMITTALS

- A. Submit product data under Provisions of Contract and Division 1.
- B. Include outline Drawings with dimensions, equipment ratings for voltage, capacity, horsepower and short circuit.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - DISCONNECT SWITCHES

- A. Siemens.
- B. Square 'D'.
- C. General Electric.
- D. Or approved equal.

2.2 DISCONNECT SWITCHES

- A. Fusible switch assemblies: Quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch is in ON position. Handle lockable in OFF position. Fuse clips: Designed to accommodate class R, J fuses.
- B. Non-fusible switch assemblies: Quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- C. Enclosures: NEMA Type 1; 3R; 4 as indicated on Drawings.

2.3 ACCEPTABLE MANUFACTURERS - FUSES

- A. Bussman.
- B. Ferraz-Shawmut.
- C. Or approved equal.

2.4 FUSES

- A. Fuses 600 amperes and less: ANSI/UL 198E, class RK1; RK5; Dual element, current limiting, time delay, 250 volt.
- B. Interrupting rating: 200,000 rms amperes.
- C. An additional fuse of each size required to be supplied.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install disconnect switches where indicated on Drawings.
- B. Install fuses in fusible disconnect switches.
- C. Disconnects installed outdoors shall have NEMA 3R enclosures.
- D. Disconnects installed indoors in dry locations shall have NEMA 1 enclosure.

END OF SECTION 260600

SECTION 260650 - GROUNDING

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all materials, labor, tools and services necessary to install the power system grounding to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Panelboards.
- B. Raceways.
- C. Connection Equipment.
- D. Electric Equipment.
- E. Tests and Acceptance.
- F. Transformers.
- G. Electric Service.

1.3 SUBMITTALS

- A. Manufacturers' data, catalog cuts of ground rods, connectors, bushings, etc., along with recommended installation procedures.

PART 2 - PRODUCTS

2.1 WIRING

- A. All wiring used for grounding shall be insulated copper, unless otherwise noted. Size shall be in accordance with code for the application, minimum #12.
- B. Where used in conjunction with computer equipment, grounding conductors shall be equal in size to the phase conductors.
- C. Avoid splices in ground conductors.

2.2 RACEWAY

- A. Grounding continuity shall be maintained for all metallic raceways.

- B. Provide bonding jumpers across metal parts separated by non-conducting materials.
- C. Where a grounding conductor is installed as a supplement to metallic raceway serving as the equipment grounding conductor, bonding conductor to the raceway at each end.
- D. All raceway accessories, such as locknuts, bushings, expansion fittings, etc. shall be installed to provide maximum metal-to-metal bonding.

2.3 CLAMPS

- A. Provide approved ground clamps for connecting grounding conductors to pipe, conduits, wireways, building steel, grounding rods, etc.
- B. Where bond will be in an inaccessible location or as an alternate to ground clamps, provide exothermic weld, similar to Cadweld.

2.4 ACCESSORIES

- A. Provide all necessary accessories of appropriate size and material for connection or termination of grounding conductors including:
 - 1. Straps.
 - 2. Clamps.
 - 3. Lugs.
 - 4. Bars and buses.
 - 5. Isolators (where applicable).
 - 6. Locknuts and bushings.

2.5 ACCEPTABLE MANUFACTURERS

- A. Copperweld.
- B. Cadweld (for exothermic welds).
- C. O.Z. Gedney.
- D. Burndy.

PART 3 - EXECUTION

3.1 SERVICE ENTRANCE/SWITCH

- A. Coordinate all bonding and grounding requirements of the service entrance with the utility company.
- B. Provide ground lug in each switchboard, minimum 25% of phase bus, along entire length of switchboard.

- C. Separately connect each ground to existing grounding electrode. Test existing grounding electrode for proper resistance values and provide all necessary modifications required.

3.2 TRANSFORMERS

- A. Bond each transformer secondary neutral to nearest building structural column or beam via transformer case grounding stud.
- B. Provide jumper between transformer case and all conduit bushings.
- C. Where a separate equipment-grounding conductor is provided the primary and/or secondary feeders; bond to transformer grounding stud.
- D. Where isolation shield is provided, bond to transformer grounding stud.
- E. Where a separate ground riser is provided in addition to or instead of building steel; bond transformer-grounding stud to the ground riser.

3.3 STRUCTURAL STEEL BUILDINGS

- A. Select a column common to aligned electric closets as the bonding column for grounding of transformer neutrals, isolated grounds and separate equipment grounding conductors.
- B. All grounding conductors in each closet shall be bonded in close proximity to one another.
- C. Where a grounding conductor to be bonded is not in proximity to the common column, bond to the nearest column or structural beam.
- D. Provide bonding jumper strap across all structural expansion joints where the grounding integrity of the structural system is reduced

3.4 RACEWAYS

- A. Grounding continuity is to be maintained for all metallic raceways. Provide necessary clamps, bushings, straps and locknuts to assure continuity.
- B. For non-metallic or flexible raceways, provide a separate equipment-grounding conductor bonded to both ends.
- C. Where indicated, an additional equipment-grounding conductor shall be provided in metallic raceway.
- D. Where indicated, an isolated ground conductor shall be provided in addition to the equipment-grounding conductor. Bond at each end to the isolated ground terminal identified.

3.5 EQUIPMENT

- A. All equipment shall be grounded.

- B. Where isolated grounding is indicated, it shall be for the isolation of internal equipment components only. All metallic enclosures of such equipment shall be connected to the equipment ground system.

3.6 PANELBOARDS

- A. All panelboards and distribution panels shall be provided with a ground bar bonded to the enclosure. Provide an isolated ground bar connected to the incoming feeder ground where indicated.

3.7 TESTING

- A. Upon completion of the installation, confirm the grounding continuity of all raceways, conductors and equipment. Maximum allowable resistance is 25 ohms.

3.8 RECORD DRAWINGS

- A. Submit record As-Built Drawings indicating the location of all points where grounding conductors are bonded to steel, rods, plates, etc.
- B. Indicate the location of all grounding buses not installed within distribution equipment.

END OF SECTION 260650

SECTION 260700 - PANELBOARDS

PART 1 - GENERAL

Applicable provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all materials, labor, tools and services necessary to install the panelboards and to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Grounding
- B. Overcurrent Protection

1.3 SUBMITTALS

- A. Submit shop drawings for equipment and component devices under provisions of Division 1.
- B. Include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.
- C. Furnish two (2) sets of keys to Owner.

1.4 REFERENCES

- A. FS W-C-375 - Circuit breakers, molded case, branch circuit and service.
- B. FS W-P-115 - Power distribution panel.
- C. NEMA AB 1 - Molded case circuit breakers.
- D. NEMA KS 1 - Enclosed switches.
- E. NEMA PB 1 - Panelboards.
- F. NEMA PB 1.1 - Instruction for safe installation, operation and maintenance of panelboard rated 600 volts or less.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - PANELBOARD AND LOAD CENTERS

- A. Siemens.
- B. Square "D".
- C. General Electric.
- D. Or approved equal.

2.2 BRANCH CIRCUIT PANELBOARDS

- A. Lighting and appliance branch circuit panelboards: NEMA PB 1; circuit breaker type.
- B. Enclosure: NEMA PB 1; Type 1.
- C. Cabinet size: Approximately 6 inches deep; 20 inches wide for 240 volt and less panelboards. Verify field conditions and alter dimensions to suit at no additional cost.
- D. Provide surface cabinet front door-in-door with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.
- E. Provide panelboards with copper bus, rating as scheduled on Drawings. Provide copper ground bus in all panelboards and isolated ground bus in those as indicated on Drawings.
- F. Minimum integrated short circuit rating: 10,000 amperes rms symmetrical for 240 volt rated for 125 amps or less, 22,000 amperes rms symmetrical for 240 volt rated greater than 125 amps to 225 amps and 30,000 amperes for emergency power panelboards (verify in field). If panelboard is noted as a main distribution panelboard, than panel shall be rated as a distribution panelboard. Contractor shall provide short circuit study to ensure adequacy.
- G. Molded case circuit breakers: Bolt-on type thermal magnetic trip handle for all poles. Provide circuit breakers UL listed as type SWD for lighting circuits. Breaker handle to indicate ampere rating.

2.3 DISTRIBUTION PANELBOARDS

- A. Description: NEMA PB 1, circuit breaker type. The bus of all panels rated a minimum 400 amps shall be distribution type.
- B. Panelboard Bus: Copper, ratings as indicated. Provide copper ground bus in each panelboard.

- C. Minimum integrated short circuit rating: 65,000 amperes rms symmetrical for 240 volt panelboards; 65,000 amperes rms symmetrical for 480 volt panelboards, unless otherwise noted on Drawings.
- D. Model Case Circuit Breakers: NEMA AB 1, circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type HACR as specified on Drawings.
- E. Enclosure: NEMA PB 1, Type 1.
- F. Cabinet Front: Surface type, fastened with screws. Double hinged doors with flush lock, metal directory frame, finished in manufacturer's standard gray enamel. One hinged door to access breakers, the other to access wiring compartment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install panelboards flush or surface mounted as indicated on Drawings.
- B. Mounting height maximum 6 ft. (2 m) to top circuit breaker.
- C. Provide filler plates for unused spaces in panelboards.
- D. Provide type written circuit directory for each branch circuit panelboard. Indicate loads served and panel name by matching that shown on panel schedules on Drawings. Revise directory to reflect circuiting changes required to balance phase loads. Provide a second copy and turn over to Owner.
- E. Provide 3/4" thick plywood backboard for mounting of panels. Paint backboard with fire retardant paint.
- F. Provide nameplates as indicated in Section 16550.

3.2 FIELD QUALITY CONTROL

- A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits.
- B. Visual and mechanical inspection: Inspect for physical damage, proper alignment, anchorage and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.
- C. Provide thermographic inspections in accordance with Section 26 0100.

3.3 TESTS

- A. Submit certification that each panelboard has withstood, without breakdown, a factory dielectric (Hi-Pot) test consisting of a one minute application of a 60 cycle AC test voltage applied between phase legs and from each phase leg to enclosure.
- B. The applied test voltage shall have an RMS value of at least twice the line to line system voltage to which the panelboard is to be applied, plus one thousand volts (minimum 1500V).

3.4 RECORD DRAWINGS

- A. Submit As-Built Drawings indicating the location of all panelboards.

END OF SECTION 260700

SECTION 260800 – ADDRESSABLE FIRE PROTECTIVE SIGNALING SYSTEM

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 FIRE ALARM SYSTEM

- A. The existing fire alarm system is an addressable system. The fire alarm control panel is located in the boiler room.
- B. Add and modify as required to the existing system, as specified/shown on the drawings and as per field requirements. All devices shall be suitable for operation and compatible with existing system. Provide relays modules, cards, power supplies, etc. as required.
- C. Provide sufficient quantity of relays for fan shutdown as specified/shown on Drawings.
- D. Connect, test and leave the system in first class operating condition.
- E. The system shall maintain all applicable Local, State and National Codes including the National Electrical Code, NPFA-72, NFPA-101, ADA 1971 and NEC. The system shall be listed by Underwriter's Laboratories, Inc.
- F. The Electrical Contractor shall provide a manufacturers certified technician to supervise installation, adjustments, final connection and system testing.
- G. Fire alarm wiring and cable shall be per manufacturer's requirements.
- H. Fire alarm system test shall be in accordance with NFPA-72 and local fire department requirements.
- I. Shutdown of HVAC system equipment (Not limited to, Roof Top, Exhaust Fans, etc.) of 1000 CFM or greater, shall be performed via a relay interface system. Send signal to building Automated Temperature Control (ATC) system indicating shutdown has occurred. Equipment restart shall be by building 'ATC' system upon Fire Alarm reset to normal mode. Restart of equipment shall be sequential.

END OF SECTION 260800

SECTION 260900 - GUARANTEE

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 GUARANTEE

- A. The Contractor shall remove, replace and/or repair at his own expense and at the convenience of the Owner, any defects in workmanship, materials, ratings, capacities and/or characteristics occurring in the work within one (1) year or within such longer period as may be provided in the Drawings and/or Section of the Specifications, which guarantee period shall commence with the final acceptance of the entire Contract in accordance with the guarantee provisions stated in the General Conditions, and the Contractor shall pay for all damage to the system resulting from defects in the work and all expenses necessary to remove, replace, and/or repair any other work which may be damaged in removing, replacing and/or repairing the work.

END OF SECTION 260900